Academic self-concept in twice-exceptional students: An exploratory investigation

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A thesis submitted in fulfilment of the requirements of the degree of
Doctor of Philosophy

School of Education and Professional Studies
Griffith University
July 2014
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<th>Meaning</th>
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<tr>
<td>ACER</td>
<td>Australian Council for Educational Research</td>
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<tr>
<td>ADA</td>
<td>Anti-discrimination Act</td>
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<tr>
<td>AGAT</td>
<td>Australian General Ability Test</td>
</tr>
<tr>
<td>ANOVA</td>
<td>Analysis of variance between groups</td>
</tr>
<tr>
<td>ASD</td>
<td>Autism spectrum disorder</td>
</tr>
<tr>
<td>BASC-2</td>
<td>Behavioural Assessment for Children 2nd edition</td>
</tr>
<tr>
<td>BFLPE</td>
<td>Big-fish-little-pond effect</td>
</tr>
<tr>
<td>DDA</td>
<td>Disability Discrimination Act</td>
</tr>
<tr>
<td>DMTG</td>
<td>Differentiated Model for Giftedness and Talent</td>
</tr>
<tr>
<td>INC</td>
<td>Inconsistent Responding index, part of PH-2, which is designed to identify random response patterns.</td>
</tr>
<tr>
<td>IQ</td>
<td>Intelligence Quotient</td>
</tr>
<tr>
<td>MYAT</td>
<td>Middle Years Ability Test</td>
</tr>
<tr>
<td>NAPLAN</td>
<td>National Assessment Program – Literacy and Numeracy</td>
</tr>
<tr>
<td>PH2</td>
<td>Piers-Harris Children’s Self-Concept Scale 2nd edition</td>
</tr>
<tr>
<td>PRS</td>
<td>Parent rating scale, part of BASC-2, on which the parent describes their child’s observable behaviour</td>
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<tr>
<td>QCS</td>
<td>Queensland Core Skills</td>
</tr>
<tr>
<td>RBI</td>
<td>Response Bias index</td>
</tr>
<tr>
<td>SB 5</td>
<td>Stanford Binet 5th edition</td>
</tr>
<tr>
<td>SDH</td>
<td>Structured development history, part of which allows the researcher to gather information on the child’s background history</td>
</tr>
<tr>
<td>SOS</td>
<td>Student observational system, part of the BASC-2, for recording and classifying directly observed classroom behaviours</td>
</tr>
<tr>
<td>SRP</td>
<td>Self-report scale, part of BASC-2, on which the child can indicate his emotional self-perceptions</td>
</tr>
<tr>
<td>TRS</td>
<td>Teacher rating scale, part of BASC-2, on which the teacher gathers descriptions of the child’s observable behaviour</td>
</tr>
<tr>
<td>t-test</td>
<td>A statistical hypothesis test in which the test statistic follows a student's 't' distribution, if the null hypothesis is supported. It is most commonly applied when the test statistic would follow a normal distribution</td>
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Declaration

This work has not been previously submitted in any University. To the best of my knowledge and belief, the dissertation contains no material previously published or written by another person except where due reference is made in the dissertation itself.

Signed:………………………………..………………..…………

Geraldine Townend

17 September, 2014
Dedication

To my beloved family and friends for always supporting, helping, and standing by me.

“I have not failed 700 times. I have not failed once. I have succeeded in proving that those 700 ways will not work. When I have eliminated the ways that will not work, I will find the way that will work.” Thomas Edison.
Acknowledgements

There are many people who have helped me during the PhD. There is not enough space, nor time, to acknowledge everyone to the extent they deserve. I hope people understand the brevity of this part. First of all, I would like to thank my PhD supervisors at Griffith University, Professor Donna Pendergast, Associate Professor Raymond Brown, and Dr Susie Garvis; I gained invaluable experience and I was given the gentle guidance and freedom to pursue my research in my own way and I greatly appreciated that freedom. It was a great pleasure to discuss my work with them and gain their insight and wisdom. Thank you for supporting and encouraging me through these years.

Professor Catherine Beavis, Associate Professor Peter Grootenboer and Associate Professor Leonie Rowan have also been very supportive fielding ad-hoc questions and scenarios; their patience and enthusiasm have helped me through many rough times, for which I sincerely thank them.

The financial support provided by the Arts, Education and Law Group at Griffith University in the form of a scholarship was indispensable and I am grateful. I am appreciative to Griffith Institute for Educational Research for the many workshops and symposiums provided to enhance my academic journey, and for the financial support with editing.

Last, but certainly not least, I would like to thank my family and friends, whose love and support have helped to keep me buoyant, and for giving me the confidence to know I can achieve anything. The support has been valuable, with patience and ongoing love from my husband, Ian, and my beautiful children, Katherine and Harry, who have foregone many weekends with me over the years. For my Mother, Lynda, without whom I would not have considered this venture, and the support and encouragement from my brother Jonathon, and Leigh. Also, for my friends who have spent many hours editing my work and providing great feedback especially Carol Barnes who assisted with aspects of this thesis, Lynda Morris, Emma Janetzki, and Roberta Thompson, and all of my other supportive friends, all of whom have remained good friends despite my lack of availability over the recent years… words cannot express my gratitude to you all.
Abstract

Academic self-concept relates to students’ perceptions of their academic accomplishments, academic competence and their expectations of academic success or failure. Academic self-concept has been identified as being critical for academic success in school as it underpins educational aspirations, academic interest, course selection, and achievement over time.

Twice-exceptional students are gifted with a coexisting disability. Twice-exceptional students present as a dual paradox for education systems, both in terms of being gifted and having a disability, and in terms of the lamentable lack of nurturing of a potential resource both for the individual and also at a national level. The paradox of two, or one, or neither of the exceptionalities being visible in a child in school is due primarily to outward behaviours, lack of community knowledge, and challenges with identification (Vail, 1989). Despite over twenty years of empirical research on twice-exceptional students, the influences on academic self-concept remain virtually unexplored.

Australian professional teaching standards call for educators to design and implement learning experiences that value diversity. The teaching standards include identifying individual learning needs and adopting strategies for teaching students with disabilities, for those who are gifted, and for those who are twice-exceptional. Few studies have investigated the ways in which psychosocial, school, and academic experiences influence twice-exceptional students.

This research investigates the psychosocial influences on the school experience for twice-exceptional students and how these influences shape academic self-concept. A qualitative case study research design included both quantitative instrument data in addition to interview data. This research was undertaken at a private boys’ school in South East Queensland. The school has a proactive approach to twice-exceptional students and, at the time of data collection, was one of the few schools in the region recognising and aiming to cater for the unique needs of twice-exceptional students.

Findings provide new understanding about the psychosocial influence on academic self-concept for twice-exceptional students with key influences being generated mainly by teachers in the school context, and secondly by peers. This research contributes to a gap
in the field, and leads to a better understanding that can be applied to policy and practice for gifted education.
Chapter 1. Introduction

“It feels like what my aunty has got, she had a stroke, it’s like your brain works but your body doesn’t always follow fast enough, if at all. You feel so useless. It’s much worse when people treat you like an idiot too” (Ben, 2011).

1.1. Background and purpose

Intellectually gifted students with a disability, often known as twice-exceptional students, are among the most misunderstood students in our schools (Foley Nicpon, Allmon, Sieck & Stinson, 2011). These students often go unnoticed or are only partially accommodated either due to the masking effect of one exceptionality concealing the other exceptionality, or because there is no concrete understanding of how these dual effects manifest in a child (Foley Nicpon et al., 2011). Yet research affirms that twice-exceptional students must have both the giftedness supported and the disability accommodated in school (Rogers, 2011) in order to optimally address their learning needs.

Academic self-concept plays a critical part in identity formation (Marsh & Hau, 2003) and is considered to be important for academic success in school (Marsh & Craven, 1997; Mendaglio, 2013; Xin & Hao, 2003). Academic self-concept relates to students’ understanding of their academic accomplishments, academic competence, expectations of academic success or failure, and academic self-beliefs (Marsh, 2011). Academic self-concept has been identified as being critical for academic success as it underpins educational aspirations (Davis, Rimm & Siegle, 2011; Marsh et al., 1997), academic interest (Marsh, Hau & Craven, 2004, Marsh, 2011), course selection (Marsh & Yeung, 1997a), and achievement over time (Marsh & Yeung, 1997b). Academic self-concept is comprised of several related perceptions, “competence, self-worth, interest, enjoyment, intentions, to name but a few” (Bong & Skaalvik, 2003, p.29). Studies indicate that students with high academic self-concept enjoy comparatively higher motivation, higher school connection and higher academic achievement, and ultimately higher life satisfaction (Pekrun, Elliot, & Maier, 2009; Pekrun & Frese, 1992). However, there is a paucity of research exploring the academic self-concept of twice-exceptional students
Twice-exceptional students are, in many cases, failing to reach their potential in school (Assouline, Foley Nicpon, & Whiteman, 2010). As a result, often only their disability is formally identified as this may meet disability criteria, and will therefore be afforded legislative protection. Vialle (2013) presents the range of assessments available for assessment of the gifted but such assessments are not used widely and the giftedness in twice-exceptional students is often still overlooked. Modified curriculum for exceptional learners has been long recognised by schools, and implemented to some degree (Munro, 2012), although still not necessarily meeting the full needs of the student. Norris and Dixon (2011) and Lovecky (2004) observed that twice-exceptional students in special needs programs were rarely assigned academic work commensurate with their abilities and interests, although the ‘gifted’ programs focused on strengths, and “[C]learly from the child’s perspective, it would be more desirable for them to come through being identified as gifted rather than disabled” (Norris & Dixon, 2011, p. 34).

According to Foley Nicpon et al. (2011), although many, there are three most researched categories of twice-exceptional students: those who are gifted students with attention deficit hyperactivity disorder; those who are gifted students with Autism Spectrum Disorder; and those who are gifted students with specific disability which may include emotional disturbances such as anxiety and depression, developmental delay, writing difficulties, physical disabilities (such as hearing, visual, orthopaedic and other health impairments), speech and language impairments and brain injury. The premise that students can be twice-exceptional is generally accepted in the field of gifted education (Assouline et al., 2010; Baum et al., 2004; Baum, 1984; Brody et al., 1997; Foley Nicpon, Colangelo & Assouline, 2013; Neihart, 2008; Nielsen, 2002).

Twice-exceptional students can present as a dual paradox for education systems, both in terms of having giftedness and disability simultaneously, and in terms of the lamentable lack of nurturing of a potential resource on both an individual and a national level. The paradox of two exceptionalities in schools is due primarily to behavioural issues, lack of community knowledge, and challenges with identification (Vail, 1989). Notwithstanding over twenty years of empirical research on twice-exceptional students,
the influences on academic self-concept, that is perceptions about academic competence, remain virtually unexplored.

Regardless of the enormous potential of twice-exceptional students, for their own growth and in terms of their possible contribution as a national resource, many are failing to reach their academic potential (Assouline et al., 2010). In Australia, despite the findings of two Senate Inquiries into the education of gifted children that gifted students are among the most educationally disadvantaged groups in Australian schools (The Education of Gifted and Talented Children, 1988, (Cth) Australia; The Education of Gifted and Talented Children, 2001, (Cth) Australia), there is still no legislation relating specifically to gifted students. Findings presented by Gallagher, Smith & Merrotsy (2010) indicate the negative attitudes remain, particularly amongst teachers, towards provisions for gifted students (including early entry) in Queensland primary schools (albeit less than 50% but a large proportion). There is federal legislation to support disability but not giftedness. In Queensland, the former State ‘policy’ on gifted education was in August 2014 downgraded from a policy to a mere ‘further information’ document, thereby diminishing even more remarkably whatever persuasiveness it previously enjoyed. Furthermore there is a lack of pre-service education to adequately prepare teachers to identify and support twice-exceptionality; hence academic underachievement for twice-exceptional students is often reported (Wormald, 2011). The outcomes for twice-exceptional students have been long established in the literature to include academic underachievement, school drop out and negative psychosocial issues as a result of, and including for example, depression and anxiety (Foley Nicpon, Assouline & Colangelo, 2013; Neihart, 1999, 2008; Vespi & Yewchuck, 1992).

The purpose of this thesis is to engage in a deep analysis of the academic self-concept of three twice-exceptional students, utilising case study methodology and employing a multi-methods framework. Data were collected through the administration of standardised test instruments along with interviews conducted with each of the students, their parents and their teachers. Instrument data were analysed and interpreted using the validated test parameters, and interview data were analysed using thematic content analysis with both hand coding and the Leximancer software program.

The school milieu is pertinent for this research for providing the situation in which academic self-concept is highly influenced, and a contextual consideration that
underpins the sociocultural framework for understanding in this study. The self-perceptions of the participants’ academic success are consequential in the formation of academic self-concept, and school is a key context in providing such opportunities for perceptions of success (Cross, 2013).

In many ways, the typical development issues that affect school-age children are also affecting gifted and twice-exceptional students (Cross, 2013). During adolescence, fitting in and standing out are often desired at the same time (Gross, 2010), and is especially challenging if students are finding themselves in socially demanding situations due to their relative maturity, lack of life experience, and difficulties relating to others. It is for this reason that the theoretical directive of sociocultural theory has been adapted for this study. This is now introduced.

1.2. The theory

Sociocultural research provides insight into relationships, including people and their relationships with curriculum and schools. Sociocultural research does not look at issues in isolation but gives an integrated picture of the whole inquiry (Wertsch, 1993) and is thus ideal for this study. Vygotsky, as a forerunner of the sociocultural paradigm, worked across many disciplines; his approach used cultural, historical and institutional relationships (Vygotsky, 1978). He suggested that collective activity is the foundation of children’s concept formation and interacts between their physical development, conceptual development, and environment. Sociocultural theory suggests that learning is embedded within social events and occurs as a learner interacts with his environment (Veer & Valsiner, 1991), i.e. that learning does not occur in isolation but holistically across all experiences throughout a lifespan (Roth & Lee, 2007).

Research in the educational field has utilised different research paradigms and conceptual frameworks. The ways in which sociocultural forces, or the ‘social’ environment, affect the development of academic self-concept, through the practices in communities and the relationships with significant others, are the primary focus in this research. There is a paucity of research exploring academic self-concept in twice-exceptional students in Australia and internationally; hence the sociocultural paradigm is a useful platform to examine the phenomenon as such a paradigm can support investigation where the gaps in the research are very large (Penvel & Wertsch, 1995).
Thus, by exploring the sociocultural contexts and forces that shape identity, of which academic self-concept is one component, an investigation of the development and formation of an academic self-concept in complex sociocultural contexts can be conducted.

Scholars from a more positivist tradition may argue that qualitative accounts cannot be represented as an empirical reality. However, the qualitative researcher accepts that the concept of objectivity is flawed (Thomas, 2008) and assumes a subjective reality informed by interpretations of events (Burton & Bartlett, 2009). ‘Reality’ is multi-perspectival and the way that humans create meanings is by offering accounts of what they do, and this in turn is affected by context (Morrison, 2007). The importance of ‘context’ and how it influences perceived reality underpins this research. Hence, the sociocultural paradigm is a useful vehicle to investigate the context of academic self-concept in twice-exceptional students, and this approach constitutes an overarching framework for understanding, and constructing meaning, out of social experiences (Beavis, 2010).

There is a paucity of research in the twice-exceptional field (at date of writing) reflecting the use of the sociocultural theory. It is being used in this research to provide a scholarly perspective on the phenomenon of academic self-concept for twice-exceptional students and, thus, provide another point of difference. Sociocultural theory supports the use of different research methodologies. However, case study research is particularly useful because approaches within the sociocultural framework explore participants’ interactions in the larger social and cultural contexts, thereby adding intense investigation of unique individuals to the knowledge base in the gifted field. Such interactions cannot be assumed to give globally uniform cognitive effects as interactions and practices are shaped by different social and cultural environments, for example location, institution, and language. The exploration of the Research Issues guiding this research is now presented.

1.3. Research Issues and methodology

In order to explore the academic self-concept of twice-exceptional students, exploration using different data collection mechanisms, within the context of the school environment, was utilised in this multiple case study research. The aims of the research
were to measure academic self-concept for twice-exceptional students, to explore their school experiences, and explore the relationships between the two.

In order to achieve these aims, the following Research Issues will guide the case studies:

1. Explore some of the social interactions that influence the development of academic self-concept for twice-exceptional students.

2. Explore some of the social practices and contexts that influence the development of academic self-concept for twice-exceptional students.

In exploring interactions and practices of the twice-exceptional research participants, this research is designed to examine academic self-concept via case study research as there is both a paucity of this methodology, and also the use of the sociocultural framework, in the twice-exceptional field (Townend, Pendergast & Garvis, 2014). The invitation to encourage more qualitative research in the gifted field (VanTassel-Baska, 2006) has been heeded, and this research is aimed to enhance the understanding of the complex phenomenon of twice-exceptional students at a deeper level. This contribution to the field aims to provide a platform for deeper understanding of phenomena using context-based, case-study methodology, and, although not generalizable, will contribute to informing a gap in the literature.

By using multiple case studies, findings that are common to all participants can be analysed using cross-case analysis (Creswell, 2008; Stake, 1995), but this is not sufficient to say that, when using a small number of participants, the findings are generalizable (Creswell, 2009). In a case study research using comprehensive assessments with twice-exceptional female students to reveal important differences and similarities between participants, Assouline, Foley Nicpon and Doobay (2009) proposed that the case study approach bridged the gap between assessment in the clinical setting and exploration in the daily contexts and interactions of the participants. Such work implies support for Gerring’s (2007) conjecture that in-depth knowledge of an individual is more helpful than superficial knowledge of a larger number of participants. Thus case studies provide deeper understanding of phenomena being explored.
The case studies are three bounded systems providing descriptions using a variety of data sources. The aims are that these data will provide insights into the perceptions of the participants, their parents and teachers, and the academic self-concept of participants. The emergent themes are presented for each case study and, in later discussion, any shared patterns of perceptions for the participants are presented. The diversity of data provide insights into the phenomenon of academic self-concept in twice-exceptional students, leading to better understanding and providing the basis for understandings that can be applied to policy and practice arenas.

The research design is established to provide optimal exploration of the Research Issues within the outlined limitations: how contexts, practices and social interactions in the sociocultural paradigm inform academic self-concept. Research in the twice-exceptional field was used as a reference point to guide the methodological approach to shaping the research design. Data sources are the participants, their parents and teachers, and their school records, and instrument data that have been used and supported within the field of gifted education, in addition to interview data which, as anticipated, provided deeper insights.

1.4. The significance of this research

The significance of this study lies in its contribution to scholarship in this field, a drive towards sustainable quality educational practices, policy and future research, and intention to verify the use of sociocultural theoretical research in studies of gifted and twice-exceptional students to enhance awareness and scaffold broader practices. In addition to contributing to the gap in the literature and using the sociocultural theory, the other point of difference in this research is the sociocultural notion that internalization is not the indiscriminate transfer of external mediation to a pre-existing internal plane (Wenger, 2000), as sustained by Cartesian dualism. On the contrary, sociocultural theory argues that human psychological processes do not pre-exist in the head waiting to emerge at the right biological developmental phase. In short, although biology plays a role, academic self-concept cannot be an isolated process but is formed through external social actions.
1.5. **Framework of this thesis**

This thesis is presented in nine chapters beginning with this Introduction. Chapter Two presents a review of the literature relating to academic self-concept. As there is little literature on academic self-concept for twice-exceptional students, the literature around general self-concept for twice-exceptional students, and academic self-concept for gifted students and students with learning disabilities will be presented. The gap in the literature will be highlighted, as will the ways in which other academic self-concept literature might help to inform both the gap in published research and the methodology used for this research. Additionally, the literature reveals the complexity of twice-exceptionality and the challenges with understanding the effects on academic self-concept and academic achievement. Chapter Three, Theoretical framework, describes the theoretical framework used for this research, how this also contributes to a gap in the field, and how the theory informs the approach to this research and the data methodology. The following Chapter Four, Methodology, presents the methodological framework and provides insight into the validity and reliability of data presented. The variety of data sources and data collection methods, including both instruments and interviews, is discussed, including the limitations. Chapter Five, Framing the case studies, precedes the case studies. Chapters Six, Seven and Eight present the case studies and the analysis of the data for each. The case studies are presented in multi-layered, multi-dimensional aspects as the data are analysed in light of the literature through the theoretical framework, and in light of the Research Issues through the theoretical framework. A discussion of all three case studies, particularly in light of both the literature and the theoretical framework, is provided to gain insights into the nuances of influences on academic self-concept for the participants which, although not generalizable, commonalities may provide a platform for insights and for further research. Chapter Nine, Discussion, provides discussion and assertions around the data. Finally, Chapter Ten, Conclusion, provides a succinct conclusion in which teacher and school practices are highlighted that can enhance or inhibit academic self-concept for twice-exceptional students. Limitations that should be taken into consideration when interpreting the research are outlined prior to the recommendations for policy, practice and future research.
1.6. Chapter summary

This research aims to identify and investigate the sociocultural forces that shape academic self-concept for twice-exceptional students; thus providing insights into policies, school practices and teacher practices that may enhance academic self-concept for twice-exceptional students through a greater understanding of the phenomenon. As twice-exceptional students are at very high risk of academic underachievement, and hence risk of being excluded from gifted programs, this study seeks to provide insights into the influences on academic self-concept and how these are pivotal in improving psychological and educational outcomes, progressing knowledge, informing the twice-exceptional literature, and addressing the dual paradox experienced by stakeholders in the twice-exceptional field.
Chapter 2. Literature review

“The view that academic problems have intrinsic causes reflects the dominant culture’s belief that normalcy is equated with academic success” (Dole, 2001, p.107).

2.1. Introduction

The previous Chapter provided an introduction and overview of this research. In this Chapter a review of the literature that pertains to academic self-concept, and the literature that pertains to twice-exceptional students, is presented. Definitions of the key terms of ‘giftedness’, ‘children with disability’, and ‘twice-exceptionality’ are stated and, once defined, the use of these terms in the thesis will be presented as follows: first, the definitions of twice-exceptional students will be considered. Second, definitions of ‘general’ self-concept will be presented: the connection to identity formation, the development of self-concept in an individual, and the literature associated with self-concept for twice-exceptional students. Third will be a discussion of, and the definition of, academic self-concept used for this research. As there is limited literature reporting on academic self-concept for twice-exceptional students, an examination of the literature revealing what we know about academic self-concept for gifted students, and academic self-concept for students with disability, and what we know about twice-exceptional students in school (socially and academically), will be explored. The interface of findings for gifted students and students with disability, together with insights into twice-exceptional students, might be useful to speculate how academic self-concept in twice-exceptional students might manifest. Fourth, some of the influences that impact the formation of academic self-concept will be outlined. Finally, the gap in the literature will be delineated followed by a summary of Chapter Two.

Giftedness and talent are two separate constructs (Gagné, 2013) based on natural abilities or aptitudes (giftedness) and systematically developed skills (talent). There is a developmental relationship between these two constructs as demonstrated in Gagné’s ‘Differentiated Model for Giftedness and Talent’ [DMTG] (Gagné, 2008). The DMTG illustrates that an individual might be gifted in any one or more of the following aptitude domains: intellectual, creative, socioaffective, and sensorimotor. As a result of, for example, motivation, surroundings, and life experiences, the giftedness can be
transposed into talents through the developmental processes of learning, training and practise. As a result, gifted children might become talented in, for example, academics, strategy games, technology, arts, business, social action and/or sports. It is possible to have the aptitude of giftedness without the positive catalysts to transform that giftedness into talent. Gagné’s model of giftedness is widely accepted in the field of gifted education and research and is used for the purposes of this research. To be gifted, Gagné states that an individual has the natural ability that places them in the top 10% of their peer population in the domain/s in which they are gifted. Similarly, to be considered talented using the DMTG, the developed skills are performed at a level that places the individual in their top 10% of their peer population for that skill. Whether or not a child develops their giftedness into talent is influenced by developmental processes such as interpersonal, environmental and chance catalysts. Such catalysts can include a child having a disability.

A disability is a functional consequence of impairment (Foreman, 2008) and can include learning, emotional, physical, sensory, and/or, developmental disability. A student is considered ‘twice-exceptional’ when he or she is identified as gifted in one or more domains whilst also having a learning, emotional, physical, sensory, and/or developmental disability (Assouline, Foley Nipcon, & Huber, 2006).

Accurate measures of giftedness are challenging in many of the domains, however intellectual giftedness can be identified using an intelligence quotient (IQ) test. This research considered only those students recognised by the school to be twice-exceptional and, although there are limitations with this approach, the school does use reports that are widely utilised in the field of gifted education. The twice-exceptional participants had been identified by the school as being intellectually gifted through IQ assessments, and diagnosed with a disability through specialist reports, all of which were submitted to the school by parents of the students. Although it is acknowledged that twice-exceptional students can significantly underperform in IQ assessments and that many twice-exceptional students are overlooked for this reason, the students identified by the school using such assessments were invited for this research.

Twice-exceptional students typically experience challenges in education systems (Assouline, Foley Nipcon, & Whiteman, 2010). They are at a high risk of academic underachievement and this is likely to be linked to their academic self-concept,
psychosocial well-being and educational achievement (Townend, Pendergast & Garvis, 2014). However, there is a paucity of research into the academic self-concept of twice-exceptional students (Townend et al., 2014). Academic self-concept is important in predicting future achievement (Marsh & Yeung, 1997b), coursework selection (Marsh & Yeung, 1997a), educational attainment (Marsh et al, 2008), life success and satisfaction up to a decade after leaving school (Field, Sarver, & Shaw, 2003; Skinner, 2003), educational aspirations (Davis, Rimm & Siegle, 2011; Marsh et al., 1997), and academic interest (Marsh, Hau & Craven, 2004; Marsh et al., 2008). Within the gifted population, it is estimated by some authors that up to 20% of students may also meet the criteria for twice-exceptionality [of having a disability that affects learning and being gifted] (Barber & Mueller, 2011).

Studies indicate that students with high academic self-concept have comparatively higher motivation, higher school connection and higher academic achievement, although it is not clear which comes first – the higher self-concept, the higher motivation, or the higher achievement (Shi et al., 2008). Students’ emotional reactions during learning have been shown to relate to educational and life outcomes (Pekrun, Elliot & Maier, 2009; Pekrun & Frese, 1992). This is not surprising as the school environment creates a context for a variety of emotional experiences, which can influence learning (Lipnevich, MacCann, Bertling, Naemi, & Roberts, 2012). Despite the dearth of information about the academic self-concept of twice-exceptional students, more is known about general self-concept in twice-exceptional students, and the academic self-concept in both gifted students and students with disabilities that effect learning (called learning disabilities in this research). Such studies may provide the opportunity to explore the possible interface where the two exceptions overlap.

2.2. What is twice-exceptionality?

For the purposes of this research, students who are twice-exceptional are defined as intellectually gifted with a disability that affects learning. Brody and Mills (1997) define gifted students with learning disabilities as “those who possess an outstanding gift or talent and are capable of high performance, but who also have a disability that makes some aspect of academic achievement difficult” (p. 282). Baum and Owen (2004) concur, defining a twice-exceptional student as an individual who simultaneously possesses both superior cognitive ability and a disability including learning disability,
developmental, physical, emotional or medical disability. For the purposes of this research, the term ‘learning disability’ will refer to any of the possible domains of disability afore mentioned, which have been formally diagnosed, and may have an impact on learning. The premise that students can be twice-exceptional is generally accepted in the field of gifted education (Assouline et al., 2010; Baum & Owen, 2004; Baum, 1984; Brody et al., 1997; Neihart, 2008; Nielsen, 2002). ‘Giftedness’ has numerous definitions (Renzulli & Reis, 2002) and can include areas such as intellectual, creative, musical and sporting domains. This research will focus on the intellectual domain. Intellectual giftedness is frequently based on traditional intelligence testing (Litster & Roberts, 2011) to indicate superior cognitive ability (Gagné, 2010, 1995; Renzulli et al., 2002; Sternberg, 2000). IQs well above average have long been regarded as a classical feature of intellectual giftedness (Marland, 1972).

Twice-exceptional students often go unnoticed or their needs are only partially addressed educationally because of the masking effect, whereby the giftedness masks the disability or vice-versa, or because there is no tangible understanding as to how these dual effects manifest in a child (Foley Nicpon, Allmon, Sieck, & Stinson, 2011). Research reveals that teachers have little knowledge and understanding of twice-exceptional students in Australia (Wormald, 2011). Twice-exceptional students are often recognised for their disability, not their gifts (Davis & Rimm, 1998; Lovecky, 2004). Yet, research affirms that twice-exceptional students must have both the giftedness supported and the disability accommodated in school (Rogers, 2011). Twice-exceptional students are not only “waiting to fail, they are failing to flourish” (Assouline, Foley Nicpon, & Whiteman, 2010. p.103).

Researchers have reported variable social and emotional functioning amongst twice-exceptional students (e.g. Neihart et al., 2002). Some researchers suggest that these students are, at the very least, in the normal range and coping well. Coleman (1992) suggests that due to their high cognitive characteristics, twice-exceptional students adapt quickly and adopt coping mechanisms which help them to deal with the significant school stressors. Dole (2001) also suggests that positive self-identity in twice-exceptional students is related to self-advocacy and self-determination. In contrast, other researchers have revealed that twice-exceptional students have issues with social skills, peer relationships, perfectionism, anxiety, depression and low self-
efficacy (Antshel et al., 2007; Foley Nicpon et al., 2011, Sousa, 2009; Vespi et al., 1992). However, there is no comment about the academic self-concept of twice-exceptional students.

Self-understanding and self-acceptance are important to twice-exceptional students and identification is, consequently, critical to the development of all aspects of self-concept. Dole (2001) discovered positive self-perceptions for students in a study where students' positive self-identity was enhanced by strong support systems, involvement in extra-curricular activities, self-knowledge and self-advocacy. More adverse outcomes for students can include youth suicide (Svetaz, Ireland & Blum, 2000) and substance abuse (Beitchman, Wilson, Young & Adlaf, 2001). Studies report that disengaged high school dropouts can also be gifted but underperforming (Rimm, 2006). Although these studies have not been directly linked to twice-exceptional students, they highlight the fact that there are risk factors for both gifted students and students with disability, and that these may be greatly enhanced when combined within twice-exceptional students.

This literature reveals the complexity of twice-exceptionality and the challenges of understanding the effects on academic self-concept and on academic achievement. This review of the literature now presents some of the disabilities that can present in twice-exceptional students.

2.3. Disabilities

As mentioned earlier, disabilities can include learning disability, developmental, physical, emotional or medical disability. ‘Learning disabilities’ is a generic term that refers to a heterogeneous group of disorders manifested by significant difficulties in the acquisition and use of listening, speaking, reading, writing, reasoning or mathematical abilities (Hammill, Leigh, McNutt & Larsen, 1988). These disorders are intrinsic to the individual and presumed to be due to central nervous system dysfunction. Students with disability often face achievement problems due to neurocognitive factors (Fletcher, Coulter, Reschly, & Vaughn (2004). IQ is irrelevant to the definition of all disabilities except for students with intellectual disability (Siegel, 1989) and, for example, an individual who can read well may have a disability and an individual who is gifted may have a disability.
Foley Nicpon et al. (2011) suggest that, although many, there are three commonly investigated areas of twice-exceptionality and these three categories are the focus for delineating and categorising in this literature review. The first category is gifted students with attention deficit hyperactivity disorder (ADHD), which is considered to be a medical or neurobehavioural condition. Current conceptualization of the disorder is that it is a developmental condition that manifests both cognitively (internally), for example executive functioning, working memory, planning, and/or behaviourally (externally) for example impulsivity, hyperactivity, distractibility, and that these symptoms exist on a continuum of severity (Brassertt-Harknett & Butler, 2007).

The second category is gifted students with Autism Spectrum Disorder (ASD) which includes students with Asperger’s syndrome, although updates in the DSM5 (2013) now exclude Asperger’s syndrome. The final category is gifted students with specific learning disability, which may include developmental delay, writing difficulties, physical disabilities, such as hearing, visual, orthopaedic and other health impairments, speech and language impairments and brain injury. Some researchers also believe that gifted students with specific learning disability experience negative psychosocial factors for example emotional disturbances such as anxiety and depression (Reis et al., 2000; Vespi & Yewchuck, 1992).

The literature has identified that academic self-concept is influenced in various ways, including the individualised influences of giftedness and learning disabilities. Academic self-concept is part of a larger self-concept, which collectively contribute toward identity formation in individuals. Self-concept will now be explored to provide a framework for the understanding of academic self-concept.

2.4. **What is self-concept?**

Much of the research highlights general self-concept for twice-exceptional students and inferences about academic self-concept might be drawn from such results. However, when academic self-concept is considered alone, it will be identified as such.

Academic self-concept is a part of a more ‘general’ or ‘global’ self-concept which will be referred to from hereon as *self-concept*. Prior to exploring the literature on academic self-concept, the construct of self-concept used for this research will be delineated in
order to provide a framework for understanding academic self-concept. Self-concept describes the “totality of the individual’s thoughts and feelings having reference to himself as an object” (Rosenburg, 1989, p. 34). In general, students with a positive self-concept think of themselves as valuable and competent and are usually motivated to do well in school and exhibit fewer behaviour problems (Eccles, Wigfield, & Schiefele, 1989; Wei & Marder, 2012).

Scholars agree that self-concept is a significant psychological construct (Shi, Li & Zhang, 2008), which is considered to be a multidimensional, multilevel structure that is domain specific. Bahr (2007, p. 138) argues that “self-concept is a term that refers to the knowledge we have of ourselves. We develop self-concept through interacting with the environment”. Self-concept is multidimensional in that it comprises various facets (Zheng et al., 2012).

Research studies suggest that there may be causal models to describe the relationship between self-concept and academic achievement (Hattie, 1992; Valentine, 2001). The causal models include hypotheses that (a) self-concept determines academic achievement; (b) academic achievement determines self-concept; (c) self-concept and academic achievement can be determined mutually, indicating that self-concept and academic achievement cause each other; or (d) another variable determines both self-concept and academic achievement (Sanchez & Roda, 2003). Studies using a wide variety of designs (e.g., cross-sectional or longitudinal panel designs) with different samples and age ranges, which demonstrate findings, tend to agree that self-concept has a moderate correlation with academic achievement, and that academic self-concept has a strong correlation with academic achievement. However, these studies did not focus on students with learning disabilities (Ahmed & Bruinsma, 2006; Acosta, 2001; Sanchez & Roda, 2003; Sebald, 2010; Valentine, 2001).

It is difficult to find a unanimous and accepted definition of self-concept since researchers approach the construct from different theoretical perspectives (Acosta, 2001; Ahmed & Bruinsma, 2006; Sanchez & Roda, 2003). For example, Valentine (2001) summarises self-concept as “a collection of knowledge structures” (p. 2), whereas Sanchez and Roda (2003) consider self-concept “a set of knowledge and attributes that we have about ourselves, the perceptions that the individual assigns to himself and characteristics or attributes that we use to describe ourselves” (p. 97).
Ahmed and Bruinsma (2006) adopted the self-concept model of Shavelson, Hubner and Stanton (1976), which defines self-concept as “a person’s perception of himself, formed through environmental experiences and significant others” (p. 554). This latter definition provides the framework to present academic self-concept in this research as it aligns with the sociocultural lens and theoretical framework through which this research is conducted, and is further explicated in Chapter Three.

Shavelson (1976) argues that self-concept is gradually formed over time and is founded on an individual’s experiences and their interpretation of these experiences. This is underpinned by Festinger’s (1954) social comparison theory regarding how students use frames-of-reference to assess themselves, and their strengths and weaknesses. Research indicates that, using social comparison theory, gifted students view themselves to be at a social disadvantage (Cross et al., 1993) and students with disability have social difficulties (Kavale & Forness, 1996).

The definition of self-concept used for this research furthermore divides self-concept into two main areas: social self-concept and academic self-concept. Social self-concept refers to perceptions about personal qualities e.g. appearance, physical ability, and interpersonal relationships. Academic self-concept refers to perceptions students have about their academic performance and beliefs; academic self-concept can be influenced by other domains within social self-concept (Piers & Herzberg, 2004). Self-concept concurrently develops with identity formation (Steinberg, 1996).

Identity formation is a complex process involving multiple influences, “both within the sociocultural environment and within the individual” (Dole, 2001. p.104). Adolescence is a particularly pivotal time for identity construction (Erickson, 1991; Feldman & Elliott, 1990; Steinberg, 1996). Gecas and Burke (1995) posit that identity is the most visible aspect of self that involves the influences of social, psychological, historical and developmental factors. Sociocultural influences, such as school culture or peer expectations, on an individual have consequences for identity formation which may result in contradictory feelings and, in a sense, weaken the sense of ‘who’ we are (Dole, 2001; Erickson, 1991). Bunning and Steel (2007) observed the importance of context and cultural belonging in the construction of identity and, therefore, the construction of self-concept. Culture plays a pivotal role in a society’s concept of what is considered normal or otherwise; a physical or intellectual difference can be a major social disability.
(Wendell, 1996) and have a positive or negative impact on the individual, their sense of identity, and therefore their self-concept.

Social comparison theory (Festinger, 1954) and identity formation, through social interactions, can influence self-concept. Research by Barber and Meuller (2011) illustrated the social difficulties that twice-exceptional students face, especially when compared to their gifted, and nonidentified peers, which included lower self-concept. The social risks for twice-exceptional students, proposed by Barber and Mueller (2011), show that students with only the disability identified placed themselves in the 25th percentile with regards to social skills and felt high levels of isolation, peer pressure and interpersonal difficulties. By contrast, the gifted students felt isolated and different from age peers, but environment could positively address this, for example access to gifted programs (Cross et al., 1993). Parents of twice-exceptional students suggested a propensity for their children to ask probing questions at home, probably as they feel safer in their home environment (Griffin, 2001) and thus reinforcing the implication of environment on their self-concept. Furthermore, if gifted students feel the social disadvantage of their giftedness they will avoid opportunities to demonstrate their talent (Barber & Mueller, 2011), thus reinforcing the strong influence that classroom environments, school cultures and interactions with others have on their development. It is the perception of being different that drives the behaviour of individuals (Reis & Renzulli, 2004; Rimm, 2002). As a result, gifted students, including the twice-exceptional, are likely to seek social support from older individuals with whom they have more in common (Rimm, 2002). Feeling different and awareness of social difficulties contribute to lowering self-concept (Swiaeks, 2001). It is argued that self-concept is the most important attribute for gifted children to recognise their potential (Feldhusen & Hoover, 1986). Chen, Peters and Moenks (1997) revealed a positive correlation between self-concept and IQ, which implies that students with high IQ ‘should’ have high self-concept.

Self-concept is the most important attribute for gifted students and likewise for twice-exceptional students as part of the gifted population, to recognise their own potential (Feldhusen & Hoover, 1986). Additionally, when learning disabilities are considered, there is evidence that students have low self-concept (Beltempo & Achille, 1990; Cooley & Ayres, 1988). Although Chen, Peters and Moenks (1997) reported a positive
correlation between self-concept and IQ, being gifted does not assure positive self-concept (Klein & Cantor, 1976). Gifted students are more likely to have emotional issues (due to negative social and school experiences) that may negatively impact self-concept (Litster et al., 2011). Research regarding self-concept in gifted students has produced mixed and sometimes contrary results, with some studies showing that gifted students have higher self-concepts than other students (Li et al., 2004; Mulcahy, Wilgosh & Peat, 1991; Pyryt & Mendaglio, 1994; Young & McIntyre, 1991). Other studies indicate a lower self-concept in gifted children. When lower self-concept for gifted children is regarded alongside the influence of age, Shi et al. (2008) discovered that, at age 13, gifted students had lower self-concept in all aspects of their lives and that this was explained by the high frames-of-reference as a result of their being in high-performance, gifted, streamed classes. Shi et al. (2008) also recognised that, although all students have a lowered self-concept between ages nine to thirteen, that the gifted students were much lower. Tong and Yewchuck (1996) did not find any significant differences between gifted and neuro-typical students’ self-concept. This was supported by Shi et al. (2008) for just one age group; for children aged eleven. Shi et al. (2005) also discovered, in a study using 283 students that lowered self-concept in general was due to age and not giftedness.

Coleman (2001) reports that twice-exceptional students have feelings of frustration due to the pressure to perform (their giftedness), and having barriers to their performance (their aspect of learning disability). This leads to social difficulties as students perceive parental, teacher and peer expectations are high and they are unable to live up to them. In addition, the twice-exceptional students feel they lack social skills and do not feel they fit-in with their peers (Vespi & Yewchuck, 2008). If the twice-exceptional students do not typically demonstrate levels of giftedness in the classroom with high levels of academic performance, they are likely to be disengaged and present disruptive classroom behaviours, and an overall resistance to school – possibly due to the difficulty in finding true or like-minded peers in the classroom context (Barber & Meuller, 2001). Social coping mechanisms are related to some areas of self-concept (Swiaeks, 2001) to help a student feel as if they are fitting in for example, using humour to downplay giftedness and wanting peer acceptance. Nielsen (2002) elucidates this by explaining that twice-exceptional students have difficulty identifying with the gifted students, the students with learning disabilities, and the general peer group; unlike the gifted who can
associate with others who share talents and interests, twice-exceptional students find it harder to fit-in as, although there may be similar strengths and interests, there are several possible variables of disability that creates difference.

Kloomak and Cosden (1994) reported that students with disability who wanted to succeed in school and in life maintained a positive self-concept despite academic difficulties. They would perceive themselves as competent in other, non-academic domains which enhanced self-concept; additionally they perceived high levels of social and familial support.

Trail (2008) uncovered the notion that twice-exceptional students benefit from opportunities for interactions with students of similar abilities as necessary for peer relationships. In addition, Trail discovered that twice-exceptional students need support from teachers and parents, which is essential for socioemotional development. Dole (2000) suggests that the single largest factor that appears to differentiate the twice-exceptional group from gifted students is a sense of inefficacy in school, despite the creative potential of the twice-exceptional group. As a result of lack of understanding and identification of twice-exceptional students in the education system, they have lower self-concept, lower self-efficacy, higher hypersensitivity, and higher emotional lability (Dole and Mueller, 2001). Twice-exceptional students are underrepresented in gifted and enrichment programs (vanTassel-Baska, Johnson & Avery, 2009). It would, therefore, appear that twice-exceptional students face a double-edged sword as they may have the low self-concept of both a gifted student and a student with disability (Assouline, 2011; Barber & Mueller, 2011; Baum & Owen, 1988; Reis et al., 2000). Their low academic achievement and, at times disruptive behaviour, can lead to school failure and social-emotional issues, and this is a large price to pay for overlooking a disability (Dole, 2000, Reis & Blacher, 2002) and thus likely to amplify the likelihood of low academic self-concept.

2.4.1. What is academic self-concept?

One of the two areas of self-concept, academic self-concept, is known to reflect students’ perceptions of specific and general academic achievements (Bahr, 2007). Academic self-concept relates to students’ perceptions of their academic accomplishments, academic competence, expectations of academic success or failure, and academic self-beliefs (Marsh, 2011). Academic self-concept reflects students’
perceptions of specific and general academic achievements (Bahr, 2007), and includes emotional reactions to academic domains (Lipnevich et al., 2012). Emotional reactions include enjoyment, anxiety, pride, anger and boredom, the first two being most prominent in school students (Goetz, Frenzel, Pekrun, Hall, & Ludtke, 2007). Studies indicate that positive emotions in school predict positive outcomes (Fredrickson, 2001; Lipnevich et al., 2012; Seligman & Csikszentmihalyi, 2000). Academic self-concept can influence a student’s attitude to school (Marsh & Hau, 2003), and can also vary between academic subjects, teachers and contexts (Lipnevich et al., 2012). Academic self-concept and achievement motivation can be the most important factors in school achievement (Liu, Guo & Wang, 1991), but academic self-concept plays the largest role in school achievement as it also influences life satisfaction (Lipnevich et al., 2012). Academic self-concepts can also vary between different academic subjects and are domain specific.

Furthermore, students with high academic self-concept are more likely to sustain efforts to learn in school, capitalise on their strengths and take ownership of their actions (Goldberg, Higgins, Raskind, & Herman, 2003; Lackaye & Margalit, 2006; Madaus, 2006). Students with high academic self-concept are also more likely to be successful in post education environments (Field, Sarver, & Shaw, 2003; Skinner, 2003; Zheng, Erickson, Kingston & Noonan, 2012). Educators often falsely believe that academic accomplishments alone contribute to academic success, but academic self-concept also relates to emotional reactions to academic domains and academic experiences, so that previous academic success is positively related to academic self-concept (Hampton & Mason, 2003).

Bong and Skaalvik (2003) suggest that academic self-concept predicts emotion, motivation and performance. High academic self-concept results in high achievement motivation, involvement in school and academic achievement (Xin & Hao, 2003). Academic self-concept has been shown to affect one’s educational aspirations (Davis, Rim & Siegle, 2011; Marsh, 1988), academic interest (Marsh, Hay & Craven, 2004; Marsh, Seaton, Trautwein, Ludtke, Hau, O'Mara & Craven, 2007), course selection (Marsh & Yeung, 1997a), and achievement over time (Marsh & Yeung, 1997b). Shi et al. (2008) conducted a meta-analysis of research carried out on the connection between self-concept and academic performance. In general, it appears that students with high
self-concept demonstrated higher motivation, school connection and academic achievement.

Influences on academic self-concept change as a student progresses through school. In primary school, educational and school achievement affects academic self-concept (Guay, Marsh & Boivin, 2003). However, Guay et al. (2003) state that this is reversed in middle school and that academic self-concept affects achievement. In addition, a study of middle school students in Years 6 and 7 linked depth of learning to school relationship and academic self-concept (Burnett & Proctor, 2002). The ‘skill development model’ for the early years and then the ‘self-enhancement model’ can demonstrate these two positions for the middle years and beyond (Guay et al., 2003). Dai et al. (2008) also suggest that causal effects of academic achievement over academic self-concept is likely to be a bi-directional and reciprocal relationship and that this will be mediated by motivational processes like self-appraisal and self-motivation. Different social comparative feedback also significantly impacts self-efficacy and performance aspirations.

Shi et al. (2008) conducted a meta-analysis of research carried out on the connection between self-concept and academic performance. In general, it appears that children with high self-concept had higher motivation, school connection and academic achievement. There is no literature exploring the academic self-concept of twice-exceptional students. To attempt to explore this phenomenon, this Chapter will now analyse the literature regarding academic self-concept for both gifted students and students with learning disability as this may provide the interface for speculation of academic self-concept for twice-exceptional students.

2.4.2. Academic self-concept in gifted students:

A range of studies reveal that gifted students who are achieving can have comparatively high academic self-concept, gifted students who are not achieving have lower academic self-concept, and students with disability have low academic self-concept (Assouline, 2011; Barber et al., 2011; Baum et al., 1988; Colangelo et al., 1995; Litster & Roberts, 2011; Reis et al., 2000). Colangelo and Assouline (1995) reported that gifted students across elementary and high school had positive academic self-concepts but had the lowest self-concept scores in the interpersonal relationships domain. Likewise, Yong and McIntyre (1991) had previously proposed that gifted students have higher self-
concepts. Lister and Roberts (2011), in a meta-analysis, suggested that gifted students consistently report higher academic self-concept than their non-gifted peers. Kolloff and Moore (1989) investigated the effects on academic self-concept of summer programs for gifted students and submit that academic self-concept is enhanced due to the perceptions of an intellectually ‘safe’ environment. Enerson (1993) examined how gifted children interpreted their participation in summer programs for the gifted and uncovered that they had a positive effect on academic self-concept stating “the satisfaction of challenging coursework taught by caring, expert teachers and the opportunity to live on university campus were significant to them: making friends and gaining confidence in their own abilities was equally vital” (p.69). This research echoed that conducted by Cunningham and Rinn (2007), who proposed that residential summer programs, in general, enhanced both social self-concept of gifted students, and positively influenced their already high academic self-concept.

The conflicting research regarding the effects of summer programs on gifted students’ self-concepts might be explained by two theories. The first theory is the big-fish-little-pond-effect (Marsh 1991; Marsh & Craven, 2000) that has been advanced through multiple studies and is considered to have a negative influence on academic self-concept; by placing high-ability students in homogenous ability classes their social comparison parameters are readjusted as they have only high-ability students with whom to compare themselves. The second theory concerning the effect of educating gifted students separately from regular students involves the positive effect on self-concept known as the reflected glory effect (Cialdini, Borden, Thorne, Walker, Freeman, & Sloan, 1976). This type of effect, although recorded in studies based primarily in social psychology research, has also been applied to gifted education. The reflected glory can occur when high-ability students experience a boost of self-concept upon acceptance into a selective program due to their association with a successful group of people (Aberson, 1999; Burger, 1985; Cialdini et al., 1976).

Gross (2001) revealed that acceleration for gifted students improved their academic self-concept; however, this is challenged by researchers who reported the opposite to be the case (Marsh et al., 1995). In a study exploring academic self-concept in gifted students, it was reported that academic self-concept deteriorates after a couple of years when gifted students are placed into a homogenous gifted class (Marsh et al., 1995) thus
supporting Festinger’s (1954) social comparison theory which underpins the big-fish-little-pond-effect (Marsh et al. 1995) discussed later. However, Gross, (1997) in response, emphasised that Marsh’s ‘high-ability’ subjects (with IQ average of 109), bore little resemblance to gifted students and would unlikely be accepted for entry into selective gifted programs “where mean IQs are rarely less than 130” (Gross, 1997, p. 145) and Dai (2004) supports this notion. Students in accelerated programs have higher global self-concepts (Hargreaves et al., 2009) and the sensitivity of gifted students result in more positive peer relationships.

In a meta-analysis of self-concepts, Litster et al. (2011) report that gifted students, when compared with other students, have higher self-concept in intelligence, behaviour and reasoning and lower self-concept in other domains such as physical ability and appearance. Li et al. (2004) published a study that indicates that intellectually gifted students have high intellectual self-concept. Piers and Herzberg (2002), the authors of the Piers-Harris Self-concept Instrument, propose that there are no significant differences between gifted and non-gifted students’ self-concepts, including academic self-concept. Conversely, in a meta-analysis of the self-concept of students with learning disability, Bear, Minke and Manning (2002) discovered that such students had lower academic self-concept than their peers.

Marsh et al. (2008) state that academic self-concepts are related to academic accomplishments but are not necessarily linked to self-esteem. This may explain the mixed research findings by researchers for example Assouline (2010) who identified high self-esteem in twice-exceptional students, which might relate to their sense-of-self beyond the classroom environment or, as it can vastly fluctuate (Bahr, 2007), it may have been measured when high. Academic self-concept relates to the students’ perceptions of their academic accomplishments, academic competence, expectations of academic success or failure, and academic self-beliefs (Marsh et al., 2008).

Academic self-concept, like self-concept, can be linked to identity though attribution theory. Although attribution theory is a cognitive model for understanding motivation (Weiner, 1985) and, as such, is not generally seen as a result of a reaction to environmental stimuli, through the sociocultural lens, this research views the internal loci of control that influence identity and academic self-concept as, ultimately, linked to externalised sociocultural influences (Asmolov, 2010). Assouline, Colangelo, Ihrig, and
Forstadt (2006) presented research which proposed that gifted students are more likely to attribute academic failure to lack of work effort rather than lack of ability, in other words that their identity is ‘untarnished’ by the failure. The limitation of this study was that all of the students had been identified as high-performing gifted and had been selected for a gifted summer program, having already experienced success in the academic domain. Nevertheless, the study offers valuable insights and indicates how success can be a catalyst to influence attributions and, thus, academic self-concept. However, there are disparate findings in research that report gifted students are emotionally well adjusted (Neihart, Reis, Robinson, & Moon, 2002). Assouline et al. (2006) suggest that recognising the causal attributions of, for example, environment and identity formation are useful for educators to understand motivation in the academic environment; a strong identity as being smart or good at something relates to a positive academic self-concept in that area. However, on the other side, negative outcomes might occur if experiences of failure are attributed to lack of ability and lead to lack of motivation, for example “[I]f I’m no good at it, why should I try?” (Dai, Moon & Feldhusen, 1998; Dweck, 1986; Weiner, 1985). Assouline et al. (2006) suggest that realistic attributions for successes are important as misattributions may lead to negative outcomes including underachievement. Assouline et al., (2006) identified that underachievement can be labelled as ‘lazy’ in lay terms and that such underachievement is often multi-faceted. Gilmore & Boulton-Lewis (2009) report that in a study of primary school students who had been labelled as ‘lazy’ by their parents and teachers, 85% in fact had a disability. The influence on students’ identity and academic self-concept, whether gifted, twice-exceptional, with disability or labelled as ‘lazy’, can only be speculated at this time but it is assumed that it will unlikely be a positive influence on academic self-concept.

2.4.3. Academic self-concept in students with learning disability

The academic self-concept for students with learning disability has, on the whole, been reported to be low, and co-occur with, low self-esteem and low social competencies (Bear, Minke, & Manning, 2002; Elbaum & Vaughn, 2003; Kavale & Forness, 1996; Reis, Nue, & McGuire, 1997), and leads to feelings of loneliness and isolation for students. When compared to peers without learning disability, school age students with disability demonstrate lower levels of academic self-concept (Field et al., 2003; Pierson
et al., 2008). In a study of university students, Shany, Wiener, and Assido (2012) proposed that students with learning disability had lower academic self-concept and lower overall self-concept compared with those students without disability. Kloomok and Cosden (1994) explored academic self-concept and self-concept for students with learning disability and suggested that, despite high self-concept, they generally had low academic self-concept. Ayres, Cooley and Dun (1990) also discovered that students with disability had lower academic self-concept and, overall, were rated by their teachers to be less persistent at school than their non-disability peers.

As discussed earlier, the academic self-concept of students does change over time, and this includes students with learning disability. Wei and Marder (2012) presented the notion that the academic self-concept of students with disability declined throughout primary school but rebounds in secondary school unlike students without disability whose academic self-concept declines, on average, only during middle school and slowly increases towards the end of senior school. Koenig (1988) attributes some of this decline to anxiety or depression, which further exacerbates social difficulties and low self-concept in the group, particularly in the school context, which leads to reduced academic self-concept. However, environment is not always indicative and, in some studies, although students with disability have lower academic self-concept at school, they maintain a social self-concept compared to their peers (Bryan, 1986; Chapman & Boersma, 1991). Other studies indicate that both academic self-concept and social self-concept are lower in the school context for students with disability (Tabbasam & Grainger, 2002; Zelke, 2004). Zelke (2004) uncovered lower academic self-concepts for students with disability, with negatively rated results in all academic and social self-concept sub-scales. Achievement motivation can lead to higher academic outcomes for gifted students (Dai et al., 1998; Dweck, 1986; Weiner, 1985) and might be useful to enhance academic achievement for twice-exceptional students. However, the results suggested that the academic self-concept results were subject specific and were pertinent also to the area of disability.

Studies show that academic and teacher feedback have also been highlighted as important for students with disability. Zhang, Wang, Li, Yu, and Bi (2011) discussed findings that indicate that by concealing teacher feedback, using grades only, relating to academic performance in class, led to increased academic self-concept for students with
disability and decreased academic self-concept for high performing students. Feedback has been linked to environment in some studies. Renick and Harter (1989) discovered that the school environment and context emphasises grades and various forms of praise, adding to the element of competition and social comparison thus leading to lower academic self-concept.

2.4.4. Academic self-concept of twice-exceptional students

As twice-exceptional students have the traits of both being gifted, vulnerable to under-achievement, and with a disability, it is likely that their academic self-concept will be influenced. As academic self-concept is linked to identity and social interactions it is pertinent that Vespi et al. (1992) report that twice-exceptional students present with inconsistent social skills, frustration with peers, negative perfectionism, which leads to feelings of failure, depression, low self-efficacy and worthlessness. As a result, twice-exceptional students may become disruptive and avoid tasks (Assouline et al., 2010; Sousa, 2009; Vespi et al., 1992). In a study exploring self-concept, Foley Nicpon et al., (2012) discovered that twice-exceptional students with ADHD had lower intellectual self-concept, a close cousin of academic self-concept. Antshel et al. (2007) recognised that gifted students with ADHD experience poor school performance and high levels of anxiety which can have direct influence on academic self-concept.

Characteristics that might enhance the academic self-concept of twice-exceptional students have been identified. Baum and Owen (1988) report that gifted students with learning disabilities have unique characteristics related to persistence in individual interests but, unfortunately, have lower academic self-efficacy than their peers who are not identified as twice-exceptional. In addition, they suggested that 36% of the participants in their study who were identified as having a disability, also simultaneously demonstrated behaviours associated with giftedness such as high achievement, high task commitment and creativity, reinforcing the identification issues experienced by twice-exceptional students. In a study of twice-exceptional university students by Reis et al. (1997), all students recall negative school experiences, which included critical and hostile feedback from teachers.

Olenchak (1995) investigated the effects of using a highly structured and personally tailored enrichment program on the attitudes, self-concepts, and creative productivity of twice-exceptional students. After one year the twice-exceptional students participating
in the program, demonstrated significant positive results towards school attitude and statistically significant gains in all areas of self-concept. Olenchak suggests that the lived experiences beyond school enable twice-exceptional students to survive and positively construct their negative experiences in school, thus enabling them to develop attitudes to help them succeed later in life. Many had non-academic strengths, including sports and art that were not recognised, nurtured, or rewarded in school, and thus were not positively contributing influences on their earlier school academic self-concept.

In reviewing the literature to this point, it is evident that there are many contributing influences on academic self-concept. Neihart (1999) observed that “it is impossible, then, to make any generalizations regarding the self-concepts of gifted children ….it is not useful to assess self-concept as a criterion to compare gifted children’s psychological well-being; there are too many confounding variables, making generalizations very difficult. We need to consider other criteria” (p. 8).

The influences that have been revealed in empirical studies, which provide insights into self-concept through the sociocultural lens (Bracken, 1996; Kuhnen & Oyserman, 2002; Markus & Herzog, 1995; Oyserman & Markus, 1993) that was used for this research are now discussed. The influences include both those stemming from the environmental, contextual or intermental plane, and the psychological, internal, or intramental plane.

2.4.5. Influences on academic self-concept

Both environmental and psychological influences on academic self-concept can be explored by looking at the literature in two these two areas. Through the lens of sociocultural theory, it has been assumed that the environmental (external or intermental) influences will influence the psychological (internal or intramental) influences (Dole, 2001) however, each has been foregrounded for the purposes of explication and analysis. The influences used in this research have been guided by the literature and, although not all of them are included individually, they may be subsumed into another, similar influence and the ones most pertinent to this research are now described and a summary is illustrated in Figure 2.1.

The intramental influences are: mastery experience, enjoyment, self-understanding, psychological centrality and self-talk. Intermental influences include: the social comparison theory of Big Fish-Little-Pond-Effect (BFLPE). Other intermental
Influences that shape academic self-concept include significant others (Kurtz-Costes, Rowley, Harris-Britt, & Woods, 2008; Nota, Ferrari, Soresi, & Wehmeyer, 2007; Shogren et al., 2007; Wehmeyer, Abery, Zhang, Ward, Willis, Hossain & Walker, 2011), environment (Zheng et al., 2012), and age and gender (for example Zeidner & Schleyer, 1999; and Shi et al., 2008). These influences do not stand-alone but interweave and interrelate with one another. A selection of the informing literature associated with each of the key influences on academic self-concept is now presented.

Figure 2.1 Summary of Inter- and Intramental Influences on Academic Self-concept

2.4.5.1. Big Fish Little Pond Effect (BFLPE)

BFLPE is based on social comparison theory (Festinger, 1954) in that the classroom context and the ability of peers directly influence academic self-concept for individuals (Marsh, 1987). Liem et al. (2013) posit that academic self-concept is directly influenced by BFLPE in that students compare themselves with those around them, significant others and environment. Academic self-concept is the perception of social comparison of academic ability and achievement, which is grounded in BFLPE, and thus a critical factor to facilitate (or hinder) educational outcomes (Marsh, 1987).

Marsh (1987; Marsh et al., 2008) reported that studies point to the negative impact this has on academic self-concept when high ability students are placed in homogenous
high-ability contexts. Concerning all students in homogenous ability classes, Marsh (1987) discovered that all academic self-concepts were reduced, the most significant being amongst the most highly able students. Hattie (2002) in a meta-analysis of ability grouping research, supported the BFLPE model and concluded that for high ability students in particular, BFLPE had long-term negative effects on academic self-concept. Trautwein et al. (2006) in a study of over 14,000 German students from upper-, middle-, and lower-ability schools presented a discussion that outlined that students in high-track schools had relatively lower academic self-concept than those in middle- and low-track schools, thus reinforcing the same pattern reported by Marsh & Craven in 2000.

Other researchers, however, in the gifted field, dispute the claims made by Marsh and colleagues claiming that gifted students cannot be compared to ‘high-ability’ students used in the studies and that they would, in fact, be disadvantaged by the BFLPE model (Gross, 2010; Dai & Rinn, 2008). Indeed Gross (2006) reported significant differences with educational status, life satisfaction, social relationships, and self-esteem as a function of the degree of academic acceleration gifted students received. In contrast to the BFLPE, Gross presented a cogent discussion that placing gifted students in higher ability groups was, without exception, beneficial for them. Dai and Rinn (2008) further critique BFLPE in that whilst it has added to the understanding of formations of self-concepts, it is too narrow in just considering social comparison as there are many other factors including social cognition, motivation and social-contextual influences. Some researchers argue that, in contrast to the BFLPE, an effect called ‘the reflected glory effect’ encourages individual desires to have membership of a ‘high ability’ grouping. The reflected glory effect (Aberson, 1999) occurs when high-ability students experience enhanced self-concept upon acceptance into a selective program due to their association with a successful group of people (Aberson, 1999; Burger, 1985; Cialdini, Borden, Thorne, Walker, Freeman & Sloane, 1976). However, BFLPE does support the sociocultural approach to research by emphasising context.

Ruble (1988) uncovered that high-ability children did not seek social comparison but, rather, autonomous comparison for self-evaluation which does not support BFLPE. Ruble (1988) did find that students with disability engaged more in social comparison. For the twice-exceptional student, it is conjecture at this point how Ruble might have concluded as these students are gifted first but have the influence of a disability
overshadowing their school performance. Marsh et al. (2008) challenged Dai and Rinn (2008) and suggested that BFLPE would be less evident in ‘gifted programs’ due to higher quality teachers and better resources.

However, Marsh et al. (2008) conducted a study that showed that the state-recorded school abilities in the average range negatively affected academic self-concept, but had little effect on other constructs that did not invoke social comparison processes. Social comparison through class average achievement and selected classmate achievement both had substantial and negative effects on agency self-beliefs. Liem et al. (2013) conducted research in Singapore of over 4,500 seventh to ninth grade students and presented results that demonstrated consistency with BFLPE theory, in that students in high-ability homogenous classes had lower academic self-concepts and those in lower ability homogenous classes had higher academic self-concepts. Research by Marsh, Seaton, Trautwein, Ludtke, Hau, O’Mara and Craven (2008) claimed that BFLPE stands up to critical scrutiny and that it was robust in relation to social comparison theory.

The complexity of BFLPE, and the number of influences affecting the process on academic self-concept, was further highlighted by Jonkman, Becker, Marsh, Ludtke and Trautwein (2012). Personality traits moderate the BFLPE and academic self-concept and findings showed the negative effect of BFLPE interacted significantly with narcissism. Students high in narcissism experienced smaller BFLPEs compared to students with low or average levels. The opposite was suggested for students with neuroticism. The study shows that personality traits moderate frames of reference which are central to self-concept formation. Although challenged, it would appear that many believe that high-ability students in homogenous classes experience a negative impact on their academic self-concept. BFLPE is not a simple contributor to academic self-concept as so many influences can be at play. Dai (2004) argues that to further BFLPE research, it needs to take into account the complexity and multifaceted nature of social comparison and self-appraisal processes, the active, self-regulatory role individuals play, and the ensuing positive, as well as negative consequences.

BFLPE presents differing outcomes from different researchers. The literature highlights the heterogeneous, or diverse, viewpoints concerning BFLPE. In brief, BFLPE is an important influence for academic self-concept, although the extent of the influence is debated depending on many factors including the intellectual IQ of the students (Dai,
2004; Gross, 2010) and how large a role the reflected glory effect will play. How the influence of BFLPE manifests in twice-exceptional students was explored in this research.

2.4.5.2. Significant others

The effects of significant others can be considered to have similarities with the effects of BFLPE, as both have aspects of social-comparison. For the purposes of this research, significant others are those who interact with students in the school and home contexts namely: parents, teachers, siblings and peers. Studies have uncovered that students state their parents and teachers are an important influence on their academic and career choices (Hodkinson & Sparkes, 1997; Knowles, 1998), and peers are an important influence for their social choices (Neilson & McNally, 2013).

Peers can influence children and adolescents to engage in varied behaviours (MacCallum, 2011). Peer influence, as well as parental and teacher influences, are grounded in social inter-actional hypotheses and have a theory rooted in identity development (Pristein & Dodge, 2010). The interactions with significant others can lead to positive or negative influences on identity and academic self-concept. Simons-Morton and Rusan (2009) found that school students were more likely to engage with school if parental practices and connection with the school were established, and also the establishment of friendships with peers who have a strong school engagement.

The variable of parents' education was identified in a study by May (1991) where the results showed that adults with a high school education or less, had significantly more positive attitudes towards careers such as teaching and nursing, than those with a bachelor degree or above. This, in turn, had implications on students’ approaches to schoolwork where the focus was reported to be either ‘performance-achievement’ based or ‘effort’ based. Family income also made a difference: those who were in the higher socio-economic levels were significantly more negative in attitude towards professions such as nursing and teaching as a career choice, than those in the lower socio-economic levels.

The primary influence from significant others is in the form of social interaction or feedback. Verbal, gestural or written feedback, subtle or otherwise, can inform an individual of their social comparison and has been suggested to be effective and
influential in all arenas including the academic (Niznikowski, 2013). McNeill (1992) has highlighted the significance of gesture, not only in social interaction, but also as a central role in cognitive activity. McNeill claims that inner speech is not just verbal but also has a gestural aspect. Gesture is an indispensable part of our communicative activities with ourselves and has meaning. Gesture is not a substitute the verbal but a complement to it. Thus, when we interact with others, gestural signals as well as verbal provide meaning in the interaction. The internalised, cognitive function of gesture can be demonstrated when people use hand gestures to prompt themselves in speech, or to reinforce the dialogue.

The effects of significant others will be explored in the data for this research. Teacher positive statements led to positive self-talk in boys and positive self-concept in maths for girls. Burnett et al. (2002) in a study on self-talk, uncovered that positive teacher statements indirectly led to positive self-talk and pro-social skills which had a positive effect on academic self-concept. Craven et al. (1991) also report that teachers had a positive influence on self-concept through the enhancement of school relationships. Key researchers support the notion of significant others in context or environment. The role of environment is now discussed.

2.4.5.3. Environment
Academic self-concept is a self-evaluated perception, formed through the school environment, the students’ experiences and interpretation of them. Saranli and Metin (2012) proposed that environment was necessary to develop a healthy psychosocial profile and hence was an influence on academic self-concept. Recommendations suggest that a supportive environment is essential for gifted children to flourish. Mendaglio (2013) demonstrated that academic self-concept was a self-evaluated perception formed through the school environment; the students’ experiences and their interpretation of them. The degree to which school curriculum is motivating and enjoyable for gifted students depends in part on how the individual student values align with the learning environment (Little, 2012).

Environment and context are also used to provide the social comparison or external frame-of-reference to influence academic self-concept (Marsh, 1987). Liem et al.(2013)
posit that academic self-concept is directly influenced by environment as it provides the context for students’ social comparison. Dai and Rinn (2008) emphasise that context and environment are an important influence in the formation of self-concepts. The school environment also influences emotional reactions during learning (Lipnevich, MacCann, Bertling, Naemi, & Roberts, 2012; Pekrun, Elliot, & Maier, 2009; Pekrun & Frese, 1992). Environment is observed as important as a context for cultural belonging, identity construction, and therefore, the construction of self-concept (Bunning & Steel, 2007). Feedback from the environment can contextualise and have a negative or positive impact of an individual and their self-concept (Wendell, 1996). Age and gender, another theme identified in the literature, is now discussed.

2.4.5.4. **Age and gender**

Age and gender have been highlighted by the literature to have an impact on academic self-concept. Age and gender are occasionally considered together by research in this area, and separately at other times. Researchers have uncovered that in mixed ability classes, girls have higher social self-concept and boys have higher academic self-concept (Zeidner & Scheyler, 1999). By contrast, in a study undertaken in China, Shi et al. (2008) reported that gifted females had higher self-concept in every domain to significant levels. This, it was suggested, is due to a cultural aspect in that the predominance of male children, and the value placed upon these children, has led to learned helplessness in boys and lower overall self-concept. This reinforces Bahr’s (2007) statement that self-concept has a significant cultural reference.

Using the *National Child Development Study*, Sullivan (2009) conducted a longitudinal study of a single cohort born in a week in March, 1958, with a sample of over 30,000 respondents. It was discovered that academic self-concept is highly gendered. However, this finding must be considered against the backdrop of the era which, he posits, created the societal environment that favoured male advancement; and that all students were included such as gifted students and students with disability. However, Sullivan (2009) also uncovered that boys had a higher academic self-concept in maths and girls in English (and verbal intelligence strength subjects). Single sex schooling reduced the gender gap in academic self-concept. However, selective schooling reduced academic self-concept overall due to higher frames-of-reference (Sullivan, 2009). The findings echoed some of the findings of Zeidner and Scheyler (1999) who report that in
homogenous gifted classes, boys have higher academic self-concept and higher social self-concept than girls. Using a study of gifted children on selective summer camps, Cunningham and Rinn (2007) proposed that there were no influences from gender or age of the participants but that enrolment in a residential program will increase self-concept, including a small rise in already high academic self-concepts.

Other researchers have reported that gender does not influence academic self-concept (Tong & Yewchuck, 1996; Yong & McIntyre, 1991). Greenwald and Farnham (2000) support this notion and attribute their findings to the age of their participants who were young university adults and not experiencing the developmental, social and emotional influences of those in the middle years where lower self-concept is reported. Wang et al. (2004) propose that for gifted students there was higher intellectual self-concept but that the results varied and became less conclusive with increasing age. Litster et al. (2011) submit that age shapes academic self-concept for students aged 9-13 and that no significant difference was found between gifted and other students’ academic self-concept at the age of 11. Although all students have lowered self-concept between ages 9-13, it was at its lowest at age 13. In contrast, Tong and Yewchuck (1996) did not find any effect of age on academic self-concept. In a study of 500 gifted school students, Colangelo and Assouline (1995), in a cogent discussion, presented that gifted students had a more positive self-concept compared to their peers and that the mean scores decreased with age.

In general, academic self-concept is diminished in middle school and slowly recovers in senior school for most students except those with disability for whom academic self-concept appears to diminish throughout primary school and rebound in secondary school. The difference may be due to lack of identification of learning needs and possible negative teacher feedback (Reis et al., 1997; Foley Nicpon et al., 2013). In general, it appears that boys have higher academic self-concept than girls, and that girls have higher social self-concept. Academic self-concept is subject and domain specific and boys’ academic self-concept has been suggested to be stronger in subjects such as maths. In general, gifted students demonstrate mixed results with their academic self-concept and appear partly dependent upon psychosocial influences (Assouline et al., 2010), and partly dependent on their academic performance and recognition (Cunningham & Rinn, 2007).
2.4.5.5. Academic achievement

Effects on academic self-concept are complex but research appears to support a ‘reciprocal effects’ model in which academic self-concept both affects and is affected by academic achievement. In a meta-analysis of longitudinal studies conducted by Valentine, DuBois, and Cooper (2004), academic self-concept and achievement, (both teacher assigned grades and standardised test scores), were discovered to have reciprocal effects, with enhancements in prior academic self-concept and achievement leading to improvements in subsequent academic self-concept and achievement. The reciprocal effects model was evident through all developmental stages of childhood and adolescence, and in various performance domains (for example, academic domains or sports domains) and in different cultures. This analysis was supported by Marsh & Craven (2006) who proposed that academic self-concept and students’ favourable perceptions of academic achievement are critical to facilitate educational outcomes. Trautwein et al. (2006), in a study of over 14,000 German students mentioned earlier, from ability-based state schools (upper-, middle-, and lower-ability schools), discovered that math self-concepts were positively related to individual student achievement. Later research by Marsh and O’Mara (2008) showed that students’ academic self-concept in Year 10 were a better predictor of their educational attainments five years after high school graduation, than their school grades, standardised achievement test scores, intelligence, and socioeconomic status. Also those students’ grades predicted academic self-concept after high-school, attesting to the reciprocal long-term, and causal effects between academic self-concept and achievement.

Academic achievement levels can be influenced by, for example, compensatory learning (whereby a student's learning needs are scaffolded), teacher talk, self-talk, self-esteem, self-efficacy, enjoyment levels (Bong et al., 2003) and school relationships. Academic successes in specific domains reinforce academic self-concept in those domains and lead to autonomous academic motivation. Such motivation, in turn, enhances academic achievement in those domains (Guay et al., 2010) and, hence, previous academic success is positively related to high academic self-concept (Hampton & Mason, 2003).

Influences on academic self-concept change as a student progresses through school. In primary school, educational and academic achievement affects academic self-concept (Guay, Marsh & Boivin, 2003). However, Guay et al. (2003) state that this is reversed
in middle school and that academic self-concept affects academic achievement. In addition, a study of middle school students in Years 6 and 7 linked depth of learning to school relationship and academic self-concept (Burnett & Proctor, 2002). The 'skill development model' for the early years and then the 'self-enhancement model' can demonstrate these two positions for the middle years and beyond (Guay et al., 2003).

Academic achievement, for the purposes of this study, will be analysed with regards to school records and how participants perceive feedback for their academic work. This includes feedback that is in the form of teacher-talk, parent-talk, grades, achievement tests and peer feedback, as they all have a direct influence on academic self-concept (Liem et al., 2013).

2.4.5.6. Mastery experience

Bandura (1994) advanced that self-efficacy is the belief in one’s capabilities to succeed in a particular situation. One of the major sources of self-efficacy is mastery experience and that the most effective way of developing a strong sense of efficacy is through mastery experiences (Bandura, 1994). Bandura described the beliefs in one's capabilities as determinants of how people think, behave and feel (1994). Self-efficacy develops in early childhood as children deal with a wide variety of experiences, tasks, and situations. Self-efficacy is a moderator in relation to the effects of planning interventions on behaviour and mastery-experience can be used to assist with interventions (Gaston, Cramp, & Prapavessis, 2011). Performing a task successfully strengthens our sense-of-self-efficacy (Pajares & Urdan, 2006). The ability to perform a task successfully, or otherwise, is partially dependent upon the perception of how well one can perform it, and the experience of performing it, or the mastery experience.

The old adage that ‘practice makes perfect' is relevant for mastery experience. This has to be considered alongside the supposition that a gifted student will need less practice for mastery in their area of giftedness (in this research, intellectual giftedness) and that too much repetition can have a negative effect on learning (for example, Gallagher, Harradine & Coleman, 1997). However, for those students with disability, this will also relate to appropriate support and scaffolding for the disability so that the students can develop their area of cognitive strengths. Students are more inclined to practise and master a skill if they also enjoy it. The enjoyment aspect can stem from the emotional
reactions when faced with a task - maybe a visceral reaction when having to tackle maths or write an essay.

2.4.5.7. Enjoyment

Enjoyment, for the purposes of this study, is the level of satisfaction, interest in, and happiness (or enjoyment) gained from engaging with a task that results in positive feelings (Ely, Ainley, & Pearce, 2013). Positive emotion, or enjoyment, is important for learning and achievement (Ely et al., 2013; Seligman, Ernst, Gillham, Reivivh & Linkins, 2009). Over the past two decades researchers have commented on decreasing motivation in schools (for example, Eccles & Wigfield, 2002) and increasing levels of disengagement (for example, Skinner, Furrer, Marchand & Kindermann, 2008; and Willms, 2003). Pintrich and De Groot (1990) stated that “students need to have both “will” and “skill” to be successful in classrooms” (p.38). ‘Will’ includes factors such as self-efficacy, enjoyment, and motivation (Pintrich & De Groot, 1990).

Enjoyment is the ‘feeling’ aspect of learning, “the feeling of being engaged, caught-up, fascinated, curious. There is a feeling of wanting to investigate, become involved” (Izard, 1977, p. 216). Fredrickson (2001) identified that enjoyment is associated with enhanced creativity and problem solving. Rathunde and Csikszentmihalyi (1993) suggest that enjoyment and interest support talent development in adolescents. Enjoyment leads to motivation and engagement with curriculum (Little, 2012) and enables more positive outcomes which, in turn, may enhance academic self-concept. School experiences that are positive can promote learning and enjoyment at school, and enjoyment at school can promote learning and positive experiences (Gallagher, Harradine, & Coleman, 1997; Rogers, 2007). If a student finds curriculum and academic tasks appropriately challenging, meaningful and enjoyable, they will likely be more highly motivated and achieve better academic outcomes (Little, 2012). Ely et al. (2013) report that enjoyment was linked to interest: an emotion found wanting in school environments, particularly middle school.

2.4.5.8. Self-understanding

Self-understanding is the level of insight and ability to articulate how an individual perceives himself; how they integrate their perceptions of their traits and characteristics (Muratori, Colangelo & Assouline, 2003), and makes sense of who they are (Dillon, 2009). Self-understanding is a self-awareness that contributes to self-knowledge, and
thus influences self-concept (Ayduk, Gyurak, & Luerssen (2009). School experiences, due to late or non-identification of giftedness and/or learning disabilities, can give rise to psychosocial issues relating to anxiety and depression. If the student is unidentified, there will be frustration as a result of limited self-understanding. Lack of, or late identification of, either or both exceptionalities can have a negative impact on the student (e.g. Dole, 2001; Vespi & Yewchuk, 1992; Olenchak, 1995). In some areas of school, students may be bored and disengage as their gifted self might be some years ahead of their age peers. In other areas of school, they might be over-challenged, unable to cope and struggling to compensate for the weaknesses with their disability self (for example, Assouline et al., 2010; Ferri et al., 1997). If the student has no knowledge of either exceptionality, they may feel isolated, misunderstood and depressed or anxious (for example, Coleman, 1992; Reis et al., 1995, 1997, 2000; Vespi et al., 1992). Behaviours might include disruption, disengagement, poor performance, perfectionism and symptoms of anxiety (for example, Baum et al., 1998; Brown, 2012; Moon, Zentall, Grskovic, Hall & Stormont, 2001). Baum et al. (1988) reported that twice-exceptional students were the most disruptive in class. The focus on the disability without the outlet for the giftedness, it appears, leads to frustration, tension and low academic self-efficacy. Disruptive behaviour in twice-exceptional students has been identified and supported in other empirical studies in both the quantitative domain (for example, Barber et al., 2011; Assouline et al., 2009, 2010; Baum et al., 1988) and the qualitative domain (for example, Vespi et al., 1992; Dole, 2001; Reis et al., 1997).

Self-understanding can lead to self-acceptance and is important for twice-exceptional students, thus identification is consequently critical. Dole (2001) discovered positive self-perceptions for students in a study where students' positive self-identity was enhanced by strong support systems, involvement in extra-curricular activities, self-knowledge and self-advocacy. More adverse outcomes for students can include youth suicide (Svetaz & Ireland & Blum, 2000) and substance abuse (Beitchman, Wilson, Young & Adlaf, 2001). Studies specific to gifted students advance that up to 20% of high school dropouts are gifted (Rimm, 2006). Although these studies have not been directly linked to twice-exceptional students, they highlight the fact that there are risk factors for both gifted students and students with disability and, that these may be greatly enhanced when combined within twice-exceptional students. Dole (2001) also suggested that positive self-identity in twice-exceptional students was related to self-
advocacy and self-determination. However, there was no comment about academic self-concept. Self-understanding is closely tied with, and is the product of, psychological centrality.

2.4.5.9. Psychological centrality
The concept of psychological centrality is based on the premise from identity theory that self-concept is organised into complex hierarchies; the more central that a component is to the person’s identity, the greater impact it will have on their self-concept (Breytspraak, 1984; Rosenberg, 1979; Stryker & Serpe, 1982). Psychological centrality is how an individual identifies with circumstances; Stryker and Serpe (1982) state that “the greater the commitment (to do or be something), the more salient will be the identity, and the greater will be the impact of performance on role-specific self-concept” (p. 208). How much an individual identifies with something is their psychological centrality and it is influenced by their psychosocial well-being. There are some variations in labels and content to define psychosocial well-being and, for the purposes of this research, it includes social and emotional, or psychological influences on an individual. These influences will be discussed to highlight how they inform psychological centrality.

Although the gifted are a diverse group, gifted and twice-exceptional students share common characteristics. The literature reveals that gifted students may have personality characteristics such as perfectionism, excitability, sensitivity, intensity, a desire for recognition of academic achievement, nonconformity, questioning of rules or authority, a strong sense of justice, imposter syndrome and idealism (Lovecky, 1992; Silverman, 1993b; Sowa, McIntire, May, & Bland, 1994; VanTassel-Baska, 1998). These characteristics can also create social and emotional difficulties in school. Gifted or twice-exceptional students may feel detached or isolated from their age peers. They may experience difficulty with self-regulation and therefore, develop unique socio-emotional needs.

Neihart (1999) presented evidence to support two contrasting views about the psychological well-being of gifted children; that giftedness enhances or reduces vulnerability in gifted students. Both views have been supported by research and appear to depend on three factors: the type of giftedness (intellectual or otherwise), the educational provisioning in school, and the personality of the student (Hollingworth,
1942; Neihart, 1999; Scholwinski & Reynolds, 1985). Assouline et al. (2009) identified three types of gifted students with social difficulties: ‘Type A’ with adequate or above social skills; ‘Type B’ with some psychosocial issues and who are at risk for missed diagnosis and prone to being in a mismatched environment; and ‘Type C’ who are at risk of misdiagnosis and require expert intervention. Psychosocial wellbeing in gifted students can be threatened by risks and pressures such as perfectionism, an anti-intellectual school environment (Rimm, 2003), environmental demands and coping skills (Neihart, 1999). All of these can contribute towards underachievement and, ultimately, lower academic self-concept. Assouline et al. (2010) posit that emotional and behavioural aspects inform psychosocial wellbeing and are ultimately key to developing the strengths of twice-exceptional students. Each of the influences on psychosocial wellbeing will be discussed and this will provide the framework for understanding the construct of psychological centrality and how an individual internalises the psychosocial to inform their psychological centrality and, hence, their academic self-concept.

**Perfectionism.** Twice-exceptional students may not attempt to succeed for many reasons including perfectionism (with the perceived inability to commence or complete work) or the fear they will be ‘discovered’ as being of low ability (Rimm, 1993). The complex construct of sensitivity, intensity and perfectionism produces common characteristics and counselling concerns for gifted children and adolescents (Christopher & Shewmaker, 2010). Research relating to the construct of perfectionism supports three conclusions: first that perfectionism may result in pathological problems, second that perfectionism in gifted students may contribute to high achievement, and, finally, that attributions of perfectionism fall along a range of continuums (Christopher & Shewmaker, 2010; Silverman, 1993). Research has suggested that perfectionism is understood as a multidimensional concept and, although it can contribute to high achievement for gifted students, may result in pathological problems (Christopher & Shewmaker, 2010; Stornelli et al., 2006; Silverman, 1993). Assouline (2006) associated aspects of perfectionism with misattributions. Gifted females have, due to perfectionism, been observed to set unreasonable goals and consistently attempt to achieve them (Reis, 1987). There are two types of perfectionism: adaptive, which is a healthy form that can lead to achievement motivation; and maladaptive perfectionism that can have negative outcomes and lead to depression (Parker, 2002).
Research has indicated that perfectionism was elevated for gifted students (Kornblum, 2005) and was attributed in part due to high parental expectations and criticism. In contrast, other studies for example by Parker (2000) show that perfectionism is not greater in the gifted. Perfectionism is believed to exist on a continuum and that socially prescribed perfectionism (SPP) tends to occur with depression and anxiety (Hewitt & Flett, 1991; Christopher & Shewmaker, 2010; Neihart et al., 2002).

Perfectionism can be present alongside behaviours such as aggression, hyperactivity and low motivation (Rimm, 1993). Students with disability have higher levels of depression, which may be partly attributed to perfectionism (Sadler & Buckland, 1995). A relationship has been found between perfectionism, depression and anxiety (Chrispher & Shewmaker, 2010; Flett & Hewitt, 2012). This is particularly unfortunate as Vespi et al. (1992) also uncovered that twice-exceptional students have a great capacity for motivation and confidence. Perfectionism has been observed alongside imposter syndrome (Reis, 1987; Stornelli, Flett, & Hewitt, 2009).

**Imposter syndrome.** Featured in gifted education literature, the imposter syndrome (Clance, 1985; Machlowitz, 1982; Warschaw, 1985) is interpreted as very low self-esteem and occurs when individuals attribute their success to factors other than their own efforts, as being undeserved or accidental. Imposter syndrome has been observed more in gifted females than gifted males (Machlowitz, 1982; Reis, 1987) who attribute accomplishments to external forces, unlike males who attribute accomplishments to their own effort and ability.

**Environmental demands and an anti-intellectual school environment.** Saranli and Letin (2012) conducted a study which concluded that, in addition to personality and IQ levels, environments were important for supporting, or otherwise, the psychosocial wellbeing of individuals. In many cases, if provided with optimal home and school environments, gifted students had stronger psychosocial outcomes when compared to their peers (Rimm, 2003). The optimal environments included understanding and support from significant others, primarily parents and teachers. Misattributions and low motivation associated with a lower ability and a low academic self-concept, juxtaposed against the high ability or gifted aspect and potentially high academic self-concept of a twice-exceptional student could lead to conflicting and confusing psychosocial impacts, particularly if both exceptionalities are not provided for or have been undiagnosed.
(Townend et al., 2014). These issues are enhanced by exclusion from their gifted peers’ programs, social isolation and crippling emotional issues. Twice-exceptional students are often not identified early in their school experience and their academic and psychosocial patterns can become deeply ingrained (Foley Nicpon et al., 2011). This is exacerbated by practices in education, minimal advocacy in the system for these students and gaps in the research with regards to twice-exceptional students and academic self-concept.

In a study of 5,648 East and West German middle school students shortly after reunification, it was reported that the higher the academic self-concept, the higher the achievement (Trautwein, Ludtke, Koller & Baumert, 2006). This study explored the reciprocal effects between academic self-concept and academic performance. Trautwein et al. (2006) also uncovered that achievement was moderated by domain specific academic self-concept on psychosocial wellbeing. In the former East-German students, a strong correlation was discovered between the psychosocial wellbeing and its effect on academic self-concept. Trautwein et al. (2006) believes this is due to learning environments: a meritocratic learning environment had a stronger correlation between psychosocial wellbeing and academic self-concept than the West German, more ego-protective environment.

In schools, psychosocial issues for twice-exceptional students can be addressed by: identification; referral; provisioning; advocacy; resources and curriculum; and consideration of academic achievement, social comparison theory and frames-of-reference such as BFLPE theory. For a twice-exceptional student, the psychosocial problems that might exacerbate low academic self-concept as a result of low achievement include frustration, lack of understanding, fear of failing, low motivation, negative perfectionism, unsatisfactory peer and teacher relationships, negative school attitudes and a limited connection to school.

**Environmental demands and coping.** In a comparison between students with disability and twice-exceptional students, Coleman (1992) suggested that, due to high cognitive characteristics of the twice-exceptional group, the twice-exceptional students adapt quickly with coping mechanisms. When twice-exceptional students are taught self-advocacy they increase their self-identity and self-determination (Dole, 2001). Assouline et al. (2010) emphasise the opportunity for twice-exceptional students to
carefully evaluate their self-concept to determine whether the disability may be affecting the way they feel about themselves. Researchers suggest that continued attention must be paid to the professional development of those working with twice-exceptional students in order to adequately meet their needs (Assouline et al., 2010; Baum et al., 1998; Barber et al., 2011; Dole, 2001; Foley Nicpon et al., 2013; Neihart, 1999; Reis et al., 1995; Reis & Colber, 2004; Vespi et al., 1992).

**Emotional and behavioural aspects.** Literature indicates that gifted students are emotionally well adjusted and aware of their limitations and social environment (Neihart et al., 2002). However, twice-exceptional students do not experience this to the same degree due to traits that lead to social and communication issues, which lead to undermining resilience, frustration, anxiety and self-criticism (Assouline et al., 2009; Assouline et al., 2010; Neihart et al., 2002; Reis et al., 2002). Vespi et al. (1992) reported that psychosocial problems, including inconsistent social skills, frustration with peers, perfectionism, depression, low self-efficacy, and worthlessness, undermined twice-exceptional students’ resilience and led to disruptive and avoidance behaviours.

Researchers have reported variable social and emotional functioning amongst twice-exceptional students (for example, Assouline et al., 2010; Neihart et al., 2002). Some researchers suggest that these students are, at the very least, in the normal range and coping well and others do not. As discussed earlier, Coleman (1992) suggests that due to their high cognitive characteristics, twice-exceptional students adapt quickly and adopt coping mechanisms which help them to deal with the significant school stressors. Dole (2001) also submitted that positive self-identity in twice-exceptional students was related to self-advocacy and self-determination. Negative issues such as anxiety and self-criticism may lead to psychosocial problems for twice-exceptional students, reduced self-concept and underperformance (Assouline et al., 2010). Environment, adjustments and support are globally recommended to support twice-exceptional students to enhance their psychosocial health (Foley Nicpon et al., 2013; Reis & Colbert, 2004; Saranli & Metin, 2012), thus their psychocentrality and academic self-concept.

**2.4.5.10. Self-talk**

The concept of self-talk is based on the premise that self-talk can be an acquired strategy to enable self-regulation of higher mental processes (Reis 2004). Self-talk is not
being applied in this study as it would be for socio-cultural theory of talking aloud in order to acquire competency in a practice (Vygotsky et al., 1994) but as a self-evaluation strategy which has been observed in the field of gifted education. For the purposes of this research, self-talk is defined to be when students evaluate their actions, understand the consequences of their actions, reflect upon their actions, reinforce, and self-motivate (Reis, 2004). Self-talk is an important element for self-regulation, which is a strategy used by the most successful students and adults (Zimmerman, 1989). Self-talk is a phase of self-reflection that primarily involves a reflection on performance (Reis, 2004).

Self-talk has been seen as a consequence of interactions with significant others, particularly teachers. As mentioned earlier, Burnett and Proctor (2002) revealed that negative statements made by teachers were predictive of negative self-talk for boys and reduced self-concept in maths for girls. Teacher positive statements led to positive self-talk in boys and positive self-concept in maths for girls. It would appear that academic self-concept, as a result of teacher statements, had an impact on academic self-concept in particular subject domains for girls and an impact on self-talk implications for boys. Burnett et al. (2002) revealed that, in general, positive teacher statements indirectly affected self-concept through self-talk. Craven et al. (1991) also reported that teachers had a positive influence on self-concept via self-talk. This was also supported in another fields of research looking at how compensatory education could influence academic self-concept (Olsen, 1973). Olsen suggested that compensatory education had a positive psychological effect on academic self-concept, particularly in males.

2.5. Chapter summary

The literature review reveals the gap in research associated with the unique aspects of academic self-concept of twice-exceptional students. What is revealed in the literature are the key themes influencing academic self-concept: BFLPE and social comparison theory; age and gender; academic self-concept in students with disability; academic self-concept for the gifted, environmental influences, enjoyment, psychological centrality and self-talk.

With regards to BFLPE, research described by Mendaglio (2008) reveals a gifted child stating that in their old school they were ‘smart’, and in the new, homogenous ability
grouped class they perceive themselves to be ‘average’. However, Ruble et al. (1988) revealed that high ability children were more likely to engage in self-evaluative information seeking and autonomous comparison which would not support BFLPE theory. In contrast, students of low and medium ability showed consistent interest in social comparison due to uncertainty in their levels of ability that become part of the foundations of academic self-concept. The contrast between the high and low ability findings may have significant effects on a twice-exceptional child who manages both aspects.

According to some researchers, age and gender also shape academic self-concept (for example, Shi et al., 2008; Zeidner & Schleyer, 1999). However, the effects of age and gender are not consistently reported (for example, Colangelo & Assouline, 1995; Litster, 2011; Shi et al., 2008; Li, Shi, Zhao, Wang, Zhang & Mao, 2004; Pyryt & Medaglio, 1994; Yong & McIntyre, 1991). The gap in many of the reported studies that revealed a positive correlation between academic self-concept and gifted students, is that the participants were also academically high achieving, which means that the underachieving gifted, possibly because of twice-exceptionality, may have been overlooked. With regard to students with disability, the literature concurs that, in general, there is lower academic self-concept. If an underachieving, twice-exceptional student has traits of giftedness overlapping with traits of disability, the result might be that, whilst they are cognisant of being 'found out' as an imposter, these students with disability traits may reinforce the perception of low ability despite effort. Twice-exceptional students who attempt to manage both sets of traits may find that they feel confused and misunderstood (Dai, Moon and Feldhusen, 1998; Dweck, 1986; Weiner, 1985).

Psychological centrality though various psychosocial transferences (Clance, 1985; Machlowitz, 1982; Warschaw, 1985), is featured in gifted literature and may lead to negative behaviours and negative academic self-concept, high levels of depression and anxiety (e.g. Saddler & Buckland, 1995 Foley Nicpon et al., 2011; Reis et al., 1997, 1995).

Although the gifted are a diverse group, gifted and twice-exceptional students share common characteristics. These characteristics can also create social and emotional difficulties in school and undermine resilience (Reis & Blacher, 2002). The gifted and
twice-exceptional students may feel detached or isolated from their age peers, or have difficulty with self-regulation and this therefore, highlights their unique socio-emotional needs (Barber & Mueller, 2011; Dole, 2001; Reis et al., 1995; Reis, 2007; Vespi et al., 1992).

In summary, ranges of studies reveal that gifted students can have comparatively high academic self-concept and students with disability have low academic self-concept. It would appear from the literature that twice-exceptional students face a double-edged sword with the potential for low general self-concept of both a gifted underperforming student and a student with disability (Assouline, 2011; Barber et al., 2011; Baum et al., 1988; Reis et al., 2000).

There is no specific literature concerning academic self-concept where the two exceptionalities of giftedness and learning disabilities intersect. Informing literature reveals that, although students diagnosed with disability may have a lower academic self-concept than those without diagnosis (Bear et al., 2002; Elbaum et al., 2003), there are a variety of opinions about the academic self-concept of gifted students, ranging from higher (Colangelo et al., 1995; Litster & Roberts, 2011), the same, or lower (Marsh et al., 1988) than those not identified as gifted. As twice-exceptional students have the characteristics of both gifted children and children with disability, it is possible that both identities will influence the academic self-concept of the student, and such a notion underpins the Research Issues for this thesis.

The following Chapter will discuss the sociocultural theory that is used as a lens for this research and how it informs the methodology and analysis.
Chapter 3. Theoretical framework

The development of our reactions is the history of our life. If we had to find the most important truth that modern psychology can give the teacher it would be simply: the pupil is a reacting apparatus (Vygotsky 1986, p. 48).

Research in the educational field utilise different research paradigms and conceptual frameworks. For this research, sociocultural theory is the underpinning framework. Sociocultural theory is defined in terms of its roots in the work of early twentieth-century Russian psychologist, Vygotsky (1986), who conceived of learning as being embedded within social events and occurring as a learner interacts with people, objects and events in the environment (Veer & Valsiner, 1991). Sociocultural theory propounds the notion that learning does not occur in isolation but holistically across all experiences throughout a lifespan (Roth & Lee, 2007). Three foci of sociocultural theory have evolved from Vygotsky’s earliest framework: firstly the work of Wertsch (1998) exploring inter-personal and intra-personal processes; secondly, Lave and Wenger (1991) exploring situated learning and community of practice; and finally, Roth and Lee (2007) exploring activity theory. The first two foci will be the primary topics (or lens) used for this research.

The ways in which sociocultural forces affect the development of academic self-concept through the practices in communities and the relationships with significant others is the primary focus in this study; in other words, how the social environment develops academic self-concept. There is a paucity of research exploring academic self-concept in twice-exceptional students in Australia and internationally; hence the sociocultural vehicle used to explore the academic self-concept phenomena in twice-exceptional students is useful as “researchers must employ some starting point in their approach and methodology, a starting point that necessarily directs attention towards certain phenomena and away from others” (Penvel & Wertsch, 1995, p. 84). Thus, by exploring the sociocultural contexts and forces that shape identity, of which academic self-concept is one component, an exploration of the development and formation of academic self-concept in complex sociocultural contexts was conducted.
The processes shown in the model devised for this research study (see Figure 3.1) are integrated and interact across all planes of the developmental process. However, for the purposes of explanation, data analysis, and lucidity of findings, the processes have been foregrounded in one of the two planes (firstly the intermental, or external and grounded in cultural practices, and secondly the intramental, or internalised processes that transform the intermental and reflect back into it); and their relationship with the Zone of Proximal Development (ZPD) (Wertsch, 1998). Figure 3.1 illustrates how the two planes and the zone of proximal development interrelate for this research: the black dots in the intermental plane include interactions with significant others and artefacts, social and cultural contexts and practices, legitimate-peripheral-participation, participation-in-practice, and situated learning. The white dots in the intramental plane include: situated learning, self-reflection, perceptions of self, and development of academic self-concept.

Figure 3.1  How the theory is applied to this research

This research explores academic self-concept in twice-exceptional children, through a sociocultural lens. The social cultural tradition that has shaped this study will be discussed in relation to Vygotsky’s construct of the ZPD (Veer & Valsiner, 1991), wherein it is theorised that there is an interchange of processes between the inter- and
intramental planes through mediated action (Wertsch, 1998). Vygotsky viewed the ZPD as a way to better explain the relationship between children’s learning and cognitive development, in that learning always precedes development in the ZPD. In this sense, the ZPD provides a prospective view of cognitive development, as opposed to a retrospective view that characterises development in terms of a child’s independent capabilities.

For the purposes of this research, the ZPD is defined as the zone that encompasses and enables the interchange between the external processes, in the intermental plane, and internal processes, in the intramental plane.

The processes foregrounded in the intermental plane discussed in this research are: interactions with significant others, social and cultural contexts and practices explicated through the theories/processes of legitimatePeripheral-participation, situated learning, and participation-in-practice. The intramental processes foregrounded in this research are the internalising processes of situated learning, and the development of cognition and identity which contribute to the development of academic self-concept. As mentioned earlier, although the processes are dynamically inter-connected, integrating and interacting across all planes to different extents, for the purposes of exploration and explication, the processes highlighted have been represented in a more static model showing the ZPD as an interaction space or plane for the intermental and intramental planes (see Figure 3.1).

In addition, how sociocultural theory has informed the design and implementation of the study will be outlined with reference to how the Research Issues were developed and analysis conducted; a more comprehensive treatment of research design is presented in Chapter Four: Methodology. As this research is a sociocultural exploration of twice-exceptional students’ academic self-concept, an explanation of how the theory is situated in the field of gifted education foregrounds this Chapter. The sociocultural theory will then be introduced and a brief definition of academic self-concept and the role of identity formation; demonstrating how academic self-concept can be explored using sociocultural theory as a platform to explicate the development of academic self-concept. How the application of the theory to this research follows with explication of how the theoretical framework relates to the Research Issues will be discussed. Finally,
a summary of the sociocultural theory that underpins this research study will conclude this Chapter.

3.1. **Situating the theory in the field of gifted education**

Support for using the sociocultural paradigm comes indirectly from the gifted field itself. For example, VanTassel-Baska (2006), as president of the USA National Association of Gifted Children (NAGC), reviewed research in the gifted field and identified that the research should have applied values, using constructs that may, in many cases, come from the sciences and the social sciences. Furthermore, educational research is recommended that is aspiring to construct patterns of meaning out of social experiences and transactions, as VanTassel-Baska (2006) urges:

> [P]repare yourself well in the substantive knowledge base that surrounds gifted education, which means developing an appreciation for the theoretical literature on individual differences, on motivation and affect, on different psychologies, and on sociological theories that impact our understanding of culture, gender, and race (VanTassel-Baska, 2006, p. 339).

Prior to 2006, Schultz (2002) suggested that new research in the field of gifted education needs to move away from the 'fix the broken' mentality of working on students, to working with students and understanding them in their context and environment. Research needs to lead to adequate understanding of the complex needs of twice-exceptional students in the classroom. In an empirical review of twenty years of research literature, Foley Nicpon et al. (2011) identified less than twenty qualitative research studies (e.g. Baum, 1998; Dole, 2001; Mann, 2006; Montegue, 1991; Reis et al., 2000; Vespi & Yewchuck, 1992) of which just one was a case study (Assouline et al., 2009).

In order to facilitate the contribution to the gap in the methodology and theoretical approach in the gifted field, a case study design using the sociocultural framework has been implemented for this research. How the sociocultural theory is situated in this thesis is now presented.

3.2. **Sociocultural theory**

Vygotsky studied child development and the roles of cultural mediation and interpersonal communication, observing how higher mental functions, developed
through interactions with culture, and he termed the process ‘internalization’ (Wertsch, 1985). Sociocultural theory, pioneered by Vygotsky (1938), expresses ideas about higher human mental functioning, including the mediation of action through the use of cultural tools, and the theoretical construct of the ZPD as it relates to the notion of learning and development. Subsequently, Vygotsky’s theories of mind and action have influenced exploration of learning and development as a mediated process (Daniels, Cole, & Wertsch, 2007).

Vygotsky’s work has influenced “a wide range of disciplines and professions” through attempting to develop “a theory of social, cultural and historical formation of the human mind” (Daniels et al., 2007, p. 1). Many cognitive researchers have, until relatively recently, ignored sociocultural context whilst focusing on internalised mental processes (Hatano & Wertsch, 2001). Human cognitive development is dependent upon, and interactive with, people and cultural tools (Wertsch, 1998). Individuals are not isolated and the role of social, cultural and historical contexts provides understanding in the development of higher cognitive functioning (for example: Cole, 1996; Hatano & Wertsch, 2001; Luria, 1980).

There are four main traditions that have developed in the sociocultural theory (Daniels, et al., 2007). The first tradition emphasizes semiotic mediation and has an emphasis on speech; the second tradition explores mediated action and how cultural artefacts, such as speech, serve as tools to shape thought and action (thus shaping those who use them); the third tradition analyses and emphasizes how individuals participate and function in communities; and finally, the fourth tradition is activity theory and has a focus on joint-mediated activity (Daniels et al., 2007). The traditions that have predominantly influenced the formulation and design of this study are (a) how individuals participate and function in communities (Wenger, 1996, 2000, 2011; Wenger and Lave, 1991; Wertsch, 1991, 1998, 2007) and (b) mediated action, the dynamic relationship between cultural tools, their users, and how they shape each other (Bakhtin, 1981; Daniels et al., 2007; Gee, 1991, 1992; Wertsch, 1991, 1998, 2007).

A tension within sociocultural theory is that higher cognitive functioning is shaped by cultural, historical and institutional settings, whilst also being influenced by ethnocentric assumptions around issues such as parental expectations and peer relationships. Wertsch (1998) argues that the tension is as a result of the tenet that
higher cognitive functioning cannot be universal as different sociocultural settings influence and thus inform different mental functioning. For example, different societies (e.g. countries, cultures, town or rural dwellers) or different institutions (e.g. religious, family life, and working life) inform different forms of discourse and may be quite distinct from one another. Another consequence of an acultural and asocial approach is highlighted by Hatano and Wertsch (2001) when considering developmental cognitive trajectories in children towards higher cognitive functioning; the assumptions of uniformity with biology do not account for the social interactions that might promote different cognitive development. Similarly, whilst attempting to define the underpinnings of sociocultural theory, authors in the field (e.g. Vygotsky, 1938; Asmolov, 2010) seek to avoid reducing the definitions to a simple form of social learning that becomes a form of social reductionism. Against this backdrop, sociocultural theorist themes can be used to inform Research Issues and hence findings.

Wertsch (1991) identified three themes in Vygotsky’s literature that underpin the understanding of cognitive development towards higher cognitive functioning. The first theme was that higher cognitive functioning is developmental in nature and changes over time; the second theme was that higher cognitive functioning exists within the individual (in the intramental plane) but derives from the social (the intermental plane); and the third theme explicates mediation of human action at the individual and social levels, through cultural tools and signs (Wertsch, 1991). Students’ academic self-concept is an ongoing construction and transformation of an aspect of identity. Academic self-concept is situated in life experience and practice (Wenger, 1998), is influenced by human action (Wertsch, 1998), and in the sociocultural paradigm, and can be understood in relation to the social, cultural and historical dimension of educational context as illustrated visually in Figure 3.2.
Approaches within the sociocultural framework all suggest that: interactions with other people and artefacts plays an important role in the development of cognition (middle right and bottom box in Figure 3.2), and also that what occurs in the individual is affected by larger social and cultural contexts and practices (left middle and bottom boxes in Figure 3.2).

As presented in the earlier Chapter, Literature Review, self-concept is a significant psychological construct (Shi, Li & Zhang, 2008) which is considered to be a multidimensional, multilevel structure that is domain specific. Academic self-concept hinges on students’ perceptions of their academic accomplishments, academic competence, expectations of academic success or failure, and academic self-beliefs (Marsh et al., 2008). Academic self-concept can influence a student’s attitude to school (Marsh & Hau, 2003), and can also vary between different academic subjects. Bong & Skaalvik (2003) suggest that self-concept predicts emotion, motivation and performance, and high academic self-concept typically results in high academic motivation, involvement in school and academic achievement (Xin & Hao, 2003).
3.3. **Identity and academic self-concept**

Identity formation has been used, and will be used in this research, synonymously with the formation of aspects of self, including self-concept. Figure 3.3 illustrates how, for the purpose of this study, academic self-concept is related to identity, and is based on the referring literature.

* Academic self-concept

**Figure 3.3** Where academic self-concept is positioned as part of ‘Identity’

The umbrella term of ‘identity’ will be discussed to foreground the exploration of academic self-concept. Recent trends in sociocultural research explicate the notions of space and place as being integral aspects of the processes of being and becoming, and of learning and developing, in social, cultural and historical contexts. The examples of sociocultural research that characterise such processes to help inform academic self-concept are those of “relational distance” (Panofsky & Vadeboncoeur, 2012; Vadeboncoeur, 2011), “spatialising sociocultural research” (Wertsch, 2007), “inside and outside the zone of proximal development” (Del Rio & Alvarez, 2007), “dialogic spaces” (Wegerif, 2008), and “semiotic social spaces” (Gee, 2004, 2005).

‘Social Identity’ is the representation of oneself that emerges during interaction with other people across a variety of social contexts and as experienced on a personal level.
(Gover & Gavelek, 2004). In their structural model of the self, Shavelson, Hubner and Stanton (1976) differentiate the general self-concept (or synonymously the identity) into academic, social, emotional and physical self-concepts. It is only academic self-concept, a person’s perception about their capabilities in any one academic domain (e.g. maths or arts) that can be simultaneously variable (high or low) depending on the academic domain. Academic self-concept is linked to how an individual perceives them self, rather than how others perceive them. Academic self-concept is influenced by prior achievement and is a predictor of subsequent achievement in school (e.g. Marsh, Trautwein, Ludtke, Koller, & Baumert, 2005). Identity formation is a fluid and ongoing process of being and becoming and, as identity is synonymous with aspects of self, or self-concept, it is considered synonymous with academic self-concept for this research (e.g. Markus, 1977; Marsh et al., 2005; Knigge & Hannover, 2011).

The literature is replete with definitions of identity and the term has a multitude of meanings. This research will use, in part, the proposition that identity is an ongoing construction within social dynamics (Berger & Luckman, 1966; Hagstrom & Wertsch, 2004). An individual’s academic self-concept, a self-perception that has arisen out of interpreting cultural tools and meanings in a sociocultural context, is as a result of social interaction and cultural meanings becoming internalised.

Research in identity formation during the latter part of the last century often regarded identity formation as psychological and internalised: bound within the skin (e.g. Erikson, 1958, 1963, 1964, 1968). However, what was at times overlooked was Erikson’s own recognition of the role of supportive cultural-institutional settings in identity formation, and his view that identity is shaped as a flexible response to changing contexts. Moving forward from Erikson, Wenger (2011) places identity at the core of learning: identity and learning are two sides of the same coin in that “learning is a process of identity formation, and conversely, identity formation is a process of learning” (p. 143).

The notion of identity formation embodies a trajectory over time and through social space and is a process of learning and becoming. Wenger (2011) proposes that the evolving identity across space and time also engages disparate material from events, experiences, the situational context or organisation, and becomes absorbed into a person’s constitution. Learning and identity formation, as a social process, involves the
interplay of participation and practice (Wenger, 1998). Wenger (2011) uses identity in two senses: first “in the sense of identifying oneself, or being identified ‘as’ a certain kind a person” (p. 145), for instance a kind of ‘pupil or scholar’ in school; and second with a ‘label’, a community of practice, or an experience, for instance a ‘nationality’, or utilizing the processes of engagement, imagination and alignment which are discussed later as part of ‘situated learning’. Both definitions of identity are relevant to the formation of academic self-concept in that the former refers to the internalization processes (in the intramental plane) and the latter refers to the externalised processes (in the intermental plane) that inform the development of higher cognitive functioning and, therefore, academic self-concept. Wenger (2000) argues that the success of organizations, such as schools, depends upon their ability to design themselves as a social learning system and also to participate in broader learning systems of, for example, the regional area or national education, thus enabling communities of practice and the shaping of identities through these systems.

Wenger’s perspective regarding identity being a process of learning and becoming is supported by others in the sociocultural paradigm. For example the work of Penuel and Wertsch (1995), proposes that identity research should be directed to contexts where participants are actively engaged in forming their identities through interacting with social and cultural contexts through mediated action (p. 83). This sociocultural approach to identity formation views two aspects of sociocultural processes on the one hand and individual functioning on the other (Wertsch, 1991). The two aspects are foregrounded, one each, in the external ‘intermental’ and internal ‘intramental’ planes for this research; identity formation is formed by the interaction of the two planes through individual functioning and interaction with others. The interchange of processes, as represented in Figure 3.1, takes place in the ZPD, supported by cultural artefacts or tools that in turn shape individual functioning (Wertsch, 1991).

The terms used for this research and presented in the theoretical model (see Figure 3.1) are ‘planes’. Wertsch used ‘planes’ and Vygotsky used the term ‘zone’ to foreground and explicate a static understanding of the abstract spaces that dynamically interact. This research uses the term ‘plane’ and refers to a non-physical space wherein the conditions, functions and processes contribute to ways of becoming or being within the social environment. Vygotskyan sociocultural theory submits that identity formation,
and thus academic self-concept formation, “is superimposed on the processes of growth, maturation, and the organic development of the whole” (Vygotsky, 1960, p. 47). As Vygotsky (1960) notes, the…

… growth of the normal child into civilization usually involves a fusion with the processes of organic maturation. Both planes of development, the natural and the cultural, coincide and mingle with one another. The two lines of change interpenetrate one another and essentially form a single line of socio-biological formation of the child’s personality (p.47).

It is up to the individual then to create and maintain a dynamic conception of the self, involving complex perspective coordination. Coordinating perspectives is a cognitive task well-suited to adolescents, according to Erikson, who saw adolescents' capacity for self-reflection and formal operational thinking as developing in tandem with identity (Cole & Cole, 1989). Self-reflection can be applied to the theoretical model for this research (see Figure 3.1). Self-reflection is placed alongside and within the internalizing processes in the intramental plane. Operational thinking, for Vygotsky, is placed in activity theory and how artefacts are instrumental in linking a child’s thinking and their learning and is beyond the scope of this research.

3.4. **How the theory is applied to this research**

This research uses theoretical ideas from the sociocultural paradigm to explore and explicate the development of academic self-concept in twice-exceptional school students, detailed explanations of which follow. In brief, this research submits that academic self-concept can be explored through an understanding of its development and formation. Although the two planes (inter- and intramental) are not static or stand-alone, they are discussed separately in order to foreground and explicate the theory and findings for this research. The shaping of academic self-concept, although forming on the internal, intramental plane as part of identity, is influenced by the external, intermental plane.

As discussed earlier, social, historical and cultural interactions and contexts influence the formation of identity and higher cognitive development through a variety of internalising processes, which in turn contribute to the construction of academic self-concept. The ZPD is an abstract space, a plane, through which there is a two-way
transference between the inter- and intramental planes, their processes and influences (see Figure 3.1). A process called ‘mediated action’, occurring in the ZPD, filters the transference of information between the inter- and intramental planes. Following the discussion of the ZPD, including an explanation of mediated action, is an explanation of processes in the intermental plane: the interactions with significant others, contexts and practices (through legitimate-peripheral-participation, participation-in-practice and situated learning). Finally discussed are the internalising processes of the intramental plane which contribute to identity development, part of which leads to the development of academic self-concept. Figure 3.4 shows how Lave and Wenger’s (1991) theory integrates with Wertsch (1998) to inform this research.

3.5. ZPD: a process of learning and becoming

As discussed earlier, the term ‘plane’ is used to foreground the non-physical, abstract ‘spaces’ of the intermental and intramental ‘spaces’. The ZPD, although termed a ‘zone’ in the literature as well as this thesis, is also considered to be a ‘plane’ (a non-physical abstract ‘space’ in which the inter- and intramental planes co-exist) for the purposes of this research. The explanation of each of the three planes shown in Figure 3.1 now follows, with their corresponding processes: the ZPD followed by intermental then intramental planes. The process of ‘mediated action’, operating in the ZPD, although beyond the scope for exploration for this research, is explicated to provide an understanding, which is desirable to foreground the exploration of the processes in the intermental and intramental planes. The theoretical model in Figure 3.1 is a representation of the work of Wertsch (1998), exploring the process of mediated action and participation-in-practice; and the work of Lave and Wenger (1991), exploring community of practice through the processes of legitimate-peripheral-participation and situated learning.
Vygotsky believed that higher cognitive functioning was a social process through which human action at both individual and social levels is mediated through the use of cultural tools such as language (Wertsch, 1991, 1998). Opposing popular psychological theory at the time, that higher cognitive functioning occurred in the mind of the individual with possibly some influence by environmental factors (Daniels et al., 2007; Good, 2008; Vygotsky, 1978; Wertsch, 1991), Vygotsky (1978) posited that the development of cognition and thought in the human mind was influenced by social, cultural and historical contexts. The space where the social forms of mediation (or, mediated action) develop is in the ZPD. Vygotsky (1987) proposed that this metaphor was the reflection of the process through which institutionalised schooling impacts cognition. Vygotsky states that all higher mental abilities appear twice in an individual's life: first on the intermental, external plane and mediated with other people or cultural artefacts, and later on the intramental, internal plane and mediated through psychological mediation. The ZPD is the theoretical place in which the mediated means are appropriated and internalised.
Understandings and definitions of the ZPD differ. Traditionally researchers have construed that ZPD necessarily involves interaction between expert and novice, the ZPD being the gap that bridges learning with a more experienced other (Vygotsky, 1978). Research supporting this idea has been offered by, for example, Wertsch (1985a) with the parental involvement in wooden jigsaw puzzles, and Aljaafreh and Lantolf (1994) with second language learning. However, other scholars have called for a broader understanding of the scope of ZPD to include more than the novice/expert interaction (e.g. Kuutti, 1996; Engesstrom & Middleton, 1996; Wells, 1996; Swain & Lapkin, 1998). Vygotsky’s ZPD has been reinterpreted and developed (Del Rio & Alvarez, 2007) and has more recently been described as a bridge or connector from the mind to the body. The ZPD will be explored in this research through incorporating the sociocultural notion that learning is embedded in social relationships and is situated in space; it acts as a bridge between the intra- and intermental planes.

Although Vygotsky’s ZPD is described as a plane, a non-physical, abstract ‘space’ for this research, it is characterised by the social relationships of the individual as being part of the dynamic interactions in relationships, membership of a community or group, and a social environment wherein a person’s higher cognitive functioning develops. In this light the ZPD will be used in this research as a plane wherein social interactions and interpretations take place, and from the external, intermental plane interaction, the individual internalises to the internal, intramental plane, thus contributing to the construction of identity and informing academic self-concept. For this research, the understanding of ZPD is based in mediated action. Mediated action uses culturally appropriate artefacts to co-construct contexts in which expertise emerges. ZPD is a collaborative construction of opportunities or occasions for learning (Swain et al., 1998).

The ZPD encompasses both the intermental and intramental planes (Wertsch, 1991, p. 47), within and without a person, “inside and outside the skin” (Del Rio & Alvarez, 2007, p. 281). It is embodied within and reliant upon the social, cultural and historical ‘situatedness’ of the learning and development processes. The interpretation of the ZPD for this research study is located in the educational context (a school) and has an emphasis on the relationships with significant others. The relationships occurring in the intermental plane are then transferred and internalised to the intramental plane, hence
informing academic self-concept. Thus, the ZPD is focused on the intermental/intramental interchange that takes place on the vehicle of mediated action.

3.6. Mediated action—the process within the ZPD

Although mediated action is not the focus of this research, an understanding of the process explicates how the inter- and intramental planes interact. The term mediated action was introduced by Wertsch (1991, 1998) as an expansion of Vygotsky’s concept of semiotic mediation which uses the word as a unit of analysis. Speech, cultural tools and sign systems mediate human action (Wertsch, 1991). The essence of mediated action was crystallised by Vygotsky as his later work became focused more on processes in the intermental rather than the intramental planes (Wertsch, 1991). He suggests that the goal of the sociocultural approach is to explicate how human action is situated in cultural, social, historical and institutional settings, and an understanding of mediated action, the tools that draw together the actions, cultural tools and contexts thus enabling interaction within and between the planes, is essential for this understanding.

Wertsch defines mediated action as the interaction between human action and cultural tools (for example, talking is an action but language is a tool). Mediated action has three components: the action carried out by an individual, the cultural tool used to carry out the action, and the context that provides meaning to the action. It is the combination of these three aspects that is the irreducible unit that comprises mediated action as represented in Figure 3.5.
Although all of these three components interweave in an ongoing dynamic movement, mediated action can be interpreted as the ‘process’ between the action, the cultural tool and a context. For this research, an example might be that the action is the teacher feedback, the tool may be words spoken or ‘the red pen’, and the context may be an assignment grade returned in school. Wertsch (1991, p. 119) emphasizes the importance of not focusing on language and other signs ‘in isolation or abstracted from human action’; such tools and signs are used as an understanding of being. Mediated action can, therefore, be seen as an irreducible unit to be measured (Hagstrom and Wertsch, 2004), and for this research, to be observed in the experiences and practices of twice-exceptional students within their sociocultural context of community of practice (school, family and significant others including teachers, parents, siblings and peers).

For Vygotsky, tools, language, and other sign systems are important, not simply as representational items but also as being integrally related to higher cognitive development (Vygotsky, 1987). Guiding Vygotsky's work is an assumption that signs and tools are not simply the minions of individuals’ purposes, but in important ways, transform those purposes and mediates cognitive functioning (Penuel & Wertsch, 1995). As Vygotsky (1981b) noted, by being included in the process of behaviour, the tools and artefacts alter the entire flow and structure of higher cognitive functions, including identity and, thus, academic self-concept. An example for this research might be the tool
of language; a teacher framing commands, in the positive and collectively to the whole class, with authority and courtesy might have a different impact on a student compared to framing a command in the negative and singling out an individual with disadvantageous attention. Cultural tools and signs, moreover, are borrowed from social practices even as they are mastered and transformed by individuals in their own activities. This point is reflected in Vygotsky's claim that "a sign is always originally a means used for social purposes, a means of inducing others, and only later becomes a means of influencing oneself" (Vygotsky, 1981a, p. 157).

Mediated action, through the cultural tools and signs, enable individuals that shape, empower, constrain, and have the potential to transform the action (Wertsch, 1995). Such means, in turn, facilitate and make possible both a relationship to oneself and to others and thus the development of identity and its sub-parts, including academic self-concept. Vygotsky was concerned less with tools as aids in accomplishing individual purposes than with tools as cultural artefacts that form the basis for patterns of intermental functioning or social activity (Penuel & Wertsch, 1995). This research, whilst acknowledging the importance of mediated action as a process of enabling interaction between the inter- and intramental planes, focuses on how the academic self-concept is influenced by the various processes rather than the construct of the mediated action that informs the processes, and in this respect the theory moves away from Vygotsky and aligns more with the hybrid theories evolved by, for example, Lave and Wenger (1991).

The ZPD, through the processes of mediated action using mediational means, is the abstract space wherein the internal and external sociocultural influences interact. The internal and external, or intermental and intramental planes, will now be discussed.

3.7. The Intermental Plane

For this research the intermental plane is explicated to foreground the social, cultural and historical contexts and practices that are ‘outside’ the person and, through transfer to the intramental plane via the ZPD, are ultimately internalised to inform academic self-concept. In the process of constructing identity, individuals negotiate, form and
perform their social and individual identities (Sfard & Prusak, 2005) by acting and responding to the world around them (Lasky, 2005). Thus, the aspect of identity associated with academic self-concept may be understood in terms of how it is formed in relationship with others in practice (Bakhtin, 1981; Wenger, 1998; Wertsch, 1991, 1998). The intermental plane, as well as contexts, also includes interactions with significant others (namely parents, siblings, peers and teachers) and social and cultural practices. These interactions take place through mediated action as described earlier. The three axioms integrated and adopted for this research that explicate the intermental plane are legitimate-peripheral-participation, community of practice (Lave & Wenger, 1991), situated learning (Lave & Wenger, 1991), and participation-in-practice (Wertsch, 1998) and each will now be explored in the context of this research.

3.8. Community of practice

Community of Practice is a theory of learning that starts with this assumption: engagement in social practice is the fundamental process by which we learn and so become who we are (Wenger, 1998). The primary unit of analysis of this process is neither the individual nor social institutions but rather the informal “communities of practice” that people form as they pursue shared enterprises over time. Community of practice provides a social account of learning and a platform to observe the intersection of social contexts, social practice, meaning, and identity (Wenger, 1998), providing a broad conceptual framework for thinking about learning as a process of social participation.

Wenger’s (2000) identification of a community of practice was based on an organisational and cohesive form within organisations that run on a sense of belonging and knowledge. A community of practice is a group of people informally bound together by shared expertise and shared institutional protocols, including aspects of their ‘social or professional identity’, for a joint service or enterprise. A community of practice facilitates mutual connections and a sense of belonging. A community of practice might include accountants or medical doctors, sharing knowledge and identity as specialist practitioners and aligning in their professional field through associations with institutes and similar organisations. The accountant is an accountant within and beyond their workplace and, therefore, the community of practice is not restricted to the physicality of the work place. For the purpose of this research, the community of
practice is the school as an organisation or institution. The research participants are in
the community of practice with their peers. The community of practice is not bound by
the physicality of the school and involves all aspects of school life including extra-
curricular sports and activities. This research will also include the home environment as
part of the school community of practice as the participant is still a ‘school student’,
observing the requirements of school life (such as homework), whilst they are at home.

To be a part of a community of practice, three experiential processes or axioms take
place: legitimate-peripheral-participation (Lave & Wenger, 1991) whereby the
individual is on the periphery of a community and, with practice and mastery, moves
from the periphery to the centre of the community; participation-in-practice (Hatano &
Wertsch, 2001), wherein there are opportunities provided for mutually supportive
learning; and situated learning (Lave & Wenger, 1991) whereby the individual is
‘situated’ in the context to have exposure to the learning. Figure 3.6 illustrates the
concept of participation-in-practice, legitimate-peripheral-participation, and situated
learning as processes within the community of practice. These three processes will now
be explored.

![Diagram of Community of Practice]

**Figure 3.6** Participation-in-practice, legitimate-peripheral-participation, and situated
learning as processes within the community of practice
3.9. Legitimate peripheral participation

Pivotal to this research is the aspect that is concerned with how an individual’s intentions to learn are engaged, and how their academic self-concept is informed through the social, interactive process of becoming a full participant in sociocultural practice. Legitimate peripheral participation (Lave & Wenger, 1991) suggests that learners inevitably participate in communities of practitioners and that the mastery of knowledge and skill requires newcomers to partake fully in the sociocultural practices of the community; in other words, learning by being in the location of practice and gradually getting the hang of things while being accepted by those involved. Legitimate-peripheral-participation is the forerunner to becoming fully accepted into a community of practice. Legitimate-peripheral-participation is useful for this research as a platform for exploring how and why twice-exceptional students, although gifted, marginalise themselves to the periphery of the gifted population in the school institution despite their recognised giftedness.

The aspect of legitimate-peripheral-participation that informs this research is concerned with the relationship between activities, identities, and communities of knowledge and practice. The legitimate-peripheral-participation process includes the learning of knowledgeable skills and practices that, through mediated action, inform academic self-concept. ‘Significant others’ is used in this research to describe those people with whom the participant has regular, and perceived, relevant interactions: namely, parents, teachers, the school as an institution, peers and, siblings.

There is a relationship between the situational context and the cognitive understanding that locates learning in processes of co-participation, and not just in the heads of individuals (Lave & Wenger, 1991). Learning requires skills that are acquired through the learning process, acquiring the skill to perform by engaging in a process under the attenuated conditions of legitimate-peripheral-participation. Being in the situational context for learning, and partaking in the learning processes of co-participation (which start with legitimate-peripheral-participation), requires repeat participation in the practices: also known as ‘participation-in-practice’.
3.10. **Participation in practice**

Participation in practice is the process of practising, and therefore learning, a skill. Repeated participation in the practice enhances the cognitive skills required to perform them. The practices might also provide ‘a database from which people abstract general principles and construct models of the world’ (Hatano & Wertsch, 2001, p.79) and as a result, those practices that are culturally valued are enhanced over time. Although participation in the practice is not compulsory, contexts make the practice more accessible to young people who then might participate in them. Repeated participation enhances the performance in these practices, and thus the development of cognition. If the culture values the practices then they are more likely to be repeated and reinforced (Cole, 1996; Scribner & Cole, 1981).

To explore academic self-concept using participation-in-practice as posited by Hatano and Wertsch (2001), it is necessary to link social and cultural settings and practices with individual cognitive development. Interactions with others, and the contexts in which they occur, play important roles in both the learning and development of a person (Hatano and Wertsch, 2001). Of particular importance are the practices involved in the interactions (Goodnow, Miller & Kessel, 1995). Practices are organised by the culture in which the person lives and produce a significant outcome (e.g. schoolwork or development through childhood and adolescence).

Participation-in-practice provides opportunities for mutually supportive learning (Sinclair, 2004). Participation-in-practice can be depicted as steps on a ‘ladder of participation’ (Hart, 1997). The steps of this ladder describe the degree to which people are in control of the process, and initiate the process to invite others to join them in the practice. Different rungs of the ladder may be appropriate for different tasks or activity (Shier, 2001) and highlight the need to distinguish different levels of empowerment afforded to learners (Sinclair, 2004). It is also important to recognise that although learners are in different social and cultural contexts, they also change their interests and cognitive capacities over time, and what is suitable participation-in-practice for one group may not suit another (Sinclair, 2004). How interests, perceptions and understandings are different as a result of age has been observed, as each of the participants are from the different school phases of primary, middle and senior school.
However, participation-in-practice is not assumed to give uniform cognitive effects as different practices are shaped by different contexts. In addition, cognitive effects are also shaped by different but shared cultural tools such as language, knowledge, beliefs, social organizations, and accepted patterns of behaviour associated by the physical, symbolic and social tools that allow interaction among members of the community (Cole, 1996). Accepted patterns of behaviour in one school or country may not necessarily transfer to another due to cultural and contextual differences. Many practices usually occur within a particular domain and the cognitive development tends to be domain-specific (Shi et al., 2008). However, some activities occur across many different domains (such as narratives and measurement) and for these activities cognitive development is general and can be applied in other domains. “In short, participation-in-practice is the key concept linking social and cultural setting with individual cognitive development” (Hatano & Wertsch, 2001, p. 79). When considering participation-in-practice in the school context, and how the academic self-concept is formed as a result, it is also useful to understand ‘situated learning’.

3.11. Situated learning

Simplistically, situated learning locates the individual’s engagement with and acceptance of the practices within a context or community of practice, and thus how that acceptance or alignment with the practices informs the development of identity and, thus, the academic self-concept. Situated Learning provides a conceptualisation of learning as a process of social and personal transformation in communities of practice (Lave & Wenger, 1991). Lave and Wenger (1991) propose that learning takes place in learning situations in the practices of communities, with learning is viewed as a feature of membership in a community of practice. Situated learning involves a novice negotiating and renegotiating participation in the community of practice and the processes are situated in the broader relationships of community life. The learning processes entail both the development of individuals’ membership in the community and the shaping of identity. The focus is on learning because the proclivities of people engaged in specific cultural activities create the experiences that inform their learning. Thus the experiences rather than the activities become the focus (Gutierrez & Rogoff, 2003).
Situated learning is similar to, and interweaved with, legitimate-peripheral-participation in the peripheral character of the process and the activity in which the community functions. The process is occurring on the periphery of the community, has legitimate recognition from the community, and is often organised by the community (Gutierrez & Rogoff, 2003). The key difference understood and applied for this research is that situated learning is the ‘situatedness’ of the learning – the community and social contexts and social practices that are accessible.

Situated learning provides the conditions for novices to learn by being in the situation or context that is demonstrating and ‘practising’ the art or skill. However, unlike legitimate-peripheral-participation which is by its nature ‘peripheral’, situated learning can be in process as the learning becomes less peripheral and the individual moves towards the centre of the community of practice. Lave and Wenger (1991) posit that ‘there is no activity that is not situated’ (p. 33). Situated learning embraces the notion of identity formation (Lave & Wenger, 1991) and Wenger (1996) argues that the success of organisations (such as schools) depends on their ability to design themselves as social learning systems which, in turn, shape identities by participation in these systems. The three ways that identities are shaped (Wenger 1996) are: engagement (doing things together, talking and producing artefacts); imagination (constructing our truths of the world – imaginative images of the world are essential to our sense-of-self and to our interpretation of our participation in the social world); alignment (aligning our activities with community processes, such as moral codes, that can become deep aspects of our identities). Situated learning, through the three ways that identities are shaped, is foregrounded in both the inter- and intrametal planes. The engagement activity in this research is foregrounded in the intermental plane; the imagination activity is foregrounded in the intrametal plane; and finally, the alignment activity is foregrounded in both planes.

The focus of situated learning as described by Lave and Wenger (1991) is that Situated Learning explores the situated character of human understanding and communication; the focus is on the relationship between learning and the social situations in which it occurs. Lave & Wenger (1991) situate learning in certain forms of social co-participation, rather than viewing learning as a cognitive process, learning occurs as a result of social engagement in the proper context in order to take place. Lave and
Wenger (1991) posit that learning is mutually constitutive of the world, activity, viewing agent and whole person; it is quintessentially social in character. Rather than learning being a solely epistemological account of a person, learning is a process of participation in communities of practice, participation that is at first legitimately peripheral, via legitimate-peripheral-participation, but that gradually increases in engagement and complexity. Thus learning is based on participation in the community of practice and is, thus ‘situated’ in the community context.

The socio-cultural processes of legitimate-peripheral-participation, situated learning, and participation-in-practice provide the social and cultural co-participation opportunities for learning in the community of practice; which in turn provide the platform for the exploration of the shaping of academic self-concept for twice-exceptional students. The focus in this section has been around the processes in the intermental, external plane. As situated learning shapes identities through imagination, alignment and engagement, both the internal and external planes are engaged. For this research, when exploring the internal, intramental plane, situated learning is also used as a platform for exploration.

3.12. The Intramental Plane

The second plane that contributes to the theoretical model is the intramental plane (see Figure 3.1). To reiterate, the notion that the planes are dynamic with an interaction of processes that contribute to the development of academic self-concept is important, but for purposes of explication, the planes are separated (see Figure 3.1). The intramental plane is the ‘inside the skin’ area that co-constructs the development of academic self-concept through, as used in this research, situated learning via alignment and imagination. Alignment occurs as an individual ‘aligns’ with community processes, such as moral codes, in the intermental plane and then internalises that alignment to become aspects of identity. Imagination co-occurs with alignment in the intramental plane through ‘constructing our truths of the world’ (Wenger, 1996) through a process of self-reflection and internalisation. In order to explore the internalisation and identity formation, thus academic self-concept, the process of self-reflection is now explored.

Culturally created mediational artefacts that are linguistically organised (e.g. conversations, metaphors, poetry, writing) are externally evident. The convergence of
these artefacts, via engagement and alignment (Wenger, 1996), occurs in the process of internalization. Internalization is the reconstruction, through self-reflection and imagination (Wenger, 1996), of socially mediated external forms of goal-directed activity. Internalization is the process which higher forms of cognitive functioning come to be (Lantolf & Thorne, 2006). Internalization thus assumes that the source of consciousness resides outside the head and is anchored in social activity. Developmentally, our first activities are organised and regulated (or mediated) by others and eventually, in what is usually termed normal development, we mediate our own physical and cognitive activity through the appropriation of the mediation employed by others. In the case of children, Wertsch (1985a), showed this shift using wooden puzzles. Initially the puzzle was solved through the mediational control of the child's parent. Gradually control passes to the child as they appropriate language as a means of mediating their own physical and mental activity. In other words, the children's speech was initially social, but became self-directed and grounded in the psychological, as internalised higher cognitive processes.

In the face of difficult tasks, Frawley and Lantolf (1985) state that these cognitive processes can be re-externalised as the person attempts to regain control over them in performing the tasks. This process is called the re-accessing of earlier stages of development. If the difficulty persists, the person will seek the help of another person. Thus the psychological processes become social again and externally mediated through culturally appropriate artefacts (e.g. computer, teacher, and dictionary), hence reinforcing that learning is grounded in the social environment and precedes development (Hatano & Wertsch, 2001).

Situated learning in the intramental plane encompasses two of the three ways that identities are shaped (Wenger, 1996). The first, imagination is the process of constructing our truths of the world which are essential to our sense-of-self and to our interpretation of our participation in the social world. The second, alignment is the process of aligning our activities with community processes, such as moral codes, that can become deep aspects of our identities.
3.13. How the Research Issues relate to the theory

The aims of this research are to explore, in the context of the sociocultural framework: academic self-concept and related perceptions of self in twice-exceptional students, school experiences for twice-exceptional students, and twice-exceptional students’ perceptions of significant others (parents, siblings, peers, and teachers), investigate academic achievement histories of twice-exceptional students, and finally, to explore the relationship between school experiences and academic self-concept.

From these aims emerge the following Research Issues:

1. Explore some of the social interactions that influence the development of academic self-concept for twice-exceptional students.

2. Explore some of the social practices and contexts that influence the development of academic self-concept for twice-exceptional students.

A tabular representation of how the sociocultural framework and perspectives used for this research addressed the research Aim (which are contained in both Research Issues) is detailed in Table 3.1.

<table>
<thead>
<tr>
<th>Research Aims</th>
<th>Theoretical Perspective</th>
<th>Intermental Plane</th>
<th>Intramental Plane</th>
</tr>
</thead>
<tbody>
<tr>
<td>To find the perceptions of school experiences for twice-exceptional students</td>
<td>Participation-in-practice legitimate-peripheral-participation</td>
<td>Situated learning – imagination and alignment</td>
<td></td>
</tr>
<tr>
<td>To find academic achievement histories of twice-exceptional students</td>
<td>Participation-in-practice – historical cultural element</td>
<td></td>
<td></td>
</tr>
<tr>
<td>To measure academic self-concept in twice-exceptional students</td>
<td>Legitimate-peripheral-participation</td>
<td>Situated learning – imagination and alignment</td>
<td></td>
</tr>
<tr>
<td>To investigate the relationship between academic self-concept and school experiences</td>
<td>Legitimate-peripheral-participation Participation-in-practice</td>
<td>Situated Learning – engagement and alignment</td>
<td></td>
</tr>
</tbody>
</table>

3.14. Chapter summary

This Chapter has presented the theoretical framework through which an exploratory investigation into the academic self-concept in twice-exceptional students is conducted.
Vygotsky (1986) defined sociocultural theory in terms of its roots and described learning as being embedded within the learner’s interactions in their social environment. Evolving from this is the work of Wertsch (1998), exploring inter- and intra-personal processes, and Lave and Wenger (1991) exploring community of practice. Wenger’s social theory of learning (1998) provides the sociocultural perspective for understanding the development of academic self-concept in twice-exceptional students. Ways of knowing (epistemology) and ways of being (ontology) are intertwined with the social dynamic of relationships. The concepts of learning by doing, and learning through participation were explored by Lave and Wenger (1991) and Wenger (1998). Lave and Wenger’s theory of situated learning and Wenger’s theory of learning in communities of practice emphasize the social, participatory aspects of learning which highlight the interconnection of social, cultural and historical contexts on human interactions. These interactions characterise learning and development, including the development of academic self-concept, and are part of the processes of being and becoming, of shaping and developing identity.

The influence of the externalised social environment, termed as the intermental plane, interacts with the internalised, intramental plane within the ZPD. By integrating the works of Wertsch (1998) and Lave and Wenger (1991), a platform for exploring the processes that influence academic self-concept has been devised into a framework for this research. The intermental plane encompasses the three processes of situated learning, legitimate-peripheral-participation (Lave & Wenger, 1991), and participation-in-practice (Wertsch, 1998). The intramental plane encompasses the internalising processes of alignment and imagination in situated learning (Lave & Wenger, 1991) leading to development of academic self-concept. The ZPD encompasses and enables the interchange between the intermental plane, and the intramental plane. The interchange in the ZPD is enabled through the process of mediated action in a dynamic process involving action, cultural tools, and contexts as mediational means (Wertsch, 1991, 1998), which facilitate and transform the processes between the two planes. The intermental, sociocultural forces that, in a dynamic interaction with the intramental plane and processes, inform the development of academic self-concept in twice-exceptional students.
The following Chapter Four will detail the research methodology used to explore the Research Issues that informed this study explicated by an overview of the research design that employs case study analysis.
Chapter 4. Methodology

“Case study research investigates a contemporary phenomenon within its real-life context, especially when the boundaries between phenomenon and context are not clearly evident” (Yin, 2014, p.13)

4.1. Introduction

This Methodology Chapter outlines the research design of the study and the rationale for this choice of study. In order to achieve these aims, this Chapter will initially restate the Research Issues about how interactions and practices in the sociocultural paradigm inform academic self-concept. An overview of the research design will be presented, followed by how the case study framework has consonance with socio-cultural theory. The recruitment process for participants will be discussed followed by the presentation of the data collection methods used in each stage of the research, including how the data set to address the Research Issues. The procedures used in carrying out the case study approach will then be addressed, including data analysis. Following are the considerations of issues of authenticity and trustworthiness of data collection methods and data analysis tools, as well as an outline of ethical considerations for the research. How triangulation was used will be presented and, finally, the subjectivity and reflexivity in this research will be addressed. Research in the twice-exceptional field has been used as a reference point to guide the methodological approach to this research. Finally a summary of the Chapter is included to prepare for the presentation and discussion of findings in subsequent Chapters.

Case study analysis is pivotal in translating the research problem identified in Chapter Two (Literature Review), within the sociocultural theoretical framework, into a design that advances a comprehensive exploration of the Research Issues. Assouline et al. (2009) concur that the phenomenon of twice-exceptional students can be “thoroughly understood through the use of a case study methodology” (p. 90), as this provides context and deeper understanding through the personal experiences of twice-exceptional students and will more likely capture the subtleties and nuances therein. Furthermore, support for case study styles of research can be seen in the study by vanTassle-Baska,
Feng, Swanton, Qeck & Chandler (2009) who used 37 vignettes from interviews with students that indicated the cognitive and affective impacts on twice-exceptional students.

As Yin (2003) states, of singular importance is that the reason for choosing case study methodology is that it “investigates a contemporary phenomenon within its real-life context, especially when the boundaries between phenomenon and context are not clearly evident” (Yin, 2014, p. 13). Assouline et al. (2009) outline that case study research can include multiple cases and include quantitative (in addition to qualitative) data; the case studies used for this research include quantitative, psychometric instrument data and text based qualitative data. Based on the support from the field for undertaking research using case study methodology, this research utilises case study analysis to underscore the nuances present between twice-exceptional students who are each in primary, middle and senior school. Foley Nicpon et al. (2012) recommend that future studies should investigate the influence of socioeconomic and cultural factors on cognitive and academic performance. Although this study does not include quantitatively controlled variables for performance outcomes, an exploration as to how sociocultural factors influence academic self-concept is included.

4.2. **Research Issues**

Chapter Two (Literature Review) explored the literature in the gifted, twice-exceptional and academic self-concept fields, drawing attention to the gaps in the knowledge base. This research sets out to provide new understanding about the influences that inform school experiences, academic achievement and, thus, academic self-concept.

The aims of the research are to:

- Measure academic self-concept and related perceptions of self in three twice-exceptional students.
- Explore the school experiences for these twice-exceptional students.
- Explore the perceptions of significant others (parents and teachers) of the twice-exceptional students.
- Investigate academic achievement histories of the twice-exceptional students.
• Explore the relationship between academic self-concept and school experiences.

In order to achieve the aims of this research, the following Research Issues will guide the data collection for the three participants in this study:

1. Explore some of the social interactions that influence the development of academic self-concept for twice-exceptional students.

2. Explore some of the social practices and contexts that influence the development of academic self-concept for twice-exceptional students.

In exploring interactions and practices of the participants as explicated in Chapter Three (Theoretical Perspectives), this research study was designed to explore academic self-concept via case study research as there is a paucity of this methodology in the twice-exceptional field, and an absence of twice-exceptional research through the sociocultural theoretical framework.

The shortage of published qualitative research in the twice-exceptional field was highlighted at the 2006 National Association for Gifted Children Symposium, when VanTassel-Baska (2006) argued that research in the field of giftedness is most valuable when it is a mix of quantitative and qualitative designs, thereby providing understanding of the complex phenomenon of twice-exceptional students at a deeper level. The shortage of case-study research was highlighted in a meta-analysis (Foley Nicpon et al., 2011) of research in the twice-exceptional field which indicated around 61% has been quantitative research, 26% qualitative, and around 10% have been mixed methods. Just one study out of the 42 reported studies was a case study (Assouline et al., 2009). Subsequently there have been minimal case studies published in the field (e.g. Canillas Stein, Hetzel & Beck, 2012; Pereles, Omdal & Baldwin, 2009). This research aims to further the case study contribution to the gifted and twice-exceptional field. The importance of using qualitative and case study methodologies is reinforced in the following comment:

[I]n the absence of these types of studies, the field will continue to flounder in a sea of disconnected knowledge claims that limit the potential for meaningful growth (VanTassel-Baska, 2006, p. 339).
There is no research in the twice-exceptional field (at date of writing) drawing upon sociocultural theory. The sociocultural theory supports the use of different research methodologies. However, case study research is particularly useful because approaches within the sociocultural framework explore participants’ interactions in the larger social and cultural contexts. Such interactions cannot be assumed to give globally uniform cognitive effects as interactions and practices are shaped by different social and cultural environments (for example location, institution, language, knowledge, beliefs, social organisations and accepted patterns of behaviour). In other words, the social and cultural contexts used in one institution, society or country will not necessarily translate to another although some may be transferrable such as, for example, measurement.

Using case study design enabled the two-fold objective to be achieved of addressing a gap in the gifted education field, and providing a vehicle for in-depth exploration within the research design. Thus, using a context-based, case-study methodology, although not generalizable, will contribute to informing a gap in the literature.

4.3. Overview of the research design

For this research the word Case connotes a spatially delimited phenomenon (a unit) observed at a single point in time (Gerring, 2007). It comprises the type of phenomenon that an inference attempts to explain. A case study is an exploration of a bounded system based on extensive data collection (Creswell, 2009). Bounded means that the case has been separated out for the research in terms of the individual person; the case is an individual who has been identified within the school as twice-exceptional. Three case studies have been used and will be individually described and then compared to provide insights, although not generalisable, into the issues surrounding academic self-concept for twice-exceptional students. Stake (1995) suggests defining characteristics of case study research design. These characteristics, together with those suggested by Gerring (2007) have informed the selection of the research design as (a) its method is qualitative with quantitative psychometric instrument data and has a small number of participants, (b) the research is holistic (e.g. it is a more comprehensive examination of a phenomena, is contextually well developed, is bounded and resists reductionism, is relatively non-comparative (Stake 1995), (c) it is empirical in that it is field orientated, emphasising observations made in the field, it strives to be naturalistic and in real life context, (d) it is interpretive in that it is attuned to the fact that research is researcher-
subject interaction (interacting with the participant), (e) it utilises a particular type of
evidence (clinical, non-experimental, non-survey-based, participant-observation, social,
cultural and historical), and (f), that it employs triangulation as multiple sources of
evidence (Gerring, 2007). In other words, as Creswell (2008) suggests, a case study
provides insights that, by using multiple case studies, can provide some ability to
identify findings that are common to all cases using a cross-case analysis. However, this
is not sufficient to say that, when using a small number, that the findings are
generalizable (Creswell, 2009).

Case studies can be useful to describe phenomena in real life context. Gerring (2007)
proposes that the case study rests implicitly on the micro-macro link in social
interactions, thus providing an additional argument for using case-study design within
the framework of sociocultural theory. Gerring (2007) also argues that in-depth
knowledge of an individual is more helpful than superficial knowledge of a larger
number of participants, thus case studies provide deeper understanding. Case based
analysis is arguably more able to capture the complexities of social and cultural
contexts, and previously unexplored phenomena (such as academic self-concept in
twice-exceptional students), whilst preserving the texture and detail of individual cases,
features of which are often lost in large-N cross-case analyses (Gerring, 2007). It is
probably for these reasons that case study research design occupies a central position in
education, anthropology, business, archaeology, history, medicine, political science,
psychology, and sociology (Gerring, 2007). Case study research can also be very useful
to explore causal investigation (Creswell, 2009) and the in-depth exploration of the
complex, multi-dimensional phenomena (Merriam, 1988) such as academic self-
concept. In a case study research using comprehensive assessments with twice-
exceptional girls to reveal important differences and similarities between participants,
Assouline et al. (2009) suggested that the case study approach bridged the gap between
assessment in the clinical setting and exploration in the daily contexts and interactions
of the participants.

There have been criticisms and cautions presented around case study research. For
example, Maoz (2002) suggested that case study research is freeform research with little
explanation on how the researcher intends to do research, which data are used and
which are omitted, how data are processed and analysed, and how inferences are
derived. Yin (2003) clarified the variations within case study designs and addressed many of the criticisms around case study research, many of which have been adopted by other researchers (e.g. Assouline et al., 2009). Drawing upon the case study research presented in the field, the following rationale underpins this study.

The case studies will be three bounded systems providing descriptions using a variety of sources of data. Using the case studies will provide greater understanding of and an appreciation of the uniqueness and complexity of academic self-concept in twice-exceptional students, within a sociocultural framework (Stake, 1995). The data provide insights into self-perceptions and the academic self-concept of participants, their parents and their teachers. The emergent themes will be presented for each case study and, in later discussion, any shared patterns of perceptions and academic self-concept for the participants. The diversity of data provide insights into the phenomenon of academic self-concept in twice-exceptional students, leading to better understanding and providing the basis for understandings that can be applied to policy and practice arenas.

4.4. Framework for case study design and consonance with sociocultural theory

Primary researchers utilising case studies with twice-exceptional participants (e.g. Assouline et al., 2006; Assouline et al., 2009; Baum & Novak, 2010), alongside case study methodologists (e.g. Denzin & Lincoln, 2005; Gerring, 2007; Herriott & Firestone, 1983; Merriam, 1998; Stake, 1995; Stake, 2006) inform the principles and design of this research. A case study design, based primarily on Stake’s (2006) work, has been used. Each case study employs four key signposts: defining the case, presentation of the data collected, development of issues and descriptive detail, and finally, assertions and summary. A detailed case study format is located in Appendix A.

Case study researchers recognise the significance of different contexts in educational settings; “phenomena are intricately related through many coincidental actions and that understanding them requires looking at a wide sweep of contexts: temporal and spatial, historical, political, economic, cultural, social, and personal” (Stake, 1995, p. 43). The recognition of social, cultural and historical dynamics in case study research highlights the consonance of this methodology with the sociocultural framework adopted in this study. An assumption of sociocultural theories of learning is that all learning is located
within a context of social interactions, emphasizing the important of sociocultural setting in shaping mental functioning through various tools (Vygotsky, 1962, 1978; Wertsch, 1998; Wertsch, Del Rio, & Alvarez, 1995).

Of the many reasons advanced for the use of case-study research, of singular importance is the investigation of phenomenon within real-life context. For this research the context is the community-of-practice (Wenger, 1998). A community-of-practice differs from a geographical community or a community of interest, neither of which imply shared practice. A community of practice has three dimensions: joint enterprise that is understood and constantly negotiated by its members (the school, home, extra-curricular activities, parents, teachers, peers and participants), it is a social entity (the interaction between all of the people to varying degrees within the different but interrelated activities), and it has a shared repertoire of communal practices and resources (routines, vocabulary, uniform, expectations, rules, etc.) Additionally, as discussed earlier, case studies can include multiple cases, and that case studies can include both qualitative and quantitative data. The three case studies presented for this research include data from participants, parents and teachers including psychometric data obtained from instruments and school records, qualitative data from interviews, classroom observations, and background information.

Research instruments to collect data were chosen to investigate aspects of self-concept, how twice-exceptional students perceive themselves, and how significant others perceive them. The instruments used assist the researcher in defining how twice-exceptional students perceive themselves within the parameters and associated aspects of academic self-concept. However, this research goes beyond the self-perceptions and explores how the participants’ perceptions and formation of academic self-concept emerge during interactions in their social, cultural, institutional and historical contexts. Although identity and, more specifically, social identity are not the direct focus of this research, it provides the framework for understanding how academic self-concept can be explored within the sociocultural theory. Because the identity, and more specifically the academic self-concept, of a student is a process of identitying (Hagstrom & Wertsch, 2004) that is constantly being socially constructed, the twice-exceptional student is not viewed in isolation but alongside the significant others in their lives: parents, siblings, teachers and peers within the school community-of-practice. For this reason, in order to
explore the academic self-concept of twice-exceptional students, the perceptions of parents and teachers, in addition to those of the participants, are captured in data collection together with developmental histories, specialist assessments and school records.

4.5. Recruitment processes for the participants

The participants were identified by the school as twice-exceptional students across all year levels at a p-12 boys’ school in Australia. The school is a private day and boarding school, and all participants were day students. Although the school attracts primarily middle-class families, there are a range of students afforded the opportunity to attend through, for example, a scholarship. The school is high performing as both an academic and sporting school and the Principal advocates developing emotional intelligence in school boys.

As discussed earlier, this school was used as a research site as it was, at the time, the only school in the region that acknowledged having twice-exceptional students enrolled and also claimed to provide specialist support for them. Additionally, the researcher was a former teacher at the school and was already known to the staff who were required to enable this study to proceed.

It is possible that some of the gifted students may be unidentified as twice-exceptional; researchers suggest that between nine and 36 per cent of gifted students may be twice-exceptional (Assouline, 2011; Assouline, Foley Nicpon & Whiteman, 2010; Baum, Owen & Dixon, 1991; Wormald, 2009), but only those recognised by the school as twice-exceptional were invited to participate in this study. The school had identified the students as twice-exceptional as a result of specialist reports identifying both giftedness and disability. As discussed in Chapter Two (Literature Review), research in the twice-exceptional field has consistently identified twice-exceptional children through cognitive tests and specialist reports, although to varying degrees and with differing parameters ranging from the ‘Gold Standard’ devised by Assouline et al., (2010) to performance in school-based tests, to self- nomination (e.g. Assouline et al., 2010; Barber et al., 2011; Baum et al., 1988, 2009; Crin et al., 2008; Dole, 2001; Ferri et al., 1997; Reis et al., 1997; Rinn et al., 2010; Vespi et al., 1992). An additional inconsistency in the research to date, as described in more detail in Chapter Two
(Literature Review), is IQ scores indicating giftedness ranging from IQ115+ to IQ130+. Depending on the type of psychometric tests, the IQ scores can differ and so normed population percentiles are used by some researchers that giftedness is a person with an IQ spike at the 90th percentile plus. Crin et al. (2008) used one standard deviation above and below the mean to identify giftedness and learning disabilities; which was slightly lower at the 85th percentile for giftedness and the 35th percentile for disability. Silverman (1989) also supports these percentiles and argues that a twice-exceptional IQ score should be accepted at IQ110; this allows for the disability having a negative effect on the gifted score.

The school used psychometric instruments indicating IQ120+ or the 90th+ percentile to identify giftedness and specialist reports to recognise disability. Also used were performance test scores from the Australian Council for Educational research (ACER) tests e.g. Middle Years Ability Test (MYAT) and Australian General Ability Test (AGAT). A student with disability is is identified through clinical reports, inclusion in special education classes and/or having an Individual Education Plan (IEP). Historical information about previous achievements and other cognitive, achievement or disability data were accessed through student records and parent questionnaires. Figure 4.1 illustrates the distinguishing markers used to identify twice-exceptional students for this research.

![Figure 4.1](image_url) **Identification parameters of the twice-exceptional students**

Purposeful sampling was used for both the research site and the participants. Purposeful sampling for the research site was used as the school was unique at that time with the
identification of and provision for twice-exceptional students (Creswell, 2008). Purposeful sampling was also used to select twice-exceptional students from an identified twice-exceptional population in order to investigate phenomena about this population (Creswell, 2008). Using this sampling technique echoes techniques used by other researchers in the field (e.g. Assouline et al., 2010, 2009; Baum et al., 1988; Barber et al., 2011; Dole, 2001; Ferri et al., 1997; Reis et al., 1997, 2000; Vespi et al., 1992). Due to the research gap, the intention was to use extreme sampling principles in order to learn more about the phenomena and to help inform the middle ground (Creswell, 2008). Burns (2000) suggests that by looking at extreme cases, comparisons and phenomena can be more readily observed and themes identified to help guide the research. Although extreme case sampling principles were applied for the selection of case studies to present, the decision was also guided by the completeness of the data from participants and their parents and teachers.

At the time of data collection there were 14 identified twice-exceptional students across all school years from a cohort of around 200 recognised gifted students in a school of 1,200. Approval from the School Principal had been previously obtained by completing an ethics application for conducting research within the school. A printed letter inviting participation was sent home to the parents of the identified twice-exceptional students, the students themselves and their teachers. Eleven students, their parents and their teachers, completed and returned the consent forms and were included in the study. Ultimately three case study participants are presented in this research for two reasons: the completeness and spectrum of the data obtained were comprehensive for three participants (due to instruments being returned or quality and length of the interview data) and, that there was a call for deeper exploratory research from the field of gifted education which, in order to present the depth of the case studies, provision is only available for three of them. However, the data obtained from all of the participants will be used to inform research papers which will be put forward to publications. The descriptive data of the participants not included in this thesis are at Appendix B.

Data collection occurred during three stages of the final term in the school year. Reminders of meetings, interviews and classroom observations were emailed to students and their teachers. The interviews took place in a small private office in the ‘gifted and talented’ classroom. For classroom observations, the teachers consented to and
informed the class that the researcher was observing the teacher for a research study. Ethics approval had been obtained through Griffith University and procedures for recruitment of participants are outlined in detail in the ethics application (GU Ref No: EDN/24/11/HREC). Because the researcher was a former gifted and talented education teacher at the school, the researcher did not directly approach the participants so as not to affect subject participation. In addition, due to the researcher’s prior knowledge of the participants, the Principal Supervisor for this research engaged as a ‘critical friend’ for the researcher to help address possible bias. Participation in the research requirements included completing two questionnaires, an interview, questionnaires to parents and teachers, classroom observations, and access to school records. All participants completed all of the data collection Stages.

4.6. Data collection methods used in the case study design

This section outlines data collection methods in each stage of the case study design and the procedures used in the implementation of the data collection methods, including the reliability and validity of the instruments used. An explanation of how each data set addressed the Research Issues will be provided. Figure 4.2 illustrates the stages of the case study design and shows data collection methods and the processes of reflection that occurred throughout its implementation. There were three stages that were linear in their implementation and completed over a four month period. Quantitative questionnaires were followed by qualitative data collection which informed greater depth of exploration and understanding. In twice-exceptional research, this order of exploration (questionnaires followed by more in-depth qualitative data collection) has previously been carried out in studies investigating psychosocial aspects of children (for example, Barber et al., 2011; Reis et al., 1997; Dole, 2001) and is therefore utilised as a reference point. As shown in Figure 4.2 below, the data for each case study will be sourced from historical information, school records, semi-structured interviews and classroom observations.
The instruments, interviews and observations, although taken in three stages, each contributed towards the exploration of a variety of research aims. Table 4.1 shows which research aims were addressed by which data, and how that data were analysed.

Table 4.1 How research aims are addressed by data sources and analysis

<table>
<thead>
<tr>
<th>Research Aims</th>
<th>Instrument</th>
<th>Analysis Tools</th>
</tr>
</thead>
<tbody>
<tr>
<td>To measure academic self-concept in twice-exceptional students.</td>
<td>Semi-structured interview – one per student – 60 minutes. BASC-2* questionnaires. PH-2**</td>
<td>To characterise the participant looking for similarities and differences and using descriptive statistics and thematic analysis.</td>
</tr>
<tr>
<td>To elicit the perceptions of school experiences for twice-exceptional students.</td>
<td>BASIC-2 student form. BASIC-2 – teacher form. BASIC-2 – parent form. BASC-2 – 2 x classroom observations in perceived area of strength &amp; weakness.</td>
<td>Descriptive statistics to characterise the participant looking for similarities and differences. Thematic analysis of classroom observations.</td>
</tr>
<tr>
<td>To investigate how academic self-concept manifests in social interactions and behaviours in twice-exceptional students.</td>
<td>Semi-structured interview – one per student – 60 minutes. BASC-2 questionnaires.</td>
<td>Thematic analysis</td>
</tr>
<tr>
<td>To find the perceptions of school experiences for twice-exceptional students.</td>
<td>BASC-2 achievement history questionnaire with parents. School records – achievement history e.g. standardised tests and report grades.</td>
<td>Thematic content analysis. Notes to identify achievements</td>
</tr>
<tr>
<td>To measure academic self-concept in twice-exceptional students</td>
<td>PH2</td>
<td>Descriptive statistics to indicate themes.</td>
</tr>
<tr>
<td>Research Aims</td>
<td>Instrument</td>
<td>Analysis Tools</td>
</tr>
<tr>
<td>------------------------------------------------------------------------------</td>
<td>-------------------------------------------------</td>
<td>-----------------------------------------------------</td>
</tr>
<tr>
<td>To investigate the relationship between academic self-concept and school experiences.</td>
<td>Semi-structured interview with students – 60 minutes BASC-2 and PH2</td>
<td>Descriptive statistics to describe a trend Thematic analysis of interview transcript.</td>
</tr>
<tr>
<td>To investigate how academic self-concept manifests in behaviours in twice-exceptional students as a possible indication for identifying twice-exceptional students.</td>
<td>BASC-2 – student form. BASC-2 – teacher form. BASC-2 – parent form. BASC-2 – 2 x classroom observations in perceived area of strength &amp; weakness.</td>
<td>Descriptive statistics to indicate themes or describe a trend Thematic analysis of classroom observations.</td>
</tr>
</tbody>
</table>

*Behaviour Assessment System for Children- Second Edition  
** Piers Harris Children’s Self-Concept Scale, Second Edition

### 4.6.1. Data collection methods for Stage One

Two questionnaire protocols (psychometric instruments: PH2 and BASC-2) and school records were used in Stage One: Four questionnaires from the *Behavioural Assessment System for Children 2nd edition* (BASC-2), the *Piers- Harris Children’s Self-Concept Scale 2nd edition* questionnaire (PH-2), and specialist reports from school records. The parents completed two BASC-2 questionnaires, the teachers completed one BASC-2 questionnaire, the participant completed one BASC-2 questionnaire and one PH-2 questionnaire. All of the questionnaires, with the exception of the background information (completed by the parents) gave psychometric data in quantitative format, an example of which is in Appendix C. Each data collection method for Stage One will be considered in turn, with details provided about how they were developed, reliability and validity.

In Stage One there were four sources of data collection. The three participants completed the BASC-2 (TRS), totalling twelve teachers. The parents for each participant completed two forms from the BASC-2: the PRS and the SDH. Finally in Stage One, the school records were provided to the researcher with identification information from specialist reports to identify the disability and giftedness.

The BASC-2 and PH2 used in Stage One indicated the traits and perceptions of all participants to provide background information in order to enhance the qualitative data collection (Creswell, 2008). After identification and consent procedures, Stage One of the research was to provide information from the participants, their parents and teachers with the BASC-2. Additionally, the students completed the PH-2. The aim of the instrument data were to identify individual emergent themes in psychosocial
perceptions, self-concept and reported behaviour from the students’, teachers’ and parents’ perspectives (Burns, 2000). The school records for each participant were reviewed for information and reports relevant to giftedness, disability and school performance information. The psychometric instruments are now discussed in detail.

4.6.1.1. Quantitative questionnaires
This research aims to provide new understanding about the psychosocial influence on academic self-concept for twice-exceptional students and how this mediates academic performance. The quantitative, psychometric instruments, already established and used for research in the gifted education field (e.g. Assouline et al. 2009), provided information about psychosocial perceptions, self-concepts and behaviour. Self-concept was measured using the PH2. The BASC-2 was then implemented as part of an assessment battery that indicates behavioural functioning and self-perceptions of children. The data were sourced from the students’, teachers’ and parents’ perspectives. Table 4.2 shows the forms within the instruments that were used and by whom; those in italics were used in Stage Three.

<table>
<thead>
<tr>
<th>Table 4.2 BASC-2 and PH2 Instrument Forms</th>
</tr>
</thead>
<tbody>
<tr>
<td>Name of Form</td>
</tr>
<tr>
<td>PH2</td>
</tr>
<tr>
<td>BASC-2*: Self-Report of Personality</td>
</tr>
<tr>
<td>BASC-2: Parent Rating Scale (PRS)</td>
</tr>
<tr>
<td>BASC-2: Teacher Rating Scale (TRS)</td>
</tr>
<tr>
<td>BASC-2: Structured Developmental History (SDH)</td>
</tr>
<tr>
<td>BASC-2: Student Observation System (SOS)</td>
</tr>
</tbody>
</table>

*Behaviour Assessment System for Children- Second Edition

The PH-2 (Piers & Herzberg, 2002) is a self-report instrument for the assessment of self-concept in children and adolescents between the ages of seven and eighteen years old. The PH-2 has been used extensively by researchers in the gifted and twice-exceptional fields for general self-concept in twice-exceptional students (e.g. Assouline, Foley Nipcon & Whiteman, 2010; Olenchak, 1995; Tong & Yewchuk, 1996; Yong & McIntyre, 1991).
The PH-2 measures six subscale domains: Behavioural Adjustment, Intellectual/School Status, Physical Appearance/Attributes, Freedom from Anxiety, Popularity, and Happiness and Satisfaction. Although the Intellectual/School Status domain is most closely linked to academic self-concept, some of its items also appear in other domains and can be used to validate consistency of responses and give a wider view on the psychosocial influences on academic self-concept. Scores are reported as T scores where the mean is 50 and the standard deviation is 10. Scores of 40 or less are considered “Low”, and scores of 60 or more are considered “High”. A report is then generated to give the overall self-concept rating with subscores related to each domain.

The PH-2 can be administered to groups, and may also be used as a screening device in classrooms or clinics to generate further clinical investigation (Piers & Herzberg, 2002). All are ‘yes or no’ answers. The PH2 questionnaire was administered one-on-one in an office.

**Benefits of using PH-2.** A useful feature of this 2nd edition of the instrument is the updated, nationally representative normative data on over 1,300 students aged seven to eighteen years. Although it is a USA based normative, it does have parallels with Australia and is arguably representative as all socio-economic classes are included as well as a diversity of ethnicities to account for indigenous, native and migrant populations. In addition, Hattie (1992) reported a test-retest reliability study of the original Piers-Harris (which the PH-2 closely resembles) in Australia to investigate stability; and reported good internal consistency using the Cronbach Coefficient Alphas for all domains except one. The ‘happiness and satisfaction’ domain was somewhat low and this indicates that this scale may be more multidimensional; a notion that was supported by factor analysis (Piers et al., 2002).

Another benefit of the PH-2 is that there are now just 60 items on the scale which reduces the administration time. It can be administered to a group but was administered individually, and in one sitting. The PH-2 can also be scored with computer software although, for resource reasons, it was hand scored in this study.

**Reliability of the PH-2.** Reliability suggests that the measurement is accurate and, if repeated, the scores will be stable and similar. It also indicates how much error there is in the instrument (Burns, 2000). Reliability can be measured and defended through the test-retest method and the internal consistency method.
The reliability of a psychological test is determined by how well the test items assess the domain, or the internal consistency of the test (Piers et al., 2002). The internal consistency for the PH-2 was measured using the Cronbach’s alpha and the split half reliability test. All alphas reported for the entire standardisation sample demonstrate good internal consistency with ranges from .71 to .92, although in Hattie’s (1992) study in Australia, the ‘Happiness and Satisfaction’ domain was somewhat low at .65. Test retest reliability on students with learning disabilities demonstrated construct stability (Piers et al. 2002).

The PH-2 has been standardised against a normed population. To interpret the PH-2 results, raw scores have been converted into normalised T-scores and these represent the means and standard deviations of the standardised sample. These normalised T-scores enable the examiner to compare a student’s results with those in the standardised sample, thus enhancing the reliability of the results. This standardisation sample has been examined for group differences (or moderator variables) such as age, sex, and ethnicity. Sometimes separate norms are required for different groups. Fortunately, with the PH-2, age, sex, ethnicity and socioeconomic status had such small effects that the authors’ findings could not support stratification of the PH-2 norms (Piers et al., 2002). However, Piers et al. (2002) highlighted that, although a small effect size, cultural differences in response style must be taken into account as, in some cultures, saying positive things about oneself is frowned upon (and vice versa). For this research, all participants were Caucasian, middle class, white school boys with similar cultural backgrounds. The research participants were all boys because an all-boys school was the research site; the only school at that time in the geographical region to publicly recognise and give provision for twice-exceptional students. The affordances of using all boys from one school might be observed as there are less variables between each participant thus the comparisons between each participant are less ambiguous. Additionally, the findings of this research may contribute to gender specific school research. However, the constraints of using all boys may be that females in schools are not represented by this research.

**Validity of the PH-2.** Reliability is a necessary, but not a sufficient, condition for validity (Burns, 2000). Validity refers to the test’s ability to measure accurately those psychological characteristics that it purports to measure. Since the introduction of the
first Piers-Harris in the early 1960s, researchers have produced a large body of evidence supporting the measure’s validity which has continued with the PH-2 (e.g. in the gifted field authors include Assouline et al., 2010; Foley Nicpon et al., 2012; Lewis, Karnes & Knight, 1995; Olenchak, 1995) and in the disability field authors include Gans et al., 2003; McAndrew, 1999; Nielsen & Mortoff-Albert, 1989; Olenchak, 1995; O’Rourke, Cooper & Gray, 2012). Four aspects of validity will be addressed: content validity; construct validity; criterion validity; and, response validity.

Content validity addresses the question of whether the test’s item content adequately samples the behaviour that is being measured. In the original factor analysis (Piers, 1963) six factors became cluster scales which have been continued with the PH-2 and are now called sub-scales or domains.

Construct validity refers to how well the test performs in measuring a theoretical psychological characteristic. Multi-trait-multi-method studies (e.g. Alexopoulos & Foudoulaki, 2002; Marsh, 1990; Marx & Taylor, 1977; Shavelson & Bolus, 1982; Winne, Marx & Winne, 1978) support the construct validity of the Piers-Harris. The current analysis of the PH-2 (Piers et al., 2002) suggests the domain scales measure overlapping constructs because of shared item content among the scales. However, they argue that domain scales provide useful information about empirically separable aspects of self-concept.

Criterion validity indicates how well a test predicts an individual’s performance in other activities. The structural characteristics of the scale, which refers to the inter-correlations, and item composition of the PH-2 domains, demonstrate correlations in the moderate to high moderate ranges. The factor analyses (Piers & Hertzberg, 2002), which allows for measurement error, supports the use of the PH-2 domain scales to measure distinct aspects of self-concept.

When scoring the worksheet, four primary validity issues were considered: (a) exaggeration, (b) response bias, (c) random responding, and (d) moderator variables. The PH-2 Validity scales include the Inconsistent Responding (INC) index, which is designed to identify random response patterns, and the Response Bias (RES) index, which measures a participant’s tendency to respond ‘yes’ or ‘no’ irrespective of item content. These validity scores are calculated whilst scoring the worksheet. The self-
concept scores are then calculated and a profile plotted which indicates percentile rankings. The percentile ranking gives an interpretation of whether a student’s score is in the very low to very high range.

**Limitations.** The limitations of this instrument include response validity as the intent of the instrument is readily apparent (Piers & Herzberg, 2002) and may be subject to conscious or unconscious distortion. The authors recommend that a rapport is established with the students to enhance their inclination to respond in a manner that accurately reflects the way they feel. Also, although it has been widely used in research, it cannot by itself provide a comprehensive evaluation of a student’s self-concept (Piers et al., 2002). Other sources of data used in the case studies, including the BASC-2, interviews, classroom observations, prior history and school records will be integrated to validate and triangulate the results.

The PH-2 instrument is not recommended for use by students who have a specific disability that would prohibit them from completing it (Piers et al., 2002). As twice-exceptional students have learning disabilities, they were screened for supportive requirements to complete the instrument (e.g. the researcher ‘reading’ the questions or scribing). It is noteworthy that this instrument is not recommended for use by students who are overly hostile, unwilling, prone to exaggerations or other distortions, have low English-language verbal ability (due to second language, neurological impairment or other causes) or are uncooperative (Piers et al., 2002). Liaison with teachers and exploration of school records, in addition to observed willingness to complete the questionnaires, excluded all participants from these categories. One of the participants had dyslexia, a neurological impairment and, although the PH2 is not recommended for students with neurological impairment, the researcher provided a reader, as offered to and requested by the participant, to assist with completion of the instrument. The reader was one of the gifted education teachers at the school which may have had implications on the results of the instrument. However this was addressed by providing the participant with a separate instrument so that the answers could be completed privately and without the teacher seeing them.

**4.6.1.3. BASC-2**

The BASC-2 will be used as the second instrument in Stage One of the data collection. Constructed by Kamphaus and Reynolds (2004), the BASC-2 has been used by
researchers in the psychological, educational and medical fields (Assouline, Foley Nipcon & Doobay, 2009; Lee, 2009, Nickerson & Fishman, 2009; Nowlinski, Furlong, Rahban & Smith, 2007; Rogers, 2010, Wolfe-Christensen, Mullins, Stinnet, Carpentier & Fedele, 2009). It was designed to assist in diagnosis and classification of emotional and behavioural disorders of children at different stages of development. This instrument measures behavioural and emotional strengths and weaknesses.

Gifted education literature recognises the importance of understanding how the giftedness impacts the disability and, conversely, how the disability impacts the giftedness (e.g., Assouline et al., 2009). When gifted students have co-occurring social difficulties, it is critical to determine if socialisation issues reflect an internal disability or whether the social isolation is environmentally based (Assouline et al., 2009). Insights into the influences of environment and socialization were highlighted by the BASC-2 and provided insights for academic self-concept, especially when viewed through the sociocultural lens.

The BASC-2 is a multidimensional instrument because it has five components that allow researchers to obtain information from multiple sources and settings, as shown in Table 4.2. The five components include: a teacher rating scale (TRS), on which the teacher gathers descriptions of the child’s observable behaviour; a parent rating scale (PRS), on which the parent describes their child’s observable behaviour; a self-report scale (SRP), on which the child can indicate his emotional self-perceptions; a structured development history (SDH), which allows the researcher to gather information on the child’s background history; and, a student observational system (SOS) for recording and classifying directly observed classroom behaviours. The forms can be used together in research or individually. Assouline et al. (2009a & 2009b) used only the first three forms in twice-exceptional research. As this research is also exploring the school community-of-practice, the multiple data sources contributed to the deeper understanding of the academic self-concept phenomenon in twice-exceptional students.

[T]he BASC-2 is a multi-method, multi-dimensional system used to evaluate the behaviour and self-perception of children and young adults aged 2 through 25 years (Reynolds & Kamphaus, 2004, p.1).
The BASC-2 caters for different age ranges and each form ranges from 25 to 30 items. In the SRP, items vary across age groups to reflect developmental changes. The results using the BASC-2 instrument are dichotomous (one either has a disorder or not) and this instrument allows for assessment of the severity, subsyndromal pathology, and normal variation. The BASC-2 also gives an estimate of the latent ‘traits’ such as personality, behavioural problems, emotional disturbances, and positive traits such as adaptability. A trait can be identified as a characteristic feature of mind or character, and as it is perceived through the senses, are referred to as latent (Reynolds & Kamphaus, 2004.)

Assessing the behavioural and emotional functioning of children can be an effective tool in promoting student success (Kamphaus & Reynolds, 2011). The authors of the instrument believe that academic problems, along with problems associated with developing and maintaining positive relationships with others, can be the result of underlying behavioural and emotional deficits. The BASC-2 indicates school problems, inattention/ hyperactivity, personal adjustment and, emotional symptoms (e.g. anxiety, attitude to school and teacher, depression, locus of control, school maladjustment, sensation seeking, sense of inadequacy, social stress and somatization). It also indicated strengths and weaknesses on adaptive scales (e.g. interpersonal relationships, withdrawal, daily living activities, adaptability, functional communication, leadership, social skills and study skills). This data were useful in assessing academic self-concept.

**Benefits of using BASC-2.** One of the benefits of the BASC-2 is that it is established in the psychological and educational field and has been used as a benchmark to test other instruments (Nickerson & Fishman, 2009). Assouline et al. (2009) used the BASC-2 in a two-participant, case-study research for twice-exceptional school girls. Another benefit was that it was quick to administer; about ten minutes for each adult form and no more than 25 minutes for each student form. The benefit of a time economy when asking the parents and teachers, most of whom described them as ‘time-poor’, was helpful and supportive for them. The BASC-2 allows for assessment of a wide array of behaviours that represent both behavioural problems and strengths, including internalizing problems, externalizing problems, school problems, and adaptive skills (Kamphaus & Reynolds, 2011). Assouline et al. (2009) found these forms useful to
describe the nuances and subtleties most relevant in understanding the relationship between extreme giftedness and social difficulties.

**Reliability of the BASC-2.** One of the benefits of using this tool is that it has been shown to have good reliability and validity of assessment of psychological problems (Lack & Green, 2009). The results give a single total score on the report that is a reliable and accurate predictor of a broad range of behavioural, emotional and academic problems (Kamphaus & Reynolds, 2011). Also, whilst there are some true/false answers on the SRP, the majority of answers are given on a four point Likert scale. This improves the measurement of the extremes of the score range and, thus, has added to the reliability of the instrument (Kamphaus et al., 2011).

The test-retest reliability was carried out using the SRP and the convergent and discriminate validity was explored through multi-variant analysis (Nowlinski, Furlong, Rahban & Smith, 2007). This study was significant as it was the first independent evaluation of the test-retest reliability and construct validity of the BASC-2 SRP using both clinical and non-clinical groups of college students. The authors believed that the limited numbers of students with a psychological diagnosis in the clinical category was a limitation. The results indicated that the SRP had a strong temporal stability and the scales correlated highly with other researched, self-reported measures. Nowlinski et al. (2007) found that the BASC-2 SRP was a useful contribution towards assessing and measuring behaviour and personality.

**Validity of the BASC-2.** The construct validity of the academic self-concept SRP was assessed (Weis & Smenner, 2007) using children with disruptive behaviour. They found that factor analysis supported the three factor structure. The clinical maladjustment and personality adjustment composites were found to show adequate convergent and discriminative validity. Less evidence for the validity of school maladjustment was found. However, this study supports the overall validity of the SRP and that the scales measure a wider range of traits than the labels imply. The BASC-2’s depression scale has been shown to have very strong construct validity (Lack & Green, 2009) for the individual, parent and teacher forms.

Factor analyses proved construct validity for all of the age ranges (Nickerson & Fishman, 2009). Moreover, Nickerson et al. (2009) reported that moderate to high
correlations between the BASC-2 and other comparable behaviour rating scales which also support the validity of the BASC-2. As the BASC-2 has high correlations to the original academic self-concept, it provides a credible basis for generalising previous research (Reynolds & Kamphaus, 2004).

4.6.2. Data collection methods for Stage Two

The second Stage of the data collection method were semi-structured interviews conducted with the participants. As multiple sources of data are used for case studies the interview questions were devised in light of both the questionnaire data and the review of the literature. As discussed earlier, initially eleven sets of data were collected and three cases are presented for this research. Table 4.3 provides an overview of the semi-structured interviews including the purpose, the relevant questions, the types of data collected, and how the data addressed the Research Issues.

The interview questions covered four key areas and are shown in Table 4.3. First, general and current perceptions about school and academic performance were explored. Secondly are the ways in which the student perceives success or otherwise. Thirdly, how the school experiences impacted self-perceptions and academic motivation and achievement. Fourthly, how other people affect the self-perceptions and school experience. These four areas directly addressed the Research Issues through the exploration of self-perspective as the student participants told their stories and shared their experiences. A pilot study with small group interviews of twice-exceptional students (who did not participate in the main study), parents and teachers enabled the questions to be reviewed in advance of the research. Feedback from the groups ensured that the questions were clear, the meanings precise and that the questions would optimally explore the Research Issues.
### Table 4.3 Overview of Semi-structured Interviews Including: Purpose, Relevant Questions, Data Collected and How Data addressed Research Issues

<table>
<thead>
<tr>
<th>Purpose</th>
<th>Relevant questions</th>
<th>Data included</th>
<th>Research addressed</th>
<th>question addressed</th>
</tr>
</thead>
<tbody>
<tr>
<td>General and current perceptions about school and academic performance</td>
<td>Tell me how you feel about school and how well you feel you are doing?</td>
<td>Attitudes and beliefs to support questionnaire data about school, self-perceptions and academic self-concept</td>
<td>Two (social practices and contexts that influence the development of academic self-concept)</td>
<td></td>
</tr>
<tr>
<td>Ways in which the student perceives success or otherwise</td>
<td>What is it about success, or otherwise, that is valued by you?</td>
<td>Underling values and motivation for school and school work.</td>
<td>Both: social interactions and social practices and contexts.</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Is success important for you? In what areas and how so?</td>
<td>Perceptions of what is valued on a personal level and how this might translate to academic self-concept.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>History within school and how it impacted self-perceptions and academic motivation and achievement</td>
<td>What are your experiences in school since you started in Prep? Have they changed? How so?</td>
<td>Perceptions of lived experiences in practice.</td>
<td>Both: social interactions and social practices and contexts.</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Can you give me examples about what you feel have supported you, or otherwise, the most?</td>
<td>Perceptions of how school context values certain traits and how these are nurtured (or otherwise).</td>
<td></td>
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<td></td>
<td></td>
<td>Perceptions of social acceptance in the context of the school.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>How other people affect the self-perceptions and school experience.</td>
<td>Do you feel valued in school?</td>
<td>Perceptions of what is valued within the school organisation and context and how this translates into practice.</td>
<td>One: social interactions that influence academic self-concept</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Do relationships with other people in school influence the way you feel about school or your school work? How so?</td>
<td>Details of how relationships with parents, teachers and peers inform self-perception and academic self-concept.</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Creswell (2008) argues that the questions should be open-ended, not leading, not be too wordy, not phrased in the negative, and not use any jargon or slang. Flexibility and space to allow participants to express their story fully was essential for in-depth data collection. Where helpful, probes were used to elicit more information. Six questions were used with the first being an icebreaker and the remaining being core questions and are listed in Table 4.3.
The interviews were held in the school thus enabling the participants to create responses in their own socio-cultural setting of schooling (Neuman, 2000), thus supporting the research in the sociocultural framework. The questions were sensitive to gender, class and cultural contexts and the students were free to move around and be comfortable (particularly useful if the disability is, for example, ADHD). The interviews lasted between 30 and 60 minutes. At the close of the interview there was a reminder about confidentiality, clarifying questions, and the opportunity to review the transcript by the researcher.

4.7. **Data Analysis**

As the data were collected in three stages using different methods, a range of analytical tools were applied. In some instances, several methods of data analysis were applied to the same data set in order to “uncover the full meaning of the data” (Simons, Lathlean, & Squire, 2008, p. 20) and to comprehensibly address the Research Issues. Data analysis tools included: descriptive statistics, thematic content analysis (Braun & Clarke, 2006; Moen, 2006; Patton, 2002; Silverman, 2005), and inter-rater authenticity processes for categorization of data (Cohen et al., 2007; Gay, Mills & Airasian, 2006).

4.7.1. **Descriptive statistics**

The first analytic tool of descriptive statistics (Babbie, 2004) was applied to the data gathered from the questionnaire. Question response types included closed responses (for example ‘yes/no’ answers in the PH-2), rating responses using Likert-type scales (for example BASC-2 SRP), and open-ended short response capturing parents’ opinions on background history and information (BASC-2 structured developmental history, SDH, and classroom observations). Demographics of the participants were collated and summarised using BASC-2 SDH and school records. The responses to the questionnaires by the participants, their parents and teachers, and their school records, provided information about perceptions of school problems, internalizing problems, inattention/hyperactivity, personal adjustment, adaptive skills, behavioural symptoms, externalizing problems, and background history. The analysis of descriptive statistics provided some direction for the other phases of the research, such as informing the framing of interview questions, and preparing for the classroom observations.
Table 4.4 below summarises the types of analysis that have been used in the twice-exceptional field. The type of analysis varied depending on the number of participants; even the studies with the highest participation might be considered relatively low and this is due to the challenges with identifying and, thus, ‘finding’ twice-exceptional students. As this research is using descriptive statistics, the findings would not be able to make claims of statistical significance and is following the lead taken by Assouline et al. (2009) by adding to the corpus of literature on twice-exceptional and academic self-concept.

<table>
<thead>
<tr>
<th>Year</th>
<th>Number of participants</th>
<th>Author</th>
<th>Analysis</th>
</tr>
</thead>
<tbody>
<tr>
<td>2009</td>
<td>2</td>
<td>Assouline et al.</td>
<td>• Descriptive observations in note form.</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>• Case studies.</td>
</tr>
<tr>
<td>2010</td>
<td>75</td>
<td>Assouline et al.</td>
<td>• Descriptive observations reporting measures of central tendency.</td>
</tr>
<tr>
<td>1997</td>
<td>95</td>
<td>Ferri et al.</td>
<td>• Descriptive statistics using measures of discrepancy, variability and standard deviations.</td>
</tr>
<tr>
<td>2010</td>
<td>379</td>
<td>Rinn et al.</td>
<td>• Cluster analysis.</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>• MANOVA.</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>• Chi-squared analysis.</td>
</tr>
<tr>
<td>2011</td>
<td>360</td>
<td>Barber et al.</td>
<td>• Descriptive statistics.</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>• Average scores compared using ANOVAs.</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>• Contrast analysis.</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>• Hierarchical regression analysis.</td>
</tr>
<tr>
<td>2008</td>
<td>1055</td>
<td>Crim et al.</td>
<td>• Descriptive inferential statistics.</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>• ANOVAs.</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>• Multivariate analysis.</td>
</tr>
</tbody>
</table>

4.8. Thematic content analysis of descriptive statistics and text data

The second analytic tool that was applied to the data were thematic content analyses that has been utilised in the gifted field (e.g. Harris, Plucker, Rapp & Martinez, 2009;
Qualitative responses in the questionnaires, including descriptions, were clustered into groups and labelled with a key theme providing some indication of the perceptions of the parents, together with background information from school records. The identification of these themes was considered in light of the literature review, in particular, the perceptions and practice that inform academic self-concept. The emerging topics, unexpected patterns and themes (Patton, 2001), were further explored with analysis of the interview data. The themes identified by the literature review are BFLPE, significant others, environment, academic achievement, mastery experience, enjoyment, self-understanding, psychological centrality, and self-talk.

A coding paradigm similar to one used by Reis et al. (1997 & 2000) and devised by Strauss (1987) and Strauss & Corbin (1990) was used for the interview analyses. The coding paradigm used three levels of coding: open coding, axial coding, and selective coding. Open coding involved unrestricted coding of all data included in classroom observations and interviews. In open coding, data are analysed and coded. The codes are then verified and relationships determined among and between codes to form a coded category. After initial categories are determined, axial coding enables specific relationships among the categories that emerged in open coding and, ultimately, results in the conceptualization of one or more categories selected as the “core”. A core category accounts for most of the variation in a pattern of behaviour, and thus “the generation of theory occurs around a core category” (Strauss, 1987, p. 34). The sociocultural framework was the underpinning lens for the axial coding. In the final stage of coding, the selective coding, relationships among categories were examined to determine the saturation of categories in the identification of the core category (Strauss & Corbin, 1998). Burns (2000) recommends that a small number of themes, for example five, are identified by the researcher. The codes were then related to the themes in the literature. The codes were then inter-coder checked and verified by an independent researcher with an agreement level of 80%, and the remaining 20% was agreed after negotiation of meaning.
4.8.1. **Leximancer**

The Leximancer computer program (Smith & Humphries, 2006) was then used to further explore the thematic coding of the data. Leximancer was developed by Dr Smith at the University of Queensland and over the previous decade has had four software updates. Leximancer is an automated system for content analysis of text. The system claims to transform lexical co-occurrence information from natural language to semantic patterns in an unsupervised manner (Smith & Humphreys, 2006). Leximancer employs two stages of co-occurrence information extractions – semantic and relational – using a different algorithm for each stage. The algorithms used are statistical, but they employ nonlinear dynamics and machine learning which generates retrieval of episodic text records, using semantic representations of cue words (even when the cue words are not in the text records). The outcome is a generated concept map of emergent themes which may be manipulated by the researcher. Smith and Humphreys (2006) defend the face validity, stability, reproducibility, correlative validity, and functional validity of Leximancer.

4.8.2. **The threefold approach to uncover emergent themes**

The text data were loaded into the Leximancer program, and once a stable concept map had been generated, were inter-coder tested with an independent researcher. The emergent themes were then cross correlated with the initial text data coding and the themes identified in the literature. The final outcome was a threefold agreement between manual coding, Leximancer and the literature. Each case study displays the concept map generated by Leximancer and the three-fold emergent themes that were analysed.

An extract of the coding of an interview transcript is in Appendix F and illustrates how each segment of interview data were explored in relation to the theory, the convergence with the literature, and researcher notes and interpretations. The paragraph numbers are later counted as they pertain to each theme with the literature and theory for presentation in Chapter Five (Case Study Findings) in the analysis of the data for each case study.
4.8.3. Reliability and validity

The reliability and validity of this data are based on the assumption that if the study was repeated it would have similar outcomes. Reliability, in the field of research, is broadly described as the dependability, consistency, and/or repeatability of a project’s data collection, interpretation, and/or analysis (Creswell, 2009). Reliability is viewed very differently in qualitative research compared to quantitative research (Lincoln & Guba, 1985). In the quantitative domain, reliability is specifically characterised as the extent to which multiple researchers arrive at similar results when they engage in the same study using identical procedures. In these conditions, differences in results are described as measurement error. Therefore, from a quantitative perspective, reliability is specifically defined, sought, and measured, and it is accepted as an essential indicator of a study’s quality (along with measures of validity and generalisability).

In contrast, because of the paradigmatic and methodological diversity of approaches that comprise the research field, reliability has not been described with such uniformity in qualitative research (Creswell, 2009). Whereas many qualitative researchers describe parallel concepts such as credibility, dependability, conformability, and consistency as appropriate qualitative correlates to reliability, others avoid the purposeful quest for reliability altogether (Whittemore, Chase & Mandle, 2001). Those who overtly seek credibility and dependability often assert that such aims support the rigour of qualitative work and ensure that studies avoid “haphazard” subjectivity. Three of the commonly cited indicators of credibility and dependability are methodological coherence (the appropriate and thorough collection, analysis, and interpretation of data), researcher responsiveness (the early and ongoing verification of findings and analyses with study participants), and audit trails (a transparent description of all procedures and issues relative to the research project). Such strategies have been employed for this research study to demonstrate systematic attention to reliability-related issues. Additionally, critical friends (the academic supervisors for this research) were also used to ensure that the researcher’s previous work association with the school did not enter into the analysis.

An external audit of the thematic coding was carried out, enhancing the inter-coder reliability. In addition to this, intra-coder reliability was addressed using an audit trail. Member checking of the interview transcript was also used. The Student Observation
System (SOS), was used to make classroom observations and inter-rater checking was completed on 30% of the observations to strengthen confidence in reliability.

One of the issues to be addressed when interpreting the data is subjectivity. The researcher aimed to ensure that everything is recorded and not just what is perceived to be relevant. Researcher bias was likely to some extent however, judgments and subjectivity during the data collection and analysis were minimal and member checking (whereby the participant checks and agrees with the interview transcripts) also assisted in this process (Spiers Neumeister, 2004).

4.9. **Triangulation**

Triangulation can be used to indicate two or more methods that are used in a study to check and verify results. If the results from different methods are similar there is greater confidence in the study outcomes (Creswell, 2009). Triangulation is important in this study primarily as there are a low number of participants and the multiple methods of data collection provide increased credibility and validity of the findings, it is “a method of cross-checking data from multiple sources to search for regularities in the research data” (O’Donaghue & Punch, 2003, p. 78).

Triangulation was achieved using multiple data sources, statistical analysis, inter-rater agreements, intra-rater checks, audit trails and member checking. “Gathering multiple viewpoints on a phenomenon, or triangulation, enables greater accuracy of interpretation than any of the data sources considered individually” (Reis et al., 2000, p. 126). Researchers in the twice-exceptional field have used different data sources to triangulate their data in quantitative and qualitative research (e.g. Ferri et al., 1997; Assouline et al., 2009; Dole, 2001; Baum et al., 1988). In addition to the student, parent and teacher feedback using the BASC-2, other sources including the PH-2, school records, historical information, classroom observations and semi-structured interviews underpinned this aspect of the triangulation of the data.

In Stage two, member checking, intra-rater checking, an audit trail, and inter-rater agreements were used to check the data. Member checking verified the accuracy of the interview transcript through the most convenient and accessible means for the
participant and site; and similar to Dole (2001), this research used follow-up meetings at school and emails. The researcher was cognizant that participants’ verification of the script may have been compromised by unclear recollections of an event (e.g. due to trauma or a lag in time), or fear of retribution with some information. As there was a small number of participants, distortion of the story could be detrimental to the data. Participants and the final case studies were selected with awareness of the potential data distortions. Inter-rater agreements provided consensus with the thematic coding of the transcripts and classroom observations.

4.10. Addressing subjectivity and reflexivity

Researcher subjectivity is acknowledged and, given the qualitative nature of this research project, subjectivity and the interpretation of “truth” necessarily feature. Reflexivity is the process by which researchers come to understand how they are positioned in relation to the knowledge they are producing. Although it may be argued that, at one level, reflexivity denies the possibility of an entirely objective position in relation to research, it is essential to create awareness of the interpretation and presentation of the research (Creswell, 2009). As a reflexive researcher, the researcher’s presence and the effect on the research are acknowledged. The acknowledgement serves to empower the readers whilst “denying the supremacy” of the findings (Hammersley & Atkinson, 1995).

Purposeful attempts to demonstrate reliability can be counterintuitive to the work that emanates from the qualitative domain (e.g. Given, 2008). They point to the interpretive subjective nature of qualitative work as a defining hallmark of the field, one that can be undermined by rigid reliability concerns. At the heart of this position is the notion of reflexivity. Whereas quantitative researchers (and some qualitative researchers) attempt to minimise, indeed eliminate, researcher effects so as to maintain objectivity, most qualitative researchers embrace the notion of reflexivity: the idea that researchers’ backgrounds, interests, skills, and biases necessarily play unique roles in the framing of studies and in the collection, analysis, and interpretation of data. Researchers are seen as visible, biased integral players in the process. This depiction of "researcher as instrument" in the project flows naturally with the claim that the richness and meaningfulness of qualitative research is largely dependent on its creativity and originality. Rather than seeking to standardise interview/testing procedures so that a
detached, neutral researcher might gain the same results, the unique identities of both the researcher and the participants are transparently identified and purposefully centred. Repeatability, from this perspective, is neither desired nor possible.

In addition to reflexivity, and part of it, is the acknowledgment that research in different cultures, and the comparative study that often results, is rapidly assuming greater significance than at any other time (Dimmock, 2007). Interest in cross cultural research, identified over a decade ago, is indicative of macro-social trends, particularly the global economy and for policy makers (Lauder, 2000). There has been growing awareness of the need for cultural and contextual sensitivity when conducting research (Dimmock, 2007) and findings are culturally and contextually applicable and will not necessarily transfer between different education systems and different societies in both meaning and connotation. The research undertaken has been explored in the context of a middle-class, private school in Australia and findings are underpinned by this context.

The researcher comes from the position of professional practice in gifted education and personal associations with gifted and twice-exceptional children. Lincoln and Guba (1985) state that “ultimately, researchers will represent material in the frameworks and languages of their research concerns and in disciplinary terms” (p. 20). As a gifted education professional engaging with the data and constructing knowledge, the researcher may have an advantage (and possible bias) in accessing certain disciplinary knowledge. From a constructivist perspective, for Charmaz (2006) this is unavoidable because researchers construct theories ‘through our past and present involvement and interactions with people, perspectives, and research practices’ (p. 10). Therefore, this research seeks validity through the rigorous application of established instruments and methodologies used in the twice-exceptional field, triangulation and an extensive literature review.

4.11. Referencing of the data

The data are referenced in the findings and discussion of this thesis by using the following acronyms:
4.11.1. Quantitative instrument data

4.11.1.1. BASC-2
- The structured developmental history, completed by the participant’s parents in 2011 is referenced as (SDH, 2011).
- The teacher rating scale completed by the participant’s teacher in 2011 is referenced as (TRS, 2011). TRS-A or TRS – C is used depending on age of participant.
- The parent rating scale completed by the participant’s parents in 2011 is referenced as (PRS, 2011). The PRS-A or PRS-C is used depending on age of participant.
- The self-report of personality completed by the participant in 2011 is referenced as (SRP, 2011). SRP-A or SRP-C is used depending on age of participant.
- The student observation system completed by the researcher in the participant’s class is referenced as (SOS, 2011).

4.11.1.2. PH2
- The PH2 that was completed by the participant in 2011 is referenced as (PH2, 2011).

4.11.1.3. School records
- Data from the participant’s school records in 2011 is referenced as (school records, 2011).

4.11.1.4. Interview data
- Interview data are referenced with the participant’s name and the year (all interviews took place in 2011) the interview was recorded. The references for all three participant’s interview data are referenced as (Andrew, 2011; Ben, 2011; Chris, 2011).

4.12. Chapter summary

This Chapter outlines the research methodology for this study. The research design was outlined including the rationale for the choice of case studies that, in brief, was optimal
for exploring the Research Issues about how interactions and practices in the sociocultural paradigm inform academic self-concept. Research in the twice-exceptional field was used as a reference point to guide the methodological approach to shaping the research design. An overview of the research design was presented, followed by how the case study framework had consonance with socio-cultural theory. Detailed discussion covered the recruitment process for participants, the data collection methods used in each stage of the research, including how the data addressed the Research Issues. The data analysis was then presented followed by the considerations of issues of authenticity and trustworthiness of data collection methods and data analysis tools, as well as an outline of ethical considerations for the research. How triangulation was used was discussed and, finally, the subjectivity and reflexivity in this research was addressed.

The following Chapter, Chapter Five will detail the case study template and Research Issues, including the presentation of the disabilities diagnosed for the participants.
Chapter 5. Framing the case studies

‘Every individual matters. Every individual has a role to play. Every individual makes a difference’ (Goodall, 2000, p.138).

Data were collected from eleven participants as described in the previous Chapter, Chapter Four (Methodology), and from these eleven participants, three in-depth case studies for three participants are presented. Three case studies were used to enable in-depth exploration of phenomena to provide insights and nuances and depth of meaning (as recommended by Assouline et al., 2009). The most complete data sets for each participant were analysed and presented providing an overview of experiences by twice-exceptional students: one each enrolled in the primary, middle and senior school years. In some cases, the incompleteness of the instrument data or insufficient/lack of interview data were not considered to give the most comprehensive data. A participant from each stage of schooling (primary, middle, and high school) was used to give a sense of how, if at all, the school stage influences the academic self-concept. The data are explored with reference to the Research Issues and presented using the sociocultural theoretical framework, which was outlined in Chapter Three. This Chapter commences with the Research Issues and an explanation of the data framework, and then continues with the presentation of the case studies.

5.1. Case study template

A template drawing on Stake’s (1995) work informs the structure of each case study. In addition to an opening and closing vignette, each case study is divided into four parts. The first part provides the background of the participant, as ascertained in school records, the BASC-2 structured developmental history (SDH), and the BASC-2 classroom observations (SOS). The second part presents the data from the instruments and the interview. The third focuses on the development of the issues in order to understand the complexity of the selected case. The final, fourth part is a summary of the case study, providing assertions about the data analysed. A detailed case study structure is included in Appendix A. All quotations used in each case study to illustrate specifics were chosen as they were deemed as most appropriate examples. The quotations used are one example from the data for which, in many cases, other
quotations might have been used. As described in Chapter Four (Methodology), inter-rater agreements were employed with 80% agreement and 20% negotiated agreement (Denzin & Lincoln, 1994). Notably, some quotations used to demonstrate findings could have been used more than once, but the most suitable quotation was utilised to illustrate a point even if it was used more than once.

5.2. Setting the context Research Issues

The aims of the research are to:

- Measure academic self-concept and related perceptions of self in twice-exceptional students
- Explore school experiences for twice-exceptional students
- Explore the perceptions of significant others (parents, siblings, peers, and teachers) of twice-exceptional students
- Investigate academic achievement histories of twice-exceptional students
- Explore the relationship between academic self-concept and school experiences.

From these aims emerge the following Research Issues:

1. Explore some of the social interactions that influence the development of academic self-concept for twice-exceptional students.

2. Explore some of the social practices and contexts that influence the development of academic self-concept for twice-exceptional students.

The three case studies are each presented in the following three Chapters. The Research Issues are explored with three participants who are school students attending a boys’ school. Andrew is a senior school student, aged 16 and in Year 11. Ben is attending middle school, which is on the senior school campus. He is aged 13 and in Year 8. Finally, Chris, is aged 9 and in primary school (which is on a separate but adjacent campus) in Year 4. All boys are recognised by the school as being twice-exceptional. Recognition of twice-exceptionality by the school requires both a psychometric test that indicates a spike (or high score) in intelligence quotient (IQ) subscales and a medical diagnosis of a disability that might inhibit learning. All three Participants had
psychometric tests results with at least one sub-scale showing a score of IQ 120+. Andrew’s psychometric test scores of 120+ in the WISC III were in the subscales of ‘performance’ and ‘perceptual organisation’. Ben’s SB5 results showed 120+ psychometric test scores in all subscales except for ‘quantitative reasoning’ (which scored at IQ 119). Finally, Chris’ SB5 scores were in excess of IQ 120 with the exception of working memory (IQ 50). The disabilities recognised by the school for these three participants (known as learning disabilities in this study as they were recognised to potentially impair learning) were central auditory processing disorder, hearing impairment, and Asperger’s syndrome.

Whilst it is understood that there are many learning disabilities, including those listed under the three categories of twice-exceptional students as suggested above by Foley Nicpon et al. (2011), only the three learning disabilities, which were diagnosed for the research participants, will be discussed in more detail. To reiterate, the disabilities outlined here are considered, for the purpose of this research, to be learning disabilities as they have been deemed by the school to impair learning and categorised as such, however they do not fall strictly into the categories outlined by Foley Nicpon et al. (2011). The school administration required specialist reports in order to afford the educational adjustments (also known as disability adjustments) that were recommended by medical experts such as paediatricians or otologists. Each of the three participants have a neurosensory report detailing a central auditory processing disorder. Ben has a paediatrician report diagnosing ‘diminished hearing’, and Chris has a paediatrician report diagnosing Asperger’s syndrome. Asperger’s syndrome was a former diagnosis under DSM4 and, with DSM5, has been excluded. However the school still observes the findings of the paediatrician’s diagnosis and maintains that the participant is provided the support as recommended. Classroom adjustments were recommended by the otologists and paediatricians and had been implemented by the school. All participants, as a result of the reports, had adjustments under the learning support program.

5.3. Diminished hearing

Students who are deaf or have diminished hearing are more likely to be in mainstream classrooms these days with their hearing peers due to earlier screening, treatment (for example cochlear implants) and technology [for example, amplification systems in the classroom] (Berndsen & Luckner, 2012). Additionally, due to disability legislation from both Federal and state governments in Australia, students with learning disabilities
can be educated in a setting most like that of typical peers in which they can succeed when provided with the required support and services. The benefits for these students include being able to remain with their families and exposure to the mainstream curriculum (Eriks-Brophy, Duriex-Smith, Olds, Fitzpatrick Duquette, & Whittingham, 2006). By living, learning, and socialising in settings with hearing people, they are more prepared to live and work in the community after completing formal education (Berndsen & Luckner, 2012). Additionally, the hearing peers are exposed to students with diminished hearing and learn to accept that hearing disability is a form of diversity rather than difference (Reed, Antia, & Kreimeyer, 2008).

Potential barriers to diminished hearing and deafness include the resistance by teachers due to their insufficient professional learning (Reed et al., 2008), the classroom environments, and the communication delays. Classroom environments are challenging for these students if the teachers maintain a brisk pace of discussions and instructions (Good & Brophy, 2007). Many people with hearing loss, ranging from mild to profound, experience delays in their language development and gaps in consequential knowledge (Stewart & Kluwin, 2001). Therefore, such students may experience isolation and frustration. This isolation results from communication skills, attitudes, and unfamiliarity with deafness to be a major barrier for students with reduced hearing or deafness (Stinson & Lui, 1999). If their hearing peers cannot communicate with them, it leads to the sense of isolation mentioned above.

Adjustments that are recommended in the literature have been summed up by Berndsen and Luckner (2012) and can include environmental and educational adjustments. Access to computers and technology, appropriate seating positions and general class noise reduction can accommodate students with hearing loss and deafness. Scaffolding to support the disability, including pre-teaching, post-teaching and teaching-team communication is also deemed to be important. Many students may require adjustments with their exams. An example that can be made is to turn essay questions into multiple choice questions, which can be more easily answered by students who are deaf or hearing impaired since their speech and writing skills often are delayed (Cawthon, 2006). There are many adjustments that can be made by educating the hearing impaired students’ hearing peers as well as the teachers. Examples include: making sure that the student has an appropriate place to sit and that the interpreter (if required) can sit in a place where they are easily seen; that the teacher provides information to the cohort about diminished hearing and deafness so that the hearing students become familiar
with diversity, and are not fearful of or critical of students with this disability (Stinson & Lui 1999); teachers have strategies in place to ensure that students with diminished hearing are focused on them (Stinson & Shirin, 1999).

If students with reduced hearing or those who are deaf are not identified early and provided with adjustments to help them in the mainstream classrooms there can be negative consequences (Cawthon, 2006), the most significant of which is that the students will likely experience some educational delays when compared to their hearing peers. For example, most deaf or hearing impaired students will be behind in their reading skills when compared with their hearing peers. Their writing skills are likely to suffer as well (Karchmer, 2010). Another consequence is that they are less likely to participate in class, such as in discussions and adjustments, including the use of an interpreter, can be supportive. Another barrier may be that these students are reluctant to contribute in class due to speech differences (Stinson & Shirin, 1999).

5.4. Central auditory processing disorder

The process of transforming an acoustic signal at the neural level, culminating in auditory perception, is known as central auditory processing (Musiek & Chermak, 2007). Central Auditory Processing Disorder results in difficulties with: understanding when listening, expressing clearly using speech, reading, remembering instruction, understanding spoken messages, and maintaining focused attention (Ahmed, Musiek & Chermak, 2008). As many as 10% of children have some degree of central auditory processing disorder (Medical Research Council Institute of Hearing research, UK, 2004) and, central auditory processing disorder has become more widely recognised and diagnosed in children (Jerger & Musiek, 2000). Central auditory processing disorder tends to have comorbid conditions with it most of the time. Generally, the disabilities that accompany central auditory processing disorder are Attention Deficit Hyperactivity Disorder, Dyslexia, language impairment, and other learning disabilities (Bamiou, 2001).

Potential barriers include the increased psychosocial difficulties for children with central auditory processing disorder compared with those without central auditory processing disorder (Kreisman, John, Andrew, Kreisman, Hall, & Crandell, 2012). In addition, the students with central auditory processing disorder have difficulties with auditory discrimination, recognition, temporality, and competing noises. Internationally,
the commonly reported symptom of central auditory processing disorder is the difficulty to hear in the presence of background noise which to some degree is prevalent in most modern classrooms (Ryan & Logue-Kennedy, 2013) and places a student with central auditory processing disorder under significant stress when managing auditory information. Students may present as being easily distracted or unfocused which can lead to distress, avoidance behaviours, under-achievement, and psychosocial difficulties (Jerger et al., 2000; Kresiman et al., 2012).

Adjustments that are recommended in the literature include the training of teachers to facilitate scaffolding for students with central auditory processing disorder. For the student, adjustments in the classroom might include being placed front and centre to the teacher to eliminate as much background noise as possible, in addition to opportunities to go to a quiet space when required (Ryan & Logue-Kennedy, 2013). Of course, there are further adjustments, some fairly simple and some requiring a bit more effort on the part of the teacher or student. One accommodation that has been suggested to be extremely effective is academic tutoring or special instruction. While this might be seen as singling out students with central auditory processing disorder, it serves as an excellent supplement to what they learn in the mainstream class, helping them learn more than they would without the individualised instruction. Another, simpler strategy to help students with central auditory processing disorder be as successful as possible in school is to provide visual information along with the auditory information being discussed. For instance, a teacher could create a PowerPoint presentation of the lecture she is going to give. Then she either can put it up for the class to copy down or also give copies of it to students so they only have to make notes on what already is there. The latter would be more effective for students with central auditory processing disorder. Using this strategy, they can listen to the teacher and make brief notes that they can study later (Guidelines for Audiology, 2014).

Students with central auditory processing disorder who are not diagnosed early in life have many consequences in their educational career. Some of these consequences include reduced auditory memory and difficulty in selective attention. Auditory memory refers to the ability to remember what a person has heard. For children with central auditory processing disorder, the consequence of reduced auditory memory results in them struggling to remember what they hear in the classroom. They will work hard to follow instructions, remember homework assignments, etc. Unless the teacher writes down instructions for them after getting their full attention, it is very likely that
these students with central auditory processing disorder will miss a lot of important information in school because they have trouble retaining information that they hear. Another consequence if children are not diagnosed with central auditory processing disorder early on is struggling with selective attention. Selective attention means responding to one thing that is heard when there are multiple things that the children hear. For example, selective attention would be required for a student to follow a teacher’s instructions when other students are making noise; the student must select the one voice out of the others. This is extremely challenging for students with central auditory processing disorder because they do have so much difficulty focusing on a single voice among multiple noises. However, this can be compensated for by the teacher getting the student’s attention before giving any instructions or other important information. This can be done by touching the student’s shoulder or saying her/his name (Musiek & Chermak, 2007). These are the two most prominent challenges faced by children with central auditory processing disorder.¹

5.5. Asperger’s syndrome

There are three pervasive developmental disorders that fall within ASD spectrum: autistic disorder (ASD), Asperger syndrome, and pervasive developmental disorder, not otherwise specified (PDD_NOS) (Assouline et al., 2009). Asperger’s syndrome differs from ASD because impairment is required in social interactions with restricted patterns of behaviour only, and there is no significant delay in language, cognitive ability, adaptive functioning, self-help skills, or interest in the environment (Foley Nicpon et al., 2012).

Characteristics of ASD were described by Kanner (1943), and social impairment, which was a core feature of the disorder, remains central to the identification of the disability in the DSM5. Although many of Kanner’s research participants had cognitive delays, these were never and still are not one of the defining characteristics of ASD. Nevertheless, ASD became associated with mental retardation (Assouline et al., 2009).

¹ It is noted by the author that central auditory processing disorder is at around 2% of the male population and given the size of the school of 1000 students this appears to be a remarkable amount in one population. The researcher used the reports being used by the school, and was not conducting assessment or critically analysing the specialist reports as that was beyond the scope of this research. Additionally, the recommendations made for each participant concerning the significance of the impairment in the specialist report underpinned the adjustments in the classroom, and all were considered of sufficient significance to require similar adjustments.
and those without cognitive delays were diagnosed with high-functioning ASD. In the gifted field, intellectual high-functioning can imply that IQ is at least one standard deviation above average (Assouline et al., 2009). Concurrent with Kanner’s work (1943), Asperger (1944) described students with behavioural characteristics similar to those with ASD but with average, or higher, intellectual ability. Three of the four cases presented by Asperger (1944) indicated intellectual IQs in the gifted range although the construct of giftedness was not addressed (Klin, Volkmar, & Sparrow, 2000). The main differences between ASD spectrum and Asperger’s syndrome is not the cognitive ability but the age at which impairments are first recognised (Assouline et al., 2009) and deficits in communication are associated with ASD but not with Asperger’s syndrome. ASD spectrum, including Asperger’s syndrome, has been observed to co-occur with giftedness (Gallagher & Gallagher, 2002; Neihart, 2000).

Neihart (2000) argued that Asperger’s syndrome is a pervasive developmental disorder characterised by deficits in social communication and repetitive patterns of behaviours. It can be observed in some gifted children but may be misdiagnosed or missed as the behaviours presented by a student can be attributed to giftedness or disability and, therefore, such students do not meet formal diagnostic criteria for ASD (Neihart, 2000). Characteristics include: little or no empathy, monotonous speech patterns, highly idiosyncratic and intense interests, social isolation due to limited social skills, and inflexible thoughts or habits (Atwood, 1998; Neihart, 2000). Unlike children with autism, children with Asperger’s syndrome do not have delayed speech, and the onset of difficulties are later in life, and they are more likely to also experience motor difficulties (Atwood, 1998; Klin, 1994). Children with Asperger’s syndrome do learn to speak before age five, do not remain aloof or withdrawn, and do show interest in other people as they get older; they can show dramatic improvement as they mature and be well-adapted and highly successful adults (Neihart, 2000). Eye contact can be unusual with staring into space or through another person, and children with Asperger’s syndrome are often considered to be unusual and different (Atwood, 1998; Grandin, 2008).

Within the Asperger’s syndrome subcategory there is variation as some individuals can perform poorly in school whereas others excel. Some individuals have behaviour problems whereas others do not, and some demonstrate unsociable habits such as aggression or inappropriate touching (Neihart, 2000). One of the primary distinguishing characteristics between gifted students and gifted students with Asperger’s syndrome is that the latter tend to have low metacognition (theory of mind): the ability to be aware
of oneself whilst taking another’s perspective at the same time. Children with Asperger’s syndrome have difficulty understanding the perspective of others, which makes their social adjustment challenging (Schopler & Mesibov, 1992). Table 5.1 is a synopsis by Neihart (2000) of how gifted students compare to gifted students with Asperger’s syndrome and some of the differences can be blurred or misinterpreted to inform missed diagnosis or misdiagnosis (Assouline et al., 2009; Neihart, 2000). Twice-exceptional students with Asperger’s syndrome can be identified with only the disability because of shared characteristics with the population with Asperger’s syndrome alone. This highlights the problem that if giftedness or disability is undetected, students can experience frustration with resulting behavioural and self-concept issues which become a major hurdle to successful schooling (Barton & Starnes, 1989).

Table 5.1 How gifted students compare to gifted students with Asperger’s syndrome, from Neihart (2000).

<table>
<thead>
<tr>
<th>Seven characteristics</th>
<th>differentiating characteristics</th>
<th>Ordinary gifted</th>
<th>Gifted syndrome with Asperger’s syndrome</th>
</tr>
</thead>
<tbody>
<tr>
<td>Speech patterns</td>
<td>Normal but may have advanced language skills</td>
<td>Pedantic, seamless speech</td>
<td></td>
</tr>
<tr>
<td>Response to routines</td>
<td>Passively resist but will go along</td>
<td>Very low tolerance for change, agitation, aggression</td>
<td></td>
</tr>
<tr>
<td>Awareness of differences</td>
<td>Know they are different</td>
<td>Poor awareness of how others see them</td>
<td></td>
</tr>
<tr>
<td>Disturbance of attention</td>
<td>Disturbance usually external</td>
<td>Disturbance is internal</td>
<td></td>
</tr>
<tr>
<td>Humour</td>
<td>Engages in socially reciprocal humour</td>
<td>Can do word play but does not understand humour that requires social reciprocity</td>
<td></td>
</tr>
<tr>
<td>Motor clumsiness</td>
<td>Not characteristic of most gifted children</td>
<td>Manifests in 50-90% Asperger’s syndrome</td>
<td></td>
</tr>
<tr>
<td>Inappropriate Affect</td>
<td>Not characteristic</td>
<td>Nearly always observed</td>
<td></td>
</tr>
<tr>
<td>Insight</td>
<td>Usually good</td>
<td>Usually absent</td>
<td></td>
</tr>
<tr>
<td>Stereotype</td>
<td>Not a characteristic</td>
<td>May be present</td>
<td></td>
</tr>
</tbody>
</table>

Twice-exceptional students with Asperger’s syndrome are susceptible to missed diagnosis or misdiagnosis (Assouline et al., 2009) as the traits listed in Table 5.1 are prone to misinterpretation between the two. Muddying the waters even further, additional shared traits include intense focus, visual thinking, friendships and negative behaviours (Cash, 1999), introversion and shyness (Jackson & Moyle, 2009), excellent memory, verbal precocity, sensory hypersensitivity, range of abilities and asynchronous...
development (Attwood, 2007; Lovecky, 2004; Neihart, 2000), perfectionism, creativity, frustration, over-represented in school drop-outs (Jensen, 2008); disruptive, self-criticism, anxiety and stress (Peterson, 2009). Other similarities include the sensory sensitivities (Gere, Capps, Mitchell, Grubbs, & Dunn, 2008; Grandin, 2008); and social emotional needs (Assouline, Foley Nicpon & Doobay, 2009).

The distinguishing traits are metacognition (Attwood, 2007; Neihart, 2000) and a characteristic of Asperger’s syndrome is that metacognition is a clear weakness. Metacognition is viewed as highly developed in gifted students (Shore, 2000) whilst developmentally delayed in Asperger’s syndrome (Baron-Cohen, 2002). It includes awareness of ones’ own mental state and that of others. Whilst students with Asperger’s syndrome can eventually use compensation techniques to compensate for lack of intuitive awareness of others. Secondly, attention is another distinguishing trait. As a generalization gifted children pay closer attention, stay focused and remember longer than those with Asperger’s syndrome (Jensen, 2007). However in relation to their special interests, Asperger students have no trouble paying attention an remaining focused, and it is only outside of their area of special interest that they have trouble paying attention, have interrelational difficulties and difficulty with encoding learning in memory (Attwood, 2007). The third area is stereotypy that refers to persistent, repetitive actions such as hand flapping and rocking (Assouline et al., 2008). These self-stimulatory behaviours may serve a neurological function (Norris & Dixon, 2011) but may be socially inappropriate.

5.6. Chapter summary

This Chapter outlines the participants for each case study. Each is recognised as gifted with a disability that can impair learning by their school. For the purposes of this study, each participant is acknowledged as twice-exceptional. The following Chapter, Chapter Six, will detail the data analysis and findings the first case study to be presented; Andrew is a Year 11 school student who is in the senior school and in his penultimate year of school education.
"You feel so awesome. That is what happened with one of my geography tests – I wasn’t sure if I’d done good but I was fairly confident and when I saw I got an ‘A’ I was, inside, so invincible because I had done so well." (Andrew, 2011)

6.1. Defining the case—Andrew

Andrew is a Year 11 student at a boys’ private school in Queensland. The school recognises that he both is gifted with a disability; Andrew is engaged in the gifted program and has adjustments under the learning support program. In accordance with the definition of twice-exceptionality that was presented in the Literature Review, an IQ test showing results in the gifted range, together with a specialist report showing that Andrew has central auditory processing disorder, have been the defining reports for his identification by the school. To reiterate, although these two reports may have limitations, they are the reports used and, as such, the school has identified him as twice-exceptional (thus his eligibility for this research). Andrew’s teachers are aware of his disability and adjustments (also known as disability adjustments) are made for him in the classroom. Andrew’s family presents as a middle-class, white family with professional parents who report close family ties. Andrew is the middle child and lives with his parents and younger sister. The older brother is studying at university overseas. The parents are medical professionals; his father a surgeon and his mother a psychologist.

6.1.1. Parents Structured Developmental History (SDH)

The SDH was completed by Andrew’s mother in consultation with his father. The family activities together are wide-ranging and social, and include meals, movies, conversations, family visits, trips, sports, games and watching TV together. The extended family are also included at times such as birthdays and religious holidays. Andrew’s parents report that they enjoy his caring nature and his sense of fun and laughter. They find that the most difficult aspect to Andrew’s personality is his emotional responses which obscure his ability to be rational. The parental expectations for all of their children are that they have a university education and are happy adults. His parents are particularly concerned that Andrew is equipped to handle situations without ‘going into the depths of despair’ (SDH, 2011). The mother claims to be in
charge of discipline at home with support from the father. Both parents agree on discipline techniques, which include withdrawal of privileges. However, his mother notes that this can have little effect with Andrew as he informs them that he ‘does not care and is defeatist’ (SDH, 2011). This technique can also bring out aggression in Andrew which is directed at his mother or sister.

Andrew’s development through childhood has been in the normal range with some delay in motor skills development. Andrew is left handed in all things but has learned to do ball sports using his right hand also. Andrew had ear infections as a child and has been diagnosed with central auditory processing disorder. Although central auditory processing disorder is not in the DSM5, and does not attract any funding for a school, it is used by the school to identify disability. There are no other neurological or medical issues identified.

Andrew’s mother reports that he has a friendly disposition with playmates and friends and often takes the role of leader. He is not exposed to any drugs or tobacco but does drink some wine with the family meal. A keen basketball player, Andrew plays at representative school, club and state levels. He also enjoys music. With regard to his temperament, his mother reports through the SDH that he has a short attention span, is over-reactive, and fearful and cannot calm down quickly. His mother states that anger can be flared, “by the smallest of things, like his sister using his laptop”.

Andrew’s educational history shows that he has changed school once to provide better opportunities and has been, since pre-school, without problems in school. Andrew has always disliked going to school but this seems to be improving in Year 11. He has had difficulties learning to read and is a slow reader. The parental concerns about the current school are that he sometimes is compared to his older brother who was very successful in both the academic and sporting arenas in the school.

6.1.2. School records
The school records provided the researcher with information concerning Andrew’s school performance history and two specialist reports: the WISC III, indicating giftedness, and the neurosensory report diagnosing central auditory processing disorder
The WISC III results presented in Table 5.1 indicate a range of results in the sub-scales. As detailed in Chapter Two (Literature Review), the average IQ has been normed around 100 and IQs considered to be in the gifted range for this research are those over 120 or above the 90th percentile in the normed population (Gagné, 2007). Different psychometric assessments, for example the WISC III, WISC IV and SB5, have been noted to provide differing scores in the subscales; therefore percentiles have been used to represent the results in the psychometric assessment tests, as participants were assessed using different instruments and the percentiles have, for the purposes of this research, been used to present a relative standard for the normed population. Table 5.1 indicates that Andrew has a gifted IQ score in two subscales: performance and perceptual organisation. Freedom from distractibility is also very high and is reinforced by the BASC-2 results that indicate he does not perceive ‘attention problems’. However, contrary to this, his parents and teachers believe he has some attention problems.

Table 6.1  WISC III - aged 7 years old, 9 years prior to study

<table>
<thead>
<tr>
<th>Scale or Factor</th>
<th>IQ</th>
<th>Likely percentile rank</th>
</tr>
</thead>
<tbody>
<tr>
<td>Verbal IQ</td>
<td>98</td>
<td>45</td>
</tr>
<tr>
<td>Performance IQ</td>
<td>126</td>
<td>96</td>
</tr>
<tr>
<td>Verbal comprehension</td>
<td>92</td>
<td>30</td>
</tr>
<tr>
<td>Freedom from distractibility</td>
<td>118</td>
<td>88</td>
</tr>
<tr>
<td>Processing speed</td>
<td>111</td>
<td>77</td>
</tr>
<tr>
<td>Full scale IQ</td>
<td>109</td>
<td>73</td>
</tr>
</tbody>
</table>

At age 8 Andrew was referred to the neurosensory unit for possible auditory processing dysfunction and was diagnosed with central auditory processing disorder. The consequence of central auditory processing disorder is reflected in the relatively low results in the verbal aspects of the WISC III. The central auditory processing disorder report stated that the results have implications with respect to educational performance.

Although the WISC III (with norms dated in 1991) has been superseded by the WISC IV, it has been used in this research as this instrument is being used by the school to identify giftedness for Andrew. Individual IQ testing is beyond the scope of this thesis and as discussed earlier, and the author understands that there are limitations associated with using the school’s identification parameters for twice-exceptionality: including the consideration that the parameters for scoring will have changed due to the ‘Flynn effect’ (Flynn, 2009), which is the sustained increase in fluid and crystallised intelligence test scores over the decades. Andrew’s WISC III, although now out-of-date, was undertaken prior to the release of the WISC IV and, at that time, Andrew did perform in the gifted range in a sub-scale and, more relevantly for this research, is accepted by the school as an indicator of giftedness.

2
and verbal development. Classroom adjustments were recommended by the otologist and have been implemented by the school.

Andrew performed in the below average range for verbal and verbal comprehension scales and this is indicative of central auditory processing disorder which may have hindered his acquisition of language and his ability to process the instructions during the WISC III assessment. Even minor problems with speech, hearing or vision can lead to learning disorders (Reynolds et al., 2004). The range between the high and low scores may be the cause of learning tension as Andrew strives to perform and achieve. The WISC III assessor surmised in the report that the variance between the scores may be frustrating and anxiety provoking for Andrew and went on to say that, “it is likely that Andrew is struggling with understanding and following through with verbal instructions and that these difficulties are contributing to emotional and behavioural problems occurring in the home.”

6.2. Presentation of the data collected

As detailed in Chapter Four (Methodology), two instruments were used for this research. The first was the BASC-2 which has four forms that are analysed: the SOS classroom observation form completed by the researcher in two classes, the SRP-A completed by the participant, the PRS-A completed by the parent, and the TRS-A completed by two teachers. The researcher noted that for Andrew (and all participants), the subject preferences aligned with the teacher preferences (i.e. the favourite subject was taught by the favourite teacher and vice versa.) The second instrument analysed is the Piers-Harris Self-Concept Scale, 2nd Edition (PH2) which was completed only by Andrew and reflects different aspects of his self-concept.

6.2.1. Instrument data

6.2.1.1. Classroom Observations.

Classroom observations using the SOS were conducted in four of Andrew’s classes. Two instruments were completed in geography, his favourite subject/teacher and two in maths, his least favourite subject/teacher. The aim was to assess if there was any difference in behaviour between the two different subjects and teachers. A summary of the SOS is in Table 6.2 and a detailed analysis of the SOS can be found at Appendix D.
On the whole, adaptive behaviours were observed in both classes. Whether the lesson was teacher, board work, or individual work centred, Andrew sat at the front of the class and appeared to remain focused. The observations recorded indicated that subtle maladaptive behaviour included 12 tallies of subtle movement including knee-jigging and nail-biting. On one occasion, Andrew held his head in his hands in the least favourite, maths class. The overarching observations were that Andrew had a high standard of conforming behaviour and appeared to be a focused, hard-working student, thus reinforcing the perceptions reported by both teachers. Additional observations were that Andrew sat at the front of the class to cater for his central auditory processing disorder and that he never asked questions, even when others were asking. In interview he commented that he prefers to keep quiet and work things out alone rather than draw attention to his perceived weaknesses (Andrew, 2011).

<table>
<thead>
<tr>
<th>SOS Observation</th>
<th>Favourite Teacher</th>
<th>Least Favourite Teacher</th>
</tr>
</thead>
<tbody>
<tr>
<td>Positive behaviours</td>
<td>Majority</td>
<td>Majority</td>
</tr>
<tr>
<td>Reaction to peer distractions</td>
<td>Nil</td>
<td>Nil</td>
</tr>
<tr>
<td>Remaining seated</td>
<td>Always</td>
<td>Always</td>
</tr>
<tr>
<td>Appearing focused</td>
<td>Yes – even when fidgeting the countenance appeared focused</td>
<td>Yes – even when fidgeting the countenance appeared focused – except when held head in hands for 11 seconds</td>
</tr>
<tr>
<td>Fidgeting – nail biting, knee bouncing</td>
<td>20% of the time</td>
<td>50% of the time</td>
</tr>
<tr>
<td>Head in hands</td>
<td>never</td>
<td>Once for 11 seconds after prolonged teacher talk</td>
</tr>
<tr>
<td>Seating position</td>
<td>Alone – front of class</td>
<td>Alone – front of class</td>
</tr>
<tr>
<td>Overall impression</td>
<td>Similar behaviour – good behaviour</td>
<td>Similar behaviour – good behaviour</td>
</tr>
</tbody>
</table>

6.2.1.2. **BASC-2 – instrument results completed by participant, parents and teachers**

All of the questionnaires presented in this section of the Chapter gave psychometric data about psychosocial perceptions in quantitative format from the participants’, teachers’ and parents’ perspectives. Table 6.3 offers a summary of the results of each BASC-2 instrument completed. A more detailed breakdown of Table 6.3 can be found in Appendix E.
The data in Table 6.3 indicate that Andrew perceives himself to be in the clinical ranges for ‘anxiety’ and ‘hyperactivity’. It is only his favourite subject teacher who agrees with this range in the subscale of ‘hyperactivity’. His parents and least favourite subject teacher assess him to be in the normal range for the hyperactivity subscale. He considers himself to be in the at-risk range in ‘sense of inadequacy’, ‘atypicality’ and ‘somatization’. Both of his teachers agree with the at-risk range for ‘atypicality’. For ‘anxiety’, both teachers and parents agreed with Andrew that he was in the clinical range.

Table 6.3 BASC-2 summary of results

<table>
<thead>
<tr>
<th>Scales and subscales</th>
<th>SRP-A</th>
<th>PRS-A</th>
<th>TRS-A least favourite</th>
<th>TRS-A favourite</th>
</tr>
</thead>
<tbody>
<tr>
<td>Attitude to school</td>
<td>46</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Attitude to teachers</td>
<td>10</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Sensation seeking</td>
<td>46</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Attention problems</td>
<td></td>
<td>61</td>
<td>84</td>
<td></td>
</tr>
<tr>
<td>Learning problems</td>
<td></td>
<td>65</td>
<td>93</td>
<td></td>
</tr>
<tr>
<td>SCHOOL PROBLEM COMPOSITE</td>
<td>26</td>
<td>62</td>
<td>93</td>
<td></td>
</tr>
<tr>
<td>Atypicality</td>
<td>86</td>
<td>87</td>
<td>87</td>
<td></td>
</tr>
<tr>
<td>Withdrawal</td>
<td></td>
<td>91</td>
<td>68</td>
<td></td>
</tr>
<tr>
<td>Locus of control</td>
<td>73</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Social stress</td>
<td>67</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Anxiety</td>
<td>99</td>
<td>85</td>
<td>99</td>
<td>99</td>
</tr>
<tr>
<td>Depression</td>
<td>62</td>
<td>83</td>
<td>88</td>
<td>85</td>
</tr>
<tr>
<td>Sense of inadequacy</td>
<td>89</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Somatization</td>
<td>88</td>
<td>95</td>
<td>21</td>
<td>23</td>
</tr>
<tr>
<td>INT PROBLEM COMPOSITE *</td>
<td>88</td>
<td>90</td>
<td>91</td>
<td>89</td>
</tr>
<tr>
<td>Attention problems</td>
<td>38</td>
<td>35</td>
<td>61</td>
<td>84</td>
</tr>
<tr>
<td>Hyperactivity</td>
<td>98</td>
<td>48</td>
<td>61</td>
<td>92</td>
</tr>
<tr>
<td>INATTENTION/HYP COMPOSITE **</td>
<td>87</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Relations with parents</td>
<td>54</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Interpersonal elations</td>
<td>77</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Self-esteem</td>
<td>25</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Self-reliance</td>
<td>25</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Adaptability</td>
<td>36</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Social skills</td>
<td>96</td>
<td>62</td>
<td>48</td>
<td></td>
</tr>
<tr>
<td>Leadership</td>
<td>63</td>
<td>17</td>
<td>57</td>
<td></td>
</tr>
<tr>
<td>Activities of daily living</td>
<td>86</td>
<td>22</td>
<td>64</td>
<td></td>
</tr>
<tr>
<td>Study skills</td>
<td>68</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Functional communication</td>
<td>46</td>
<td>41</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>86</td>
<td>84</td>
<td>53</td>
</tr>
<tr>
<td>ADAPTIVE PROFILE</td>
<td>38</td>
<td>88</td>
<td>55</td>
<td>53</td>
</tr>
<tr>
<td>EMOTIONAL SYMPTOMS INDEX</td>
<td>81</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
**Scales and subscales**

<table>
<thead>
<tr>
<th>Scales and subscales</th>
<th>SRP-A</th>
<th>PRS-A</th>
<th>least favourite</th>
<th>TRS-A favourite</th>
</tr>
</thead>
<tbody>
<tr>
<td>Aggression</td>
<td>99</td>
<td>25</td>
<td>83</td>
<td></td>
</tr>
<tr>
<td>Conduct problems</td>
<td>95</td>
<td>47</td>
<td>69</td>
<td></td>
</tr>
<tr>
<td>EXT PROBLEMS INDEX ***</td>
<td>97</td>
<td>39</td>
<td>85</td>
<td></td>
</tr>
<tr>
<td>Atypicality</td>
<td>42</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Withdrawal</td>
<td>19</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>BEHAVIOURAL SYMPTOMS</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>INDEX</td>
<td>72</td>
<td>88</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

*Int problem composite is ‘Internalising problem composite’.
**Inattention/HYP Composite is ‘Inattention/Hyperactivity Composite’.
*** Ext Problems Index is ‘Externalising problems index’.

**PH2 – instrument results completed by participant**

The PH-2 is a self-report instrument for the assessment of self-concept in children and measures six subscale domains: Behavioural Adjustment; Intellectual/School Status; Physical Appearance/Attributes; Freedom from Anxiety; Popularity; and Happiness and Satisfaction. Although the Intellectual/School Status domain is most closely linked to academic self-concept, some of the items also appear in other domains and can be used to validate consistency of responses and give a wider view on the psychosocial influences on academic self-concept; which, for example, was suggested by Andrew when he stated that, “I get nervous when the teacher calls on me” illustrating connection between the Intellectual/School status domain and the Freedom from Anxiety domain. Table 6.4 shows a summary of the results from the PH2.

**Table 6.4 PH2 summary of results**

| School yr | Percentile | |
|-----------|------------|---|---|---|---|---|---|
|           | Total | BEH  | INT | PHY | FRE | POP | HAP |
| 11            | 31  | 46   | 12  | 16  | 14  | 50  | 24  |

* BEH is behavioural adjustment scale; INT is intellectual scale; PHY is physical appearance and attributes scale; FRE is freedom from anxiety scale; POP is popularity scale; and HAP is the happiness and satisfaction scale.

Table 6.4 illustrates the PH2 results that are primarily in the below average ranges with the exception of behavioural adjustment (BEH) and popularity (POP). BEH measures the admission or denial of problematic behaviour and Andrew evaluates himself as well behaved but acknowledges that he has a few difficulties with his conduct (Piers & Herzberg, 2002). Likewise, Andrew’s average self-concept for the POP scale represents
his evaluation as satisfactory of his social functioning, perceived popularity, ability to make friends, and feelings of inclusion (Piers & Herzberg, 2002).

Andrew has evaluated himself on all other self-concept scales as not just in the below-average range but in the very low range (Piers & Herzberg, 2002). Andrew evaluates himself for the intellectual (INT) scale in the very low range in his assessment of his ability with respect to academic tasks, the most closely related to academic self-concept. Andrew believes that he has, “the necessary smarts to succeed in his schoolwork” (Piers & Herzberg, 2002, p. 24) but this low result can reflect low academic self-concept and an internalization of disappointment he perceived from parents and teachers (Piers and Herzberg, 2002).

Andrew also scored in the very low range for self-concept in the freedom from anxiety (FRE), happiness and satisfaction (HAP), and the physical appearance and attributes (PHY) scales. The FRE scale reflects anxiety and dysphoric mood and items in this scale appear in the INT scale for one question, “I get nervous when the teacher calls on me”, for which Andrew’s answer was ‘yes’. The HAP scale reflects feelings of happiness and satisfaction with life and no items co-occur in the INT scale which is most directly associated with academic self-concept. The PHY scale, which reflects Andrew’s perceptions of his physical appearance, leadership qualities and ability to express ideas, has three items that overlap with the INT scale (“I am smart”, “My friends like my ideas”, “My classmates in school think I have good ideas”), all of which Andrew answered in the negative. With so many scales scored in the very low range it is not surprising that the overall total self-concept scale is also scored in the very low range.

In summary, the instrument data has revealed very low self-concept scores (PH2), including that of the INT scale, and at-risk or clinical scores (BASC-2). The BASC-2 has indicated that Andrew has a good attitude to school, has high levels of internalised problems, particularly anxiety, and perceives socialising to be achievable and successful, but difficult. He also perceives that he is hyperactive, atypical, and emotional. Andrew’s perceptions are, on the whole, supported by his parents and teachers implying insight. The interview data will now be analysed to explore how the theoretical perspectives relating to the Research Issues compare with the themes that emerged from the interview data.
6.2.2. Interview analysis

As described earlier in Methodology, Chapter Four, the interview analysis was conducted through four layers of exploration: Leximancer analysis (Smith & Humphries, 2006) and independent hand-coding (using thematic analysis as described in Chapter Four, Methodology for purposes of triangulation) were used to analyse the transcript data and identify the emergent themes; the themes were then compared with the literature to identify concurrent and discordant themes; then the theoretical perspectives relating to the Research Issues were overlaid on the themes identified.

6.2.2.1. Leximancer Analysis

An automated system transforming lexical co-occurrence information from natural language to semantic patterns generates a table with numerical values of theme connectivity and a concept map of emergent themes. The interview transcript was thematically analysed using the Leximancer program and provided emergent themes, and after member-checking using manual coding techniques, and inter-rater checking using 80% an agreement level, also using both the program and manual techniques, emergent themes and their connectivity with one another are shown in Table 6.5 below. A Leximancer generated image of the concepts and themes shown in Table 6.5 is at Figure 6.2.

<table>
<thead>
<tr>
<th>Theme</th>
<th>Connectivity (%) and colour in Figure 5.2</th>
<th>Concepts</th>
</tr>
</thead>
<tbody>
<tr>
<td>School</td>
<td>100 (pink)</td>
<td>School, work, teacher talk, kids, real, disorder, processing</td>
</tr>
<tr>
<td>Feel</td>
<td>93 (buff)</td>
<td>Feel, year, teacher, people, learning, bad, life</td>
</tr>
<tr>
<td>Andrew</td>
<td>78 (light green)</td>
<td>Andrew, grade, better, grades, best</td>
</tr>
<tr>
<td>Teachers</td>
<td>31 (dark green)</td>
<td>Teachers, learn, class, easier</td>
</tr>
<tr>
<td>Facilitator</td>
<td>21 (dark blue)</td>
<td>Facilitator</td>
</tr>
<tr>
<td>Basketball</td>
<td>19 (light blue)</td>
<td>Basketball, time</td>
</tr>
<tr>
<td>Subjects</td>
<td>14 (purple)</td>
<td>Class, subjects, maths</td>
</tr>
</tbody>
</table>

Table 6.5 was generated by Leximancer, and indicates the seven main themes, in order of relative connectivity to other themes, which were revealed in the interview data. In addition, subsets of concepts that were assimilated within each theme are listed. The percentage of connectivity indicates how each theme is associated with other themes and concepts in the data. For example, the theme of ‘school’ is connected with all other
themes as it has 100% connectivity. The theme with lowest connectivity at 14%, ‘subjects’, is the smallest theme identified. At first glance, the theme of ‘feel’ indicates that Andrew expresses himself well and shares his feeling about people around him, learning and other aspects of his life.

However, Table 6.5 is complemented by a generated image of the themes. The connectivity of the themes, how they relate to one another, how the concepts link within and beyond each theme, and their relative connectivity (or rank order, shown through the size of the theme in the image) is illustrated in Figure 6.2. For example, the theme of ‘facilitator’, a relatively strong theme due to the generation of questions by the facilitator in the interview, is separated from the other themes indicating that the facilitator did not guide or lead Andrew towards the other themes. The theme of school, the largest theme shown in pink, most often overlaps with the other themes and is connected to all themes and concepts, thus reinforcing Table 6.5.
On examination of the data including inter-coder checks, themes from the Leximancer were, where applicable, overlaid with the themes identified from the literature. The theme of school in Table 6.5, because of the concepts therein (for example, school, work, teacher-talk, disorder) related to Big Fish Little Pond Effect (BFLPE) and environment in the literature (Marsh, 2011). The theme of feel related to the literature
themes of enjoyment (Little, 2002), self-understanding (Vespi et al., 1992), psychological centrality (Dweck, 1986) and self-talk (Dai et al., 1998). Andrew as a theme related to BFLPE (Marsh, 2011), academic achievement (Rinn, 2007) and self-understanding (Assouline et al., 2010). The theme of teachers related to significant others (Foley Nicpon et al., 2013), academic achievement (Assouline et al., 2012; Rinn, 2007) and mastery experience (Harter & Mayberry, 1984) in the literature. The penultimate theme of subjects related to academic achievement (Reis, 1987), mastery experience (Bong & Skaalvik, 2003) and enjoyment (Guay et al., 2010). The final, and the one discordant theme that does not relate directly to the literature is basketball. The basketball theme has two key concepts highlighted by Leximancer: basketball and time. The theme intersects with the theme of school through the concept of central auditory processing disorder which might be interpreted two ways: the central auditory processing disorder impacts both the school and basketball environments, or the basketball (like school) is something that is a necessary routine and an expected part of everyday life. In a later section ‘development of issues and descriptive detail’ the basketball theme will be explored.

6.2.3. Themes concurrent with and discordant from the literature relating to research issue one

The concurrent and discordant themes with the literature were then compared and integrated in table format with components of each research issue and theoretical perspective.

The information presented in Table 6.6 contributes to building an understanding of how the first research issue is addressed by the interview transcript data and gives the précis of the results as described in Chapter Four (Methodology).
Table 6.6  Analysis of transcript data, theoretical perspectives and concurrent and discordant themes with the literature – relating to research issue one

<table>
<thead>
<tr>
<th>Research issue One</th>
<th>BFLPE</th>
<th>significant others</th>
<th>environment</th>
<th>age</th>
<th>gender</th>
<th>basketball</th>
<th>academic-achievement</th>
<th>mastery-experience</th>
<th>enjoyment</th>
<th>self-understanding</th>
<th>psychological centrality</th>
<th>eHalk</th>
</tr>
</thead>
<tbody>
<tr>
<td>Legitimate-peripheral-participation** peers</td>
<td>7</td>
<td>2</td>
<td>4</td>
<td>4</td>
<td>4</td>
<td>1</td>
<td>2</td>
<td>4</td>
<td>6</td>
<td>2</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Participation-in-practice*** peers</td>
<td>2</td>
<td>1</td>
<td>1</td>
<td>1</td>
<td>1</td>
<td>1</td>
<td>1</td>
<td>1</td>
<td>1</td>
<td>1</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Legitimate-peripheral-participation siblings</td>
<td>1</td>
<td>1</td>
<td>4</td>
<td>1</td>
<td>1</td>
<td>1</td>
<td>1</td>
<td>1</td>
<td>1</td>
<td>1</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Participation-in-practice-siblings</td>
<td>4</td>
<td>3</td>
<td>2</td>
<td>6</td>
<td>1</td>
<td>1</td>
<td>1</td>
<td>1</td>
<td>1</td>
<td>1</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Legitimate-peripheral-participation teachers</td>
<td>3</td>
<td>9</td>
<td>3</td>
<td>0</td>
<td>6</td>
<td>1</td>
<td>2</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Participation-in-practice – teachers</td>
<td>5</td>
<td>14</td>
<td>7</td>
<td>1</td>
<td>0</td>
<td>12</td>
<td>4</td>
<td>7</td>
<td>2</td>
<td>5</td>
<td>4</td>
<td></td>
</tr>
<tr>
<td>Legitimate-peripheral-participation parents</td>
<td>1</td>
<td>2</td>
<td>0</td>
<td>1</td>
<td>1</td>
<td>1</td>
<td>1</td>
<td>1</td>
<td>1</td>
<td>1</td>
<td>1</td>
<td></td>
</tr>
<tr>
<td>Participation-in-practice – parents</td>
<td>1</td>
<td>1</td>
<td>1</td>
<td>1</td>
<td>1</td>
<td>1</td>
<td>1</td>
<td>1</td>
<td>1</td>
<td>1</td>
<td>1</td>
<td></td>
</tr>
</tbody>
</table>

For the purposes of this research, the first five processes along the top of Table 6.6 are foregrounded primarily in the intermental plane (for purposes of exploration) and they also coincide with the theory: legitimate-peripheral-participation, participation-in-practice. The other aspect of the theory explored for research issue one, situated learning, is demonstrated in Tables 6.7 to 6.9 and is investigated after the presentation of legitimate-peripheral-participation and participation-in-practice. This research argues
that academic self-concept is influenced by the processes of legitimate-peripheral-participation, participation-in-practice and situated learning.

Analysis of Table 6.6 indicates that, for Andrew, social interactions and particularly the influence of significant others are dominant, and have influenced the development of academic self-concept. Teachers have the largest influence as significant others in the school context. Social and cultural contexts and practices are not explored until research issue two.

6.2.4. **How theoretical perspectives relating to research issue one were present in the data**

*Legitimate-peripheral-participation.* Instrument and interview data were analysed to inform findings of how legitimate-peripheral-participation is evident for Andrew. The instrument data shows that Andrew’s parents reveal, on the BASC-2 SDH, that he is caring with a sense of fun and a friendly disposition. This is supported by other instrument data. The BASC-2 PRS-A (also completed by Andrew’s parents) results imply that Andrew has good social skills and his parents report that, socially, he assimilates well with his social environment. This perception is shared by both of the teachers in the BASC-2 TRS-A. However, in contrast to this, Andrew’s results on the BASC-2 SRP-A show that, although he finds social situations relatively satisfactory, he also reports that he finds interpersonal relations stressful, and he feels ‘atypical’ and has a high sense of inadequacy.

In addition, Andrew’s parents disclose that their primary concern is around his emotional outbursts, aggression, irrational reactions and depressive episodes. These traits are reflected in the BASC-2 by Andrew’s parents and teachers indicating that they perceive high levels of depression and anxiety, the latter being also reflected by Andrew. Andrew’s differing perception about depression might be indicative of his lack of life experience as depression problems frequently occur with anxiety problems (Semrud-Clikeman et al., 2003) and conduct problems (Patterson et al., 1989) which are both shown as high in Andrew’s scales.

His teachers also report that they perceive him to be in the at-risk to clinical range for withdrawal and atypical behaviours. The atypicality and anxiety might indicate that, although Andrew is popular and considered to have good social skills, he finds he has to work in social situations, something that is reinforced in his interview when he
describes being with people as tiring at times. The parents report on the BASC-2 PRS-A a clinical result for aggression and conduct problems that reflects their concerns with his anger episodes at home as reported in the SDH. Andrew’s results for the PH2 indicate that he has an overall very low self-concept in most scales, including popularity.

Notably, Andrew scores in the low average range in the intellectual scale and, later in interview, reports that his academic self-concept has improved a great deal over the previous years due to recognition and support of his twice-exceptional learning needs (pull-out classes for the gifted program and scaffolding in the classroom for his disability). The intellectual domain is most closely related to and overlapping with academic self-concept and the low result reinforces that Andrew feels on the periphery of his social (school) context.

When considering research issue one and the social interactions, which are relatively strenuous for Andrew despite his success with them, such interactions might exert influence upon his academic self-concept as he finds school and academic work strenuous and tiring (although more recently, successful). With regards to legitimate-peripheral-participation, these instrument data indicate that Andrew, although sociable and able to ‘play the game’, feels on the periphery of his social context.

Consideration will now be given to the interview data that informs legitimate-peripheral-participation. For legitimate-peripheral-participation, the breakdowns of social interactions that influence Andrew are primarily with peers and teachers. The influence of parents and siblings is comparatively low. Legitimate-peripheral-participation (Lave & Wenger, 1991) describes how learners inevitably participate in communities of practitioners and that the mastery of knowledge and skill requires newcomers to partake fully in the sociocultural practices of the community; in other words, learning by being in the location of practice and gradually getting the hang of things while being accepted by those involved. This research is concerned with how an individual’s intentions to learn are engaged, and how their academic self-concept is formed through the social, interactive process of becoming a full participant in sociocultural practice.

Figure 6.2 provides insight into the extended analysis of the interview data to indicate both the relative influence of significant others and the extent of the themes within the influences of legitimate-peripheral-participation.
Figure 6.2 indicates that peers have the highest influence with regards to legitimate-peripheral-participation, particularly within the literature themes of BFLPE, environment, self-understanding and psychological centrality. Teachers are the other major contributors and influences with emphasis on the themes of significant others and academic achievement. Siblings have the least overall influences for Andrew and show that the influences come through three themes: BFLPE, significant others and psychological centrality. Finally, parents are also a minor legitimate-peripheral-participation contributor for Andrew and have the same three themes as the siblings category.

**Participation-in-practice.** Turning now to participation-in-practice for research issue one, participation-in-practice provides opportunities for mutually supportive learning or practices (Sinclair, 2004). Practices are organised by the culture in which a developing person lives and have a relevant outcome for the individual (for example, driving or selling something). Although participation in the practice is not compulsory, contexts make the practice more accessible to young people who then might participate in them. Repeated participation enhances the performance in these practices, and thus the development of cognition, and if the culture values the practices then they are more likely to be repeated and reinforced (Cole, 1996; Scribner & Cole, 1981). Academic self-concept is considered domain specific (Marsh et al., 1995) which resembles the
participation-in-practice conjecture that many practices usually occur within a particular domain and the cognitive development tends to be domain-specific. However, some activities occur across many different domains (such as narratives and measurement) and the cognitive development is general and can be used in other domains. “In short, participation-in-practice is the key concept linking social and cultural setting with individual cognitive development” (Hatano & Wertsch, 2001, p. 79).

With regards to participation-in-practice, the breakdowns of social interactions that influence Andrew are primarily with teachers. The influence of peers and siblings is comparatively low, with no influences recorded for parents. Figure 6.3 illustrates the data for participation-in-practice as shown in Table 6.6.

Participation-in-practice has similar results to legitimate-peripheral-participation in that teachers are shown to have the most influence. Parents had no influence recorded in the data. With regards to the literature themes, academic achievement and significant others were the largest influences in the most influential group: the teachers. Enjoyment was another area with a high representation from the literature. BFLPE had a sizable effect with similar amounts of influence from peers, teachers and siblings. The literature themes of age have only one occurrence in the data with regards to participation-in-practice. The literature theme of gender did not occur at any time in the participation-in-practice data.

![Figure 6.3](image)

Extended analyses of the literary themes that influence participation-in-practice
**Situated Learning.** The final element to be explored for research issue one is situated learning. Situated learning pertains to social co-participation, in a specific environment, community-of-practice, or context that enables a learner to acquire knowledge. Cultural practices in these communities enable learning (Lave & Wenger, 1991). This research is using three ways to explore how identities are shaped in situated learning (Wenger, 1996): engagement (doing things together, talking and producing artefacts); imagination (constructing our truths of the world: imaginative images of the world are essential to our sense-of-self and to our interpretation of our participation in the social world); and alignment (aligning our activities with community processes, such as moral codes, that can become deep aspects of our identities). Engagement and alignment activities are for the explication of this research, foregrounded in the intermental plane and have been explored in both instruments and interview transcript data. It was found that alignment was consistently associated or overlapped with either engagement or imagination.

The instrument and interview data were analysed to understand how situated learning through the three activities of engagement, alignment and imagination impacted on Andrew’s development of academic self-concept. Tables 6.7, 6.8, and 6.9 have examples to indicate how situated learning in the form of engagement, imagination and alignment were present in the interview data. The data used for the examples have been inter-rater checked by two independent researchers with 80% agreement and 20% negotiated agreement.

Table 6.7  Situated learning and the interview data supporting ‘engagement’

<table>
<thead>
<tr>
<th>Engagement</th>
<th>Doing things together, talking and producing artefacts</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Percentage of transcript data</strong></td>
<td>55%</td>
</tr>
</tbody>
</table>
| **Examples from transcript data** | But then, once I get up there and have spoken for 10 or 15 seconds then I feel pretty comfortable. But it’s that time beforehand that I am so nervous and my thinking and everything just goes astray and I get scared thinking like that. I would rather stand in front of the firing squad than do the oral because I am so nervous.  
I remember thinking of trying to find excuses of why I hadn’t been doing as well. But, even though I was young, I got a high getting a good grade and so that is why I wanted to go further and get better grades.  
Like, if you have heaps of ability but don’t practice much then that probably won’t make much difference but if you have a lower ability and practice heaps then you will get better results. But you have to decide – it is all your decision- to get a good grade. |

Table 6.7 indicates that Andrew related to engagement in the construct of situated learning during 55% of his interview. The three examples highlight the diverse
examples he used that pertained to his engagement in school. Table 6.8 shows how the situated learning construct of imagination presented in the interview data.

<table>
<thead>
<tr>
<th>Table 6.8</th>
<th>Situated learning and the interview data supporting ‘alignment’</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Alignment</strong></td>
<td>Aligning our activities with community processes, such as moral codes, that can become deep aspects of our identities</td>
</tr>
<tr>
<td><strong>Percentage of transcript data</strong></td>
<td>Overlap engagement by 30% and imagination by 33%</td>
</tr>
<tr>
<td><strong>Examples from transcript data</strong></td>
<td>[On being awarded ‘player of the year’ in school basketball team:] And afterwards everyone was saying congratulations but I felt pretty bad because I didn’t feel as though I deserved it. I didn’t feel that I was the best player. Obviously I chose the subjects I did because I enjoy them but, because I get good grades, I feel more interested in what we’re learning. Like modern [history], even though they are not the best grades, I love learning about what happened: like at the moment it is really touchy content about apartheid – but it is really interesting… and with some bits I really gelled.</td>
</tr>
</tbody>
</table>

Table 6.8 indicates that Andrew associated with alignment in the construct of situated learning during 63% of his interview: alignment in the context of engagement by 30% and alignment in the context of imagination by 33%. The two quotations are examples from each context: the first relating to alignment in imagination and the second relating to engagement. Table 6.9 shows how the situated learning construct of alignment presented in the interview data.

<table>
<thead>
<tr>
<th>Table 6.9</th>
<th>Situated learning and interview data supporting ‘imagination’</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Imagination</strong></td>
<td>Constructing our truths of the world – imaginative images of the world are essential to our sense-of-self and to our interpretation of our participation in the social world</td>
</tr>
<tr>
<td><strong>Percentage of transcript data</strong></td>
<td>62%</td>
</tr>
<tr>
<td><strong>Examples from transcript data</strong></td>
<td>As far as subjects go, I find that I can find out there, like way out ways of solving an equation or question in maths or geography or modern history. I feel I am not like the normal person that uses normal thinking to get the answers. My brother was so good and disciplined. He would shoot 300 shots each morning and get all his assignments done to a high standard unlike me...Oh I do – but it’s more like when I have time. He was a lot better at finding time with things.</td>
</tr>
</tbody>
</table>

Table 6.9 indicates that Andrew pertained to imagination in the construct of situated learning during 62% of his interview. The two examples highlight the diversity he used that pertained to his imagination in his school community-of-practice.
6.3. Summary of Instrument and Interview data relating to research issue one.

In summary, research issue one sought to discover the social interactions that influence the development of academic self-concept. The analysis of the instruments’ data show that Andrew experiences a scope of perceptions, ranging from clinical, at-risk, or normative ranges, some directly associated with academic self-concept and others that indirectly influence other areas of self-concept. The instruments also indicate how such perceptions align with and differ from his parents’ and teachers’, thus highlighting how Andrew’s imagination, his sense-of-self in the world, is situated. The interview data reinforced the instrument data and added layers of understanding to the perceptions that influence academic self-concept: namely BFLPE, significant others, environment, academic achievement, mastery experience, enjoyment, self-understanding, psychological centrality, and self-talk; all of which are viewed through the lens of participation-in-practice, legitimate-peripheral-participation, and situated learning.

The case study presentation turns now to research issue 2, which provides the enquiry platform to explore the social practices and contexts that influence the development of academic self-concept. Research issue two explores the social practices and contexts that influence the development of academic self-concept. The social practices and contexts are based in the construct of situated learning (Lave & Wenger, 1991). Social and cultural contexts and practices are explored to explicate how different situations, environments, and institutions influence the cultural practices and hence the academic self-concept.

6.3.1. Concurrent and discordant themes with the literature relating to research issue two

The concurrent and discordant themes with the literature were then compared and integrated in table format with components of research issue two and the theoretical perspectives as seen in Table 6.10. Table 6.10 shows how research issue two is addressed by the interview transcript data and gives a précis of the results. As with research issue one, the themes shown in Figure 6.2 were, in all but one case, related to and overlaid with the themes from the literature based on the concepts within each of them. The one discordant theme that does not relate directly to the literature is basketball. The themes will be explored with regards to social practices and contexts.
Table 6.10  Analysis of transcript data, theoretical perspectives and concurrent and discordant themes with the literature – relating to research issue two

<table>
<thead>
<tr>
<th></th>
<th>BFLPE</th>
<th>Significant others</th>
<th>Environment</th>
<th>Age</th>
<th>Gender</th>
<th>Basketball</th>
<th>Academic achievement</th>
<th>Mastery experience</th>
<th>Enjoyment</th>
<th>Self-understanding</th>
<th>Psychological centrality</th>
<th>Self-talk</th>
</tr>
</thead>
<tbody>
<tr>
<td>The context</td>
<td>2</td>
<td>6</td>
<td>8</td>
<td>4</td>
<td>3</td>
<td>2</td>
<td>2</td>
<td>5</td>
<td>3</td>
<td>2</td>
<td>6</td>
<td>2</td>
</tr>
<tr>
<td>The practice</td>
<td>6</td>
<td>10</td>
<td>14</td>
<td>6</td>
<td>11</td>
<td>9</td>
<td>7</td>
<td>9</td>
<td>7</td>
<td>6</td>
<td>6</td>
<td>6</td>
</tr>
</tbody>
</table>

For the purposes of this research, the first five processes along the top of Table 6.10 are foregrounded primarily in the intermental plane (for purposes of exploration). They also coincide with the theory relating to social practices and contexts. This research argues that academic self-concept is also influenced by the social practices and contexts.

Analysis of the above Table 6.10 indicates that, for Andrew, the influences of environment, significant others, and academic achievement are the most dominant, and have influenced the development of academic self-concept. The social practice was more evident in the data than the social context.

6.3.2. How theoretical perspectives relating to research issue two were present in the data

With regard to social practice and social context, the relative influences of the emergent themes from the interview data, which coincide with the literature, are presented in Figure 6.5 and show that social practices are about twice as evident in the data as social contexts. However, both are particularly influenced by significant others, environment and academic achievement. Additionally in the interview data, for social practices, mastery experience, self-understanding, BFLPE, psychological centrality, and enjoyment are key contributors.
Significant others, self-understanding and environment play a majority role in both aspects. In addition academic achievement is also a large contributor to social practices. It is noteworthy that, for both social contexts and social practices, neither gender nor age contributes although these are considered consequential by a substantial portion of the literature as detailed in Chapter Two (Literature Review). The next consideration is how social contexts and practices sit within the theoretical framework of situated learning.

6.3.2.1. Situated learning

The instrument and interview data were analysed to understand how situated learning through the three activities of engagement, alignment and imagination impacted on Andrew’s formulation of academic self-concept. The interview data connected with situated learning supports the instrument data as shown in Tables 6.11, 6.12 and 6.13. The percentage of occurrence within the interview data are presented in each of the tables and, in most cases, the three activities of engagement, alignment and imagination overlap so the percentages appear inflated and add to over 100%.

Engagement (doing things together, talking and producing artefacts) was interpreted through the BASC-2 SRP and the PH2. From the PH2, the indication of engagement might be seen through the ‘behaviour’ element as this indicates engagement and, thus, interest and cooperation with school. Andrew’s behaviour was in the normal range on
the PH2 (completed by him.) The BASC-2 SOS, completed by the researcher whilst observing Andrew in classes, also indicated behaviour in the normal range; Andrew appeared to be visually engaged in all of his lessons with some occasional, minor fidgeting especially in the lessons he professed to dislike (Andrew reports his love of his favourite class and teacher in interview data and his ‘dislike’ of the least preferred class and teacher.)

Table 6.11 Situated learning and interview data supporting engagement in the social practices and contexts in research issue two.

<table>
<thead>
<tr>
<th>Engagement</th>
<th>Doing things together, talking and producing artefacts (Wenger, 1996).</th>
</tr>
</thead>
<tbody>
<tr>
<td>Percentage of transcript data</td>
<td>65%</td>
</tr>
<tr>
<td>Examples from transcript data</td>
<td>Social contexts:</td>
</tr>
<tr>
<td></td>
<td>Yes – I find it a fair bit. For me it is when I go to a basketball trial that is at representative or state level and I feel so out of place because, even though I am not the worst player there, there are so many people who are on such a high level.</td>
</tr>
<tr>
<td></td>
<td>Social Practices:</td>
</tr>
<tr>
<td></td>
<td>My favourite, as in it has been the most enjoyable to learn, has been maths. But lately my favourite subject would have to be geography because, I have been studying more and learning the content more, and this has helped me gather information more easily – and this has led to really good grades.</td>
</tr>
<tr>
<td></td>
<td>You feel so awesome. That is what happened with one of my geography tests – I wasn’t sure if I’d done good but I was fairly confident and when I saw I got an A I was, inside, so invincible because I had done so well.</td>
</tr>
</tbody>
</table>

Table 6.11 indicates that Andrew referred to engagement in the construct of situated learning, relating to social contexts and practices, for 65% of the interview data. Table 6.12 presents the data relating to alignment for Andrew.

An indicator of alignment for Andrew was his perceived alignment with the social contexts and practices around him, traversing both the intramental and intermental planes, indicating how he affiliates his activities with community processes, such as moral codes, that can become deep aspects of identity, and thus contribute to his academic self-concept (Valentine et al., 2004). The BASC-2 SRP reports a positive response to the elements of the school problem composite, indicating that he is aligned to the processes, practices and contexts presented in the institution of his community-of-practice. The BASC-2 SOS wherein he was observed as complying with class rules, teachers and lessons further supports this. Research issue two, exploring the practices and contexts influencing academic self-concept, is more thoroughly reflected from the interview data below. However, the BASC-2 classroom observations indicate
conformity in the classroom context, regardless of whether the class is Andrew’s most or least favourite subject and teacher.

Table 6.12 Situated learning and interview data supporting alignment in the context social practices and contexts in research issue two.

<table>
<thead>
<tr>
<th>Alignment</th>
<th>Aligning our activities with community processes, such as moral codes, that can become deep aspects of our identities (Wenger, 1991).</th>
</tr>
</thead>
<tbody>
<tr>
<td>Percentage of transcript data</td>
<td>Overlap engagement by 45% and imagination by 40%</td>
</tr>
<tr>
<td>Examples from transcript data</td>
<td>Social contexts:</td>
</tr>
<tr>
<td></td>
<td>I feel that I just want to go to America and , even if not being able to make a team, just to train with them and see what their lifestyle is – maybe over a 3 to 4 month period. Then after that, I don’t know what I want to do work wise.</td>
</tr>
<tr>
<td></td>
<td>Ok – I feel that I am able to communicate with everyone in the school community easily – all of them with the same ease: whether it is my best friends or anyone. I am good at this. I find it easy to talk to anyone no matter who they are and I get along with them all.</td>
</tr>
<tr>
<td></td>
<td>Social practices:</td>
</tr>
<tr>
<td></td>
<td>But outside of school with friends and that I don’t get it (feeling inadequate) - not really...unless I hang out with people who are a few years older than me then I feel like this isn’t really my place.</td>
</tr>
</tbody>
</table>

Table 6.12 indicates that Andrew related to alignment occurring with engagement for 45% of his interview and alignment occurring with imagination for 40%. The examples used in Table 6.12 demonstrate that Andrew aims to align with social contexts both within and beyond school. Table 6.13 presents the data relating to imagination for Andrew.

Imagination for Andrew in the context of situated learning is exploring how he constructs his truths of the world: images of the world that are essential to his sense-of-self and to his interpretation of his participation in the social world. A part of Andrew’s sense-of-self can be drawn from his SRP-A instrument in the BASC-2. Andrew has demonstrated a perception of at-risk or clinical levels in the internalizing composite, emotional symptoms composite, and the inattention/hyperactivity composite. These perceptions are supported for the internalizing problems composite by his teachers but not by his parents. All sub-categories of the PH2 can be considered to reflect the imagination activity and, overall, the PH2 indicates a very low self-concept in all but two scales (popularity and behaviour), thus indicating that his construction of his ‘truth’ of the world and his place within it is below average.
Table 6.13  Situated learning and interview data supporting imagination in the context social practices and contexts in research issue two.

<table>
<thead>
<tr>
<th>Imagination</th>
<th>Constructing our truths of the world – imaginative images of the world are essential to our sense-of-self and to our interpretation of our participation in the social world (Wenger, 1996).</th>
</tr>
</thead>
<tbody>
<tr>
<td>Percentage of transcript data</td>
<td>75%</td>
</tr>
</tbody>
</table>
| Examples from transcript data | Social contexts:  
I feel overall that I am a pretty bright kid but sometimes not over super-intelligent like kids in this school are. Like some of the kids do things I would never have thought of for assignments and that.  
Social practices:  
Yes – like just because I am a sports person I love doing PE and I love doing sports. But if I get a good grade I feel that I enjoy the subject more and the subject matter  
[On being awarded ‘player of the year’ in school basketball team]….. and afterwards everyone was saying congratulations but I felt pretty bad because I didn’t feel as though I deserved it. I didn’t feel that I was the best player. |

Table 6.13 gives examples from interview data of how Andrew constructs his sense-of-self in the world and how he interprets his participation in the social world. This can also be related to legitimate-peripheral-participation in that Andrew, although a high achiever now, still interprets that he is on the periphery of his social contexts and practices.

In summary, research issue two sought to discover the social practices and contexts that influence the development of academic self-concept. The analysis of the instrument data shows that Andrew experiences a scope of perceptions, ranging from clinical, at-risk, or normal ranges; directly or indirectly associated with academic self-concept. The instrument data indicated that different social contexts and practices within his community-of-practice, namely whether he is at home, playing basketball or in the classroom or playground (PH2 data) do influence Andrew’s sense-of-self and his academic self-concept. However, there is an overarching sense from the data that his very low academic self-concept, and low self-concept in general, both influences and is influenced by the social contexts and social practices in his experience. The interview data reinforces the instrument data and adds layers of understanding to the social contexts and practices that influence academic self-concept for Andrew.

This section has sought to explore the emergent themes evident from the data and how the data pertains to the theoretical framework of situated learning, participation-in-practice and legitimate-peripheral-participation. As a detailed analysis and discussion of
how both the instrument and interview data support the emergent themes are analysed and fully discussed for all three case studies in Chapter 9, a full analysis into how this data support the emergent themes for Andrew can be found in Appendix G. The data presented in Appendix G adds another layer to the analysis of the instrument and interview data, and how the data support the emergent themes: BFLPE, significant others, environment, academic achievement, mastery experience, enjoyment, self-understanding, psychological centrality, self-talk and basketball. In order to scaffold cross-referencing, the Table numbers used in Appendix G are continued under the numbering theme of this Chapter.

6.4. Chapter summary

The analysis of the case study data for Andrew illustrates that there are nine themes evident of the eleven identified themes in current literature, and one other theme, basketball, that is not. The two themes in the literature that have not been identified are gender and age. Perhaps these themes are not of consequence for Andrew as his peers are primarily his age, and he is in an all-boys school. However, age has come through as a minor theme in a different regard in that, as a sixteen year old student, typical of his culture, he now looks beyond the immediate family for social feedback to find a sense of self in his world (Chan & Chan, 2013). To recap, the two Research Issues are:

Explore some of the social interactions that influence the development of academic self-concept for twice-exceptional students.

Explore some of the social practices and contexts that influence the development of academic self-concept for twice-exceptional students.

The exploration of the Research Issues has indicated that, for Andrew, there are influences on his academic self-concept that are linked to social interactions, social practices and social contexts in his school community-of-practice. To reiterate, for the purpose of this study, the school community-of-practice includes not just the school community but the community [concurrent with school experience] beyond the physicality of the school walls. The assertions from the findings are presented in Chapter Nine, Discussion. The following Chapter presents the analysis and findings for the second case study, Ben.
Chapter 7. Case study findings–Ben

"I never sit down when I’m doing art. I always stand up and I would be agitated if I had to sit still.... it wouldn’t be so good if I couldn’t relax and it wouldn’t be a good product".

7.1. Defining the case–Ben

Ben is a Year 8 student at a boys’ private school in Queensland. The school recognises that he is both gifted with disability; Ben is engaged in the gifted program and has adjustments under the learning support program In accordance with the definition of twice-exceptionality that was presented in the Literature Review, an IQ test showing results in the gifted range, together with specialist reports showing that Ben has diminished hearing and central auditory processing disorder, have been the defining reports for his identification by the school.

Ben’s teachers are aware of his disability and adjustments are made for him in the classroom. Ben’s family presents as a middle-class white family with separated, professional parents who report close family ties, although the parents are now estranged. Ben is the youngest child of three and shares his time living with his separated parents and older twin brothers. The parents are business professionals.

7.1.1. Parents Structured Developmental History (SDH)

The SDH was completed by Ben’s mother who did not liaise with her estranged ex-husband. The family activities together are wide-ranging and social, and include meals, movies, conversations, family visits, trips, sports, games and watching TV together. Ben’s mother reports that she enjoys his caring nature and his strong sense of social justice, compassion, creativity, respect of those who acknowledge and respect him, and his loving nature. She reports that the most difficult aspect to Ben’s personality is his emotional response and disappointment when he feels he does not parallel his older brothers’ and his peers’ high performances in the academic and sporting arenas. The mother’s expectations for all of her children are that they are happy, content and that Ben is in a career that he can provide a service (she reports that he would make a great vet or doctor). The mother claims to be in charge of discipline at home without the support from the father who acts like their ‘mate’. Discipline techniques primarily
involve reasoning and consequences and the mother reports that she has not had to ‘discipline’, in her words, her children.

The data collected from the SDH completed by his mother suggests that Ben’s development through childhood has been in the normative range until he fell from a tree at aged seven, which resulted in a head injury, resulting in a comatose state and amnesia. As a result of the fall, Ben has subsequent diminished hearing in one ear. The mother also reports that Ben now suffers from a mild stutter, bites his nails, suffers anxiety and is a very fussy eater. Ben has been diagnosed with central auditory processing disorder. Although central auditory processing disorder is not listed in the DSM5, and does not attract any funding, the school categorise central auditory processing disorder as a disability. There are no other neurological or medical issues identified.

Ben’s mother reports that he has a friendly disposition with playmates and friends but prefers small groups of friends. A keen rugby player, Ben has represented the school, but prefers the less competitive ‘lower-level’ teams. He also enjoys music and Minecraft (Booch, 2013).

Ben’s educational history shows that he has attended only the current school. Ben has always disliked going to school but this has improved since commencing year eight when he moved to the senior school campus. His mother reports that he has had difficulties learning to read and is a ‘slow reader’. She also reports, “we are floored, he is now a straight ‘A’ student” and goes on to say, “he has excelled in high school and I am guessing that it is because he can ‘choose’ his subjects, is interested in them and enjoys them and they act like a safe-haven for him to cope with the other areas he is not strong” (Ben’s mother, SDH, 2011).

7.1.2. School records

The school records provided the researcher with information concerning Ben’s school performance history and two specialist reports: the SB5, indicating giftedness, the specialist report detailing hearing loss, and the neurosensory report detailing central auditory processing disorder.

The SB5 results in Table 7.1 indicate a range of scores in the sub-scales. As with some other research that has been conducted in the gifted education field (e.g. Gagné, 2010; King, 2010) percentiles have been used to represent the results in the psychological
assessment tests, as participants were assessed using different instruments and the percentiles have, for the purposes of this research, been used to present a relative standard for the normed population. Gifted level percentiles have been debated but are generally accepted at 90th percentile plus (Assouline et al., 2006). Table 7.1 indicates that Ben has a gifted IQ score in all subscales.

Table 7.1    SB5 - aged 9 years old, 4 years prior to study

<table>
<thead>
<tr>
<th>Item</th>
<th>IQ</th>
<th>Likely percentile rank</th>
</tr>
</thead>
<tbody>
<tr>
<td>Full scale IQ</td>
<td>128</td>
<td>97</td>
</tr>
<tr>
<td>Nonverbal IQ sub-scale</td>
<td>123</td>
<td>94</td>
</tr>
<tr>
<td>Verbal IQ subscale</td>
<td>131</td>
<td>98</td>
</tr>
<tr>
<td>FACTOR INDEX SCORES</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Fluid reasoning</td>
<td>123</td>
<td>94</td>
</tr>
<tr>
<td>Knowledge</td>
<td>128</td>
<td>97</td>
</tr>
<tr>
<td>Quantitative reasoning</td>
<td>119</td>
<td>90</td>
</tr>
<tr>
<td>Visual spatial</td>
<td>126</td>
<td>96</td>
</tr>
<tr>
<td>Working memory</td>
<td>126</td>
<td>96</td>
</tr>
</tbody>
</table>

Ben performed in the gifted range in all subscales of the SB5. How much influence his learning disabilities have had on his current performance is conjecture as even minor problems with speech, hearing or vision can lead to learning disorders (Reynolds et al., 2004). It is possible that his scores are depressed due to his diminished hearing and central auditory processing disorder, which might account for the anxiety and frustration that his mother reports in the SDH.

7.2.    Presentation of the data collected

As detailed in Chapter Four (Methodology), two instruments were used for this research. The first was the BASC-2 which has four forms that are analysed: the student observational system (SOS) classroom observation form completed by the researcher in two classes, the self-report scale (SRP-A) completed by the participant, the parent report scale (PRS-A) completed by the parent, and the teacher report scale (TRS-A) completed by two teachers. The researcher noted that for all participants the subject preferences aligned with the teacher preferences (i.e. the favourite subject was taught by the favourite teacher and vice versa.) The second instrument analysed is the Piers-Harris 2 (PH2), which was completed only by Ben and reflects different aspects of his self-concept.
7.2.1. Classroom observations

Classroom observations using the SOS were conducted in four of Ben’s classes. Two instruments were completed in music with his favourite teacher and two in maths with his least favourite teacher. The aim was to assess if there was any difference in behaviour between the two different subjects and teachers. A summary of the SOS is in Table 7.2.

Table 7.2 Summary of SOS observations in class

<table>
<thead>
<tr>
<th>SOS Observation</th>
<th>Favourite Teacher</th>
<th>Least Favourite Teacher</th>
</tr>
</thead>
<tbody>
<tr>
<td>Positive behaviours</td>
<td>Majority</td>
<td>Majority</td>
</tr>
<tr>
<td>Reaction to peer distractions</td>
<td>Nil</td>
<td>Nil</td>
</tr>
<tr>
<td>Remaining seated</td>
<td>Always</td>
<td>Always</td>
</tr>
<tr>
<td>Appearing focused</td>
<td>Yes</td>
<td>Yes – but increase in excessive blinking and yawning after 30 minutes of 45 minute class</td>
</tr>
<tr>
<td>Yawning and excessive blinking</td>
<td>nil</td>
<td>40% of the time</td>
</tr>
<tr>
<td>Seating position</td>
<td>Alone – front of class</td>
<td>Alone – front of class</td>
</tr>
<tr>
<td>Overall impression</td>
<td>Similar behaviour – good behaviour</td>
<td>Similar behaviour – good behaviour</td>
</tr>
</tbody>
</table>

On the whole, adaptive behaviours were observed in both classes. Whether the lesson was teacher, board work, or individual work centred, Ben sat at the front of the class and appeared to remain focused. The observations recorded indicated that subtle maladaptive behaviour included eight tallies of yawning and 18 of excessive blinking. The overarching observations were that Ben had a high standard of conforming behaviour and appeared to be a focused, hard-working student, thus reinforcing the perceptions offered by both subject teachers. Additional observations were that Ben sat at the front of the class to cater for his hearing and central auditory processing disorder learning disabilities and that he never asked questions, even when others were asking. In interview he commented that he prefers to keep quiet so he does not, as he stated, “look like an idiot” (Ben, 2011).

7.2.2. BASC-2—instrument results completed by participant, parents and teachers

All of the questionnaires presented in this section of the Chapter gave psychometric data about psychosocial perceptions in quantitative format from the participants’, teachers’ and parents’ perspectives. Table 7.3 offers a summary of the results of each BASC-2 instrument completed.
Table 7.3  BASC-2 summary of Results

<table>
<thead>
<tr>
<th>Scales and subscales</th>
<th>SRP-A</th>
<th>PRS-A</th>
<th>TRS-A least favourite</th>
<th>TRS-A favourite</th>
</tr>
</thead>
<tbody>
<tr>
<td>Attitude to school</td>
<td>48</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Attitude to teachers</td>
<td>65</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Sensation seeking</td>
<td>58</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Attention problems</td>
<td></td>
<td>43</td>
<td></td>
<td>45</td>
</tr>
<tr>
<td>Learning problems</td>
<td></td>
<td>43</td>
<td></td>
<td>46</td>
</tr>
<tr>
<td>SCHOOL PROBLEM COMPOSITE</td>
<td>57</td>
<td>43</td>
<td></td>
<td>45</td>
</tr>
<tr>
<td>Atypicality</td>
<td>85</td>
<td>75</td>
<td>47</td>
<td>50</td>
</tr>
<tr>
<td>Withdrawal</td>
<td></td>
<td>49</td>
<td></td>
<td>48</td>
</tr>
<tr>
<td>Locus of control</td>
<td>35</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Social stress</td>
<td>70</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Anxiety</td>
<td>88</td>
<td>85</td>
<td>45</td>
<td>48</td>
</tr>
<tr>
<td>Depression</td>
<td>75</td>
<td>75</td>
<td>45</td>
<td>45</td>
</tr>
<tr>
<td>Sense of inadequacy</td>
<td>85</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Somatization</td>
<td>41</td>
<td>41</td>
<td>21</td>
<td>23</td>
</tr>
<tr>
<td>INT PROBLEM COMPOSITE *</td>
<td>65</td>
<td>80</td>
<td>42</td>
<td>45</td>
</tr>
<tr>
<td>Attention problems</td>
<td>67</td>
<td>43</td>
<td>43</td>
<td>45</td>
</tr>
<tr>
<td>Hyperactivity</td>
<td>72</td>
<td>56</td>
<td>43</td>
<td>45</td>
</tr>
<tr>
<td>INATTENTION/HYP COMPOSITE **</td>
<td>69</td>
<td></td>
<td>45</td>
<td>45</td>
</tr>
<tr>
<td>Relations with parents</td>
<td>16</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Interpersonal relations</td>
<td>80</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Self-esteem</td>
<td>39</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Self-reliance</td>
<td>49</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Adaptability</td>
<td></td>
<td>66</td>
<td>43</td>
<td>50</td>
</tr>
<tr>
<td>Social skills</td>
<td></td>
<td>69</td>
<td>43</td>
<td>45</td>
</tr>
<tr>
<td>Leadership</td>
<td>54</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Activities of daily living</td>
<td>56</td>
<td>59</td>
<td>65</td>
<td></td>
</tr>
<tr>
<td>Study skills</td>
<td></td>
<td>50</td>
<td>50</td>
<td>60</td>
</tr>
<tr>
<td>Functional communication</td>
<td></td>
<td>50</td>
<td>50</td>
<td></td>
</tr>
<tr>
<td>ADAPTIVE PROFILE</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Personal adjustment composite</td>
<td>61</td>
<td>48</td>
<td>60</td>
<td></td>
</tr>
<tr>
<td>33</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>EMOTIONAL SYMPTOMS INDEX</td>
<td>68</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Aggression</td>
<td>51</td>
<td>44</td>
<td>45</td>
<td></td>
</tr>
<tr>
<td>Conduct problems</td>
<td>46</td>
<td>43</td>
<td>50</td>
<td></td>
</tr>
<tr>
<td>EXT PROBLEMS INDEX ***</td>
<td>49</td>
<td>43</td>
<td>48</td>
<td></td>
</tr>
<tr>
<td>Atypicality</td>
<td>75</td>
<td>47</td>
<td>50</td>
<td></td>
</tr>
<tr>
<td>Withdrawal</td>
<td>52</td>
<td>49</td>
<td>50</td>
<td></td>
</tr>
<tr>
<td>BEHAVIOURAL SYMPTOMS INDEX</td>
<td></td>
<td>45</td>
<td>50</td>
<td></td>
</tr>
</tbody>
</table>

*Int problem composite is ‘Internalising problem composite’.
*Inattention/HYP Composite is ‘Inattention/Hyperactivity Composite’.
*** Ext Problems Index is ‘Externalising problems index’.
The results in Table 7.3 Indicate that Ben’s teachers do not perceive him to be in the at-risk or clinical range for any of the scales. His teachers acknowledge, as his mother does, via the BASC-2 that he has hearing and eye issues and is easily annoyed by others. His mother perceives that he is in the clinical ranges for anxiety and at-risk range for depression with an overall rating of the clinical range for internalising problems. She also perceives that he is in the at-risk range for atypicality. Ben perceives himself in the clinical range for atypicality, anxiety, interpersonal relations, and a sense of inadequacy with at-risk range in the internalising problem composite and the emotional symptoms index. Ben perceives he is in the ‘at-risk’ range for social stress, and hyperactivity. Overall Ben’s perceptions present in much higher clinical and at-risk ranges than his mother. The teachers do not perceive at-risk or clinical ranges for anything indicating that Ben maintains a façade that is presented to the teachers when compared to his self-perceptions.

7.2.3. PH2—instrument results completed by participant

The PH-2 (Piers & Herzberg, 2002) is a self-report instrument for the assessment of self-concept in children and measures six subscale domains: Behavioural Adjustment, Intellectual/School Status, Physical Appearance/Attributes, Freedom from Anxiety, Popularity, and Happiness and Satisfaction. Although the Intellectual/School Status domain is most closely linked to academic self-concept, some of the items also appear in other domains and can be used to validate consistency of responses and give a wider view on the psychosocial influences on academic self-concept. Table 7.4 offers a summary of the results from the PH2 for Ben.

<table>
<thead>
<tr>
<th>School yr</th>
<th>Percentile</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Total</td>
</tr>
<tr>
<td>8</td>
<td>46</td>
</tr>
</tbody>
</table>

* BEH is behavioural adjustment scale; INT is intellectual scale; PHY is physical appearance and attributes scale; FRE is freedom from anxiety scale; POP is popularity scale; and HAP is the happiness and satisfaction scale.

Table 7.4 illustrates PH2 results that are primarily in the average range with the exception of popularity (POP). The POP scale represents Ben’s self-evaluation of his social functioning as below average, which includes perceived popularity, ability to make friends, and feelings of inclusion (Piers & Herzberg, 2002). Ben’s perceptions of his popularity are reflected in his responses with a ‘yes’ to questions such as, “my
classmates make fun of me”, “I am among the last to be chosen for games of sport”, “people pick on me”, “I am unpopular with girls”, and “I am different from others”.

In summary, the instrument data have revealed a low self-concept score for popularity in the PH2, and at-risk or clinical scores in the BASC-2. The BASC-2 has indicated that Ben sees himself in the clinical range for atypicality, anxiety, interpersonal relations, and a sense of inadequacy with clinical ranges in the internalising problem composite and the emotional symptoms index. Ben perceives he is in the ‘at-risk’ range for social stress, depression, and hyperactivity. Unlike Andrew, Ben’s perceptions are partially supported by his parents but not at all by his teachers. The interview data will now be analysed to explore how the theoretical perspectives relating to the Research Issues compare with the themes that emerged from the interview data.

7.2.4. Interview analysis

As described earlier in Methodology, Chapter Four, the interview analysis was conducted through four layers of exploration: Leximancer analysis (Smith & Humphries, 2006) and independent hand-coding (for triangulation) were used to analyse the transcript data and identify the emergent themes; the themes were then compared with the literature to identify concurrent and discordant themes; then the theoretical perspectives relating to the Research Issues were overlaid and themes identified.

7.2.4.1. Leximancer Analysis

As described in the previous case study, Leximancer is an automated system transforming lexical co-occurrence information from natural language to semantic patterns generating a table with numerical values of theme connectivity and a concept map of emergent themes. The interview transcript was thematically analysed using the Leximancer program and provided emergent themes, and after member-checking using manual coding techniques, and inter-rater checking also using both the program and manual techniques, emergent themes and their connectivity with one another are shown in Table 7.5 below. A Leximancer generated image of the concepts and themes in Table 7.5 is at Figure 7.1.
Table 7.5  Emergent themes and connectivity from interview data

<table>
<thead>
<tr>
<th>Theme</th>
<th>Connectivity (%) &amp; colour in Figure 7.1</th>
<th>Concepts</th>
</tr>
</thead>
<tbody>
<tr>
<td>Class</td>
<td>100 (pink)</td>
<td>Normal, teacher, feel, better, teacher, kids, time, maths, art, enjoy, subject</td>
</tr>
<tr>
<td>School</td>
<td>93 (buff)</td>
<td>School, classes, doing, sport, friends, stuff, term, fun, work, year, time</td>
</tr>
<tr>
<td>Sense</td>
<td>10 (light green)</td>
<td>Sense of worth</td>
</tr>
<tr>
<td>Favourite</td>
<td>05 (dark green)</td>
<td>Favourite, subject</td>
</tr>
<tr>
<td>Friend</td>
<td>02 (blue)</td>
<td>Friend, fun</td>
</tr>
<tr>
<td>Smart</td>
<td>01 (purple)</td>
<td>Smart</td>
</tr>
</tbody>
</table>

Table 7.5 was generated by Leximancer, and indicates the six main themes, in order of relative connectivity to other themes, which were found in the interview data. Arguably the final four themes are very small but have been included to give a greater depth of exploration and analysis of Ben’s data, especially as they relate to his sense of worth and popularity in the school context and were also uncovered during the hand coding of the data. The percentage of connectivity indicates how each theme is associated with other themes and concepts in the data. For example, the theme of ‘class’ is connected with all other themes as it has 100% connectivity. The theme with lowest connectivity at 1%, ‘smart’, is the smallest theme identified. At first glance, the theme of ‘sense’ indicates that Ben has referred to his sense of worth, which is relevant to academic self-concept and is directly connected to the concept of ‘school’ (see Figure 7.1). Ben expressed himself well and shared his feelings about people around him, learning and other aspects of his life.

Table 7.5 is complemented by a generated image of the themes. The connectivity of the themes, how they relate to one another, how the concepts link within and beyond each theme, and their relative connectivity (or rank order- shown through the size of the theme in the image) is illustrated in Figure 7.1. For example, the theme of ‘school’, in the buff colour, overlaps with the themes of ‘class’, ‘sense of worth’, and ‘friend’. The themes of ‘class’ and ‘school’, the largest themes, overlap with each other and all other themes and, thus, are connected to all themes and concepts, thus reinforcing Table 7.5.
The themes emergent from the interview data shown in Figure 7.1 are all related to and overlaid with the identified themes from the literature; each theme was examined in
relation to the literature to ascertain confluence or otherwise. All of the themes were ascertained, and supported by an inter-rater check with an 80% acceptance rate, to have commonality with the themes identified in the literature in Chapter Two: Literature Review.

The theme of ‘class’ in Table 7.5, after investigation of the concepts and the data therein (for example, normal, subjects, enjoy, feel, and better), related to Big Fish Little Pond Effect (BFLPE) in the literature (Marsh, 2011), environment (Mendaglio, 2013) and significant others (Foley Nicpon et al., 2013). The theme of ‘school’ and ‘favourite’ related to the literature themes of enjoyment (Guay et al., 2010; Little, 2002), academic achievement (Assouline et al., 2012; Rinn, 2007) and mastery experience (Harter & Mayberry, 1984) in the literature. The themes of ‘sense’ and ‘smart’ related to self-understanding (Vespi et al., 1992), psychological centrality (Dweck, 1986) and self-talk (Dai et al., 1998). The theme of ‘friend’ related to significant others (Foley Nicpon et al., 2013). The themes from the literature are represented. There are no discordant themes with the literature so only the concurrent themes will be discussed.

7.2.5. Concurrent themes with the literature relating to research issue one

The concurrent themes with the literature were then compared and integrated in table format with components of each research issue and theoretical perspectives.

Table 7.6 shows how the first research issue is addressed by the interview transcript data and gives the précis of the results. The table was used to indicate the number of transcript paragraphs concerning each category (as demonstrated in the previous case study and illustrated in Table 4.5, Chapter Four).
Table 7.6  Analysis of transcript data, theoretical perspectives and concurrent themes with the literature – relating to research issue one: Explore some of the social interactions that influence the development of academic self-concept for twice-exceptional students

For the purposes of this research, the first three, then the sixth and seventh processes along the top of Table 7.6 are foregrounded primarily in the intermental plane (for purposes of exploration) and they also coincide with the theory: legitimate-peripheral-participation and participation-in-practice. The other aspect of the theory explored for research issue one, situated learning, is demonstrated in Tables 7.7 to 7.9 and is investigated after the presentation of legitimate-peripheral-participation and participation-in-practice. This research argues that academic self-concept is influenced by the processes of legitimate-peripheral-participation, participation-in-practice and situated learning.

Analysis of Table 7.6 indicates that, for Ben, the influence of significant others, academic achievement, and enjoyment are dominant, and have influenced the development of academic self-concept. Teachers are the largest influence in all of those processes in the school context. Social and cultural contexts and practices will be explored in research issue two.
7.2.6. **How theoretical perspectives relating to research issue one were present in the data**

Instrument and interview data were analysed to inform findings of how legitimate-peripheral-participation is evident for Ben. In the BASC-2 SDH, Ben’s parents report that he is compassionate, creative, and has a strong sense of social justice. On the BASC-2 PRS-A (completed by Ben’s mother) the results imply that Ben has good social skills, leadership, adaptability and that he has a high score on the adaptive skills composite. This perception is shared by both of the teachers in the BASC-2 TRS-A. However, in contrast to this, Ben’s results on the BASC-2 SRP show that, although he finds social situations positive, he also reports that he finds interpersonal relations stressful, and he feels ‘atypical’ and has a high sense of inadequacy and anxiety.

Ben’s mother discloses that her concern is that he, and other people, compare him with his high-achieving older twin-brothers and he feels ‘constantly disappointed with his performance’. This is reflected in the BASC-2 by Ben’s mother showing that she perceives high levels of depression and anxiety (which are also perceived by Ben). Depression problems frequently occur with anxiety problems (Semrud-Clikeman et al., 2003).

His teachers do not report that they perceive any at-risk or clinical behaviours which may be indicative of his ability to ‘mask’ his true feelings and present himself within normal ranges despite his perceived inadequacies.

Ben’s results for the PH2 indicate that overall he has an average self-concept in most scales, but a low self-concept for popularity. Notably he scores in the average range in the intellectual scale and, later in interview, reports that his academic self-concept has improved a great deal over the previous two years due to recognition of his giftedness and subsequent support for his disability. The intellectual domain is most closely related to and overlapping with academic self-concept and the average result indicates that his academic self-concept is now in the normal range in the school context.

When considering research issue one and the social interactions, which are relatively strenuous for Ben despite his success with them, such interactions might exert influence upon his self-perceptions as he finds school and academic work strenuous and tiring. With regards to legitimate-peripheral-participation, the instrument data indicate that
Ben, although sociable and able to ‘play the game’, feels on the periphery of his social context.

Interview data informs legitimate-peripheral-participation. For legitimate-peripheral-participation, the breakdowns of social interactions that influence Ben are primarily with teachers and closely followed by peers. The influence of parents and siblings is very low; this might indicate that these parties are not as relevant to Ben in the ‘school context’ or the community-of-practice when compared to those that Ben interacts with daily at school. Legitimate-peripheral-participation (Lave & Wenger, 1991) articulates that learners inevitably participate in communities of practitioners and learn by being in the location of practice and gradually getting the hang of things while being accepted by those involved. This research is concerned with how an individual’s intentions to learn are engaged, and how their academic self-concept is formed through the social, interactive process of becoming a full participant in sociocultural practice.

Figure 7.2 shows extended analysis of the interview data to indicate both the relative influence of significant others and the extent of the themes within the influences of legitimate-peripheral-participation.

Figure 7.2 indicates that teachers have the highest influence with regards to legitimate-peripheral-participation, particularly within the literature themes of significant others.
and academic achievement. Peers are the other major contributors and emphasized are the influences of BFLPE, academic achievement and self-talk. Siblings have the next, albeit very low, influence for Ben and show that the influences come through the two themes of significant others and academic achievement. Finally, parents are also a minor legitimate-peripheral-participation contributor for Ben in the one area of self-talk. The literature themes of age or gender did not occur at any time in the legitimate-peripheral-participation data.

Participation-in-practice is now considered for research issue one. Participation-in-practice provides opportunities for mutually supportive learning or practices (Sinclair, 2004). As explained earlier in Chapter Three and Chapter Five, practices are organised by the culture and environment in an individual’s community of practice and repeated participation enhances the performance in such practices, and thus the development of cognition (Cole, 1996; Scribner & Cole, 1981). Academic self-concept is considered domain specific (Marsh et al., 1995) which resembles the participation-in-practice conjecture that many practices usually occur within a particular domain and the cognitive development tends to be domain-specific.

With regards to participation-in-practice, the breakdowns of social interactions that influence Ben are primarily with teachers. The influence of peers, siblings and parents is low. Figure 5.8 illustrates the data for participation-in-practice as shown in Table 7.6.
Participation-in-practice has similar results to legitimate-peripheral-participation in that teachers are shown to have the most influence, in particular in the literature themes of *academic achievement* and *significant others*. *Enjoyment* was a highly represented theme with peers. Again, the literature themes of *age* or *gender* did not occur at any time in the participation-in-practice data for this case study.

The final element to be explored for research issue one is situated learning. Situated learning pertains to social co-participation, in a specific environment, community-of-practice, or context that enables a learner to acquire knowledge. Cultural practices in these communities enable learning (Wenger, 1991). This research is using three ways to explore how identities are shaped in situated learning (Wenger, 1996): engagement (doing things together, talking and producing artefacts), imagination (constructing our truths of the world: imaginative images of the world are essential to our sense-of-self and to our interpretation of our participation in the social world), and alignment (aligning our activities with community processes, such as moral codes, that can become deep aspects of our identities). Engagement and alignment activities are foregrounded in the intermental plane and have been explored in both instrument and interview transcript data. As with the previous case study, the data reveal that alignment is consistently associated with either engagement or imagination.

The instrument and interview data were analysed to understand how situated learning through the three activities of engagement, alignment and imagination impacted on
Ben’s formulation of academic self-concept. Tables 7.7, 7.8, and 7.9 have examples to indicate how situated learning in the form of engagement, imagination and alignment are present in the interview data. Many examples could have been used from the interview data, and although the three ways (engagement, alignment, imagination) are foregrounded for purposes of explication, the data are not so clear-cut because many data could have been used as examples for two or more ways. The data used for the examples have been inter-rater checked by two independent researchers for reliability with 80% agreement and 20% negotiated agreement levels.

Table 7.7  Situated learning and the interview data supporting ‘engagement’

<table>
<thead>
<tr>
<th>Engagement</th>
<th>Doing things together, talking and producing artefacts</th>
</tr>
</thead>
<tbody>
<tr>
<td>Percentage of transcript data</td>
<td>65%</td>
</tr>
<tr>
<td>Examples from transcript data</td>
<td>I handed in all of my booklets, did everything and I still only got a participant B+.</td>
</tr>
<tr>
<td></td>
<td>I kind of always enjoyed Art and like Music and stuff. I got an A minus in Science and I kind of enjoy that even though like most kids would not enjoy Science.</td>
</tr>
<tr>
<td></td>
<td>I love art. I love that I can move and create and have a good outcome.</td>
</tr>
</tbody>
</table>

Table 7.7 indicates that Ben related to *engagement* in the construct of situated learning during 65% of his interview. The three examples highlight how he finds the products of his efforts very important for example grades and artwork. Table 7.31 shows how the situated learning construct of *imagination* presented in the interview data.

Table 7.8  Situated Learning and the interview data supporting ‘alignment’

<table>
<thead>
<tr>
<th>Alignment</th>
<th>Aligning our activities with community processes, like moral codes, that can become deep aspects of our identities</th>
</tr>
</thead>
<tbody>
<tr>
<td>Percentage of transcript data</td>
<td>Overlap engagement by 35% and imagination by 30%</td>
</tr>
<tr>
<td>Examples</td>
<td>I just never really overall liked the Reverend because he just builds up, builds up and then snaps and like screams at someone who never like gets into trouble or anything. I don't really like Religion.</td>
</tr>
<tr>
<td></td>
<td>So I like more constant teachers, well people really, I'm thinking of people like Mr K, constant discipline, you know where you stand all the time.</td>
</tr>
<tr>
<td></td>
<td>I like just everyone working and a good teacher as well because if you have a teacher who doesn't care about anything then you just don't get it either.</td>
</tr>
</tbody>
</table>

Table 7.8 indicates that Ben associated with *alignment* in the construct of situated learning during 65% of his interview: alignment in the context of *engagement* by 35%
and alignment in the context of imagination by 30%. The three quotations are examples from each context: the first two relating to alignment in imagination and the third relating to alignment in engagement. The percentages at times overlap within the data and so do not add to 100% exactly. Ben indicates that he aligns with, or wants to be identified as a hardworking, disciplined student who engages with high calibre teachers. Table 7.9 shows how the situated learning construct of alignment presented in the interview data.

Table 7.9 Situated learning and interview data supporting ‘imagination’

<table>
<thead>
<tr>
<th>Imagination</th>
<th>Constructing our truths of the world – imaginative images of the world are essential to our sense-of-self and to our interpretation of our participation in the social world</th>
</tr>
</thead>
<tbody>
<tr>
<td>Percentage of transcript data</td>
<td>35%</td>
</tr>
<tr>
<td>Examples</td>
<td>So, it’s enjoyment of the subject that helps me. Like if I had a really bad teacher for Art, I would still love Art but it wouldn’t be as much fun.</td>
</tr>
<tr>
<td></td>
<td>My stutter is with me kind of all the time, it goes silently. No one really ever hears it but it’s kind of there, most of the time. When I feel like I’m about to stutter…that is when it kicks in but I don’t think people notice now.</td>
</tr>
</tbody>
</table>

Table 7.9 indicates that Ben pertained to imagination in the construct of situated learning during 35% of his interview. The two examples highlight the diversity he used that pertained to his imagination in the school context.

7.2.7 Summary of Instrument and Interview data relating to research issue one

In summary, research issue one sought to discover the social interactions that influence the development of academic self-concept. The analysis of the instrument data show that Ben experiences a scope of perceptions, ranging from clinical, at-risk, or normative ranges, some directly associated with academic self-concept and others that indirectly influence academic self-concept. The instruments also indicate how such perceptions align with his mother’s perceptions and differ from his teachers’ perceptions thus highlighting how Ben’s imagination, his sense-of-self in the world, is situated. The interview data reinforces the instrument data and adds layers of understanding to the perceptions that influence academic self-concept: namely BFLPE, significant others, environment, academic achievement, mastery experience, enjoyment, self-understanding, psychological centrality, and self-talk, all of which are viewed through the lens of participation-in-practice, legitimate-peripheral-participation, and situated learning.
This case study presentation now explores research issue two, which provides the enquiry platform to explore the social practices and contexts that influence the development of academic self-concept. Research issue two aimed to explore the social practices and contexts that influence the development of academic self-concept. The social practices and contexts are based in the construct of situated learning (Lave & Wenger, 1991). Social and cultural contexts and practices are explored to explicate how different situations, environments, and institutions influence the cultural practices and hence the academic self-concept.

7.2.8. Concurrent themes with the literature relating to research issue two

The concurrent themes with the literature were then compared and integrated in table format with components of research issue 2 and the theoretical perspectives as seen in Table 7.10, which shows how research issue two is addressed by the interview transcript data and gives a précis of the results. The Table also indicates the number of occurrences in the transcript data (as illustrated in Table 4.5, Chapter Four (Methodology)). As with research issue one, the themes shown in Figure 7.1 were related to and overlaid with the themes from the literature based on the concepts within each of them. The themes will be explored with regards to social practices and contexts.

Table 7.10 Analysis of transcript data derived from Figure 7.6, overlaid with theoretical perspectives and concurrent and discordant themes with the literature – related to research issue 2: What are the social practices and contexts that influence the development

<table>
<thead>
<tr>
<th>The context</th>
<th>BFLPE</th>
<th>Significant others</th>
<th>Environment</th>
<th>Academic achievement</th>
<th>Mastery experience</th>
<th>Enjoyment</th>
<th>Self-understanding</th>
<th>Psychological centrality</th>
<th>Self-talk</th>
</tr>
</thead>
<tbody>
<tr>
<td>The practice</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>2</td>
<td>5</td>
<td>6</td>
<td>2</td>
<td>0</td>
<td>6</td>
<td>4</td>
<td>2</td>
<td>0</td>
</tr>
<tr>
<td></td>
<td>3</td>
<td>9</td>
<td>8</td>
<td>9</td>
<td>6</td>
<td>12</td>
<td>5</td>
<td>3</td>
<td>4</td>
</tr>
</tbody>
</table>

For the purposes of this research, the first five processes along the top of Table 7.10 are foregrounded primarily in the intermental plane (for purposes of exploration). The remaining four processes are foregrounded in the intramental plane and are the internalisation of the intermental processes which contributes to informing the
development of academic self-concept. They also coincide with the theory relating to social practices and contexts. This research argues that academic self-concept is also influenced by the social practices and contexts.

Analysis of the above Table 7.10 indicates that, for Ben, the influences of environment, significant others, enjoyment and academic achievement are the most dominant, and have influenced the development of academic self-concept. For Ben, the social practice was more influential than the social context.

7.2.9. How theoretical perspectives relating to research issue two were present in the data

With regard to social practice and social context, the relative influences of the emergent themes from the interview data, which coincide with the literature, are presented in Figure 7.4 and show that social practice is about twice as influential as social contexts. However both are particularly influenced by significant others, environment, enjoyment and, for social practices, academic achievement.

![Figure 7.4 Relative contributions that different themes identified in the literature make to social contexts and practices for Ben](image)

*Significant others* and *environment* play a majority role for both social contexts and social practices, whereas *enjoyment* and *mastery experience* are also large contributors to social practices. It is noteworthy that, as with the previous case study, for both social contexts and social practices neither gender nor age contribute, although these are
considered consequential by a substantial portion of the literature as detailed in Chapter Two (Literature Review). Now considered is how social contexts and practices, as evident in the data, are situated within the theoretical framework of situated learning.

7.2.9.1. Situated learning

The instrument and interview data were analysed to understand how situated learning through the three activities of engagement, alignment and imagination impacted on Ben’s formulation of academic self-concept.

Engagement (doing things together, talking and producing artefacts) was interpreted through the BASC-2 SRP and the PH2. From the PH2, the indication of engagement might be seen through the ‘behaviour’ element as this indicates engagement and, thus, interest and cooperation with education. His behaviour is in the normative range on the PH2 completed by him. The BASC-2 SOS, completed by the researcher whilst observing Ben in classes, also indicates behaviour in the normative range; Ben appeared to be visually engaged in all of his lessons with some occasional, minor fidgeting in the lessons he professed to dislike.

An indicator of alignment for Ben was his perceived alignment with the social contexts and practices around him, traversing both the intramental and intermental planes, indicating how he affiliates his activities with community processes, such as moral codes, that can become deep aspects of identity, and thus contribute to his academic self-concept (Valentine et al., 2004). The BASC-2 SRP reports a positive response to the elements of the school problem composite, indicating that he is aligned to the processes, practices and contexts presented in the institution of his school. He is also observed in the classroom, via the BASC-2, as complying with class rules, teachers, and lessons. Additionally, the BASC-2 classroom observations also indicate conformity in the classroom context, and isolation from his peers, regardless of whether the class is Ben’s most or least favourite subject and teacher. Research issue two, exploring the practices and contexts influencing academic self-concept, is illustrated using the interview data in Figure 7.9.

Imagination for Ben in the context of situated learning is exploring how he constructs his truths of the world: images of the world that are essential to his sense-of-self, and to his interpretation of his participation in the social world. A part of Ben’s sense-of-self can be drawn from the self-report instrument in the BASC-2. Ben perceives himself to
be at the at-risk or clinical levels in the internalizing composite and the emotional symptoms composite, with high scoring subscales included atypicality, social stress, anxiety, depression, sense of inadequacy and interpersonal relations. Ben also perceives that he is in the at-risk range for hyperactivity, which is not supported by his mother or teachers. His mother does support his perceptions of anxiety, depression, and atypicality. All sub-categories of the PH2 can be considered to reflect the imagination activity and, overall, the PH2 indicates an average self-concept in all but the popularity scale; thus indicating that although his ‘truth’ of the world and his place within it is in the average range, he feels unpopular. The interview data concerning situated learning supports the instrument data as shown in Tables 7.11, 7.12 and 7.13.

<table>
<thead>
<tr>
<th>Table 7.11</th>
<th>Situated learning and interview data supporting engagement in the social practices and contexts in research issue two</th>
</tr>
</thead>
<tbody>
<tr>
<td>Engagement</td>
<td>Doing things together, talking and producing artifacts</td>
</tr>
<tr>
<td>Percentage of transcript data</td>
<td>45%</td>
</tr>
<tr>
<td>Examples</td>
<td>Social contexts:</td>
</tr>
<tr>
<td></td>
<td>I know I am doing ok because I am in the smart classes at school. But, it is still like competition and I still feel useless at times. But I love the classes because they work hard and that kind of thing.</td>
</tr>
<tr>
<td></td>
<td>Social Practices:</td>
</tr>
<tr>
<td></td>
<td>It is important that my Mum can support me and talk up for me, advocate for me, and makes me feel better.</td>
</tr>
<tr>
<td></td>
<td>I love doing art most after school in a great class with fun girls. I am not as good as them but I love that class because it is more fun and there is no pressure about grades.</td>
</tr>
<tr>
<td></td>
<td>Mr T was a good teacher. He would not make you repeat easy stuff but allow you to skip and move on. He would make sure you were ok with important stuff so you wouldn’t get smashed on the test.</td>
</tr>
</tbody>
</table>

Table 7.11 indicates that the interview data pertains to engagement in the construct of situated learning, relating to social contexts and practices, for 45% of the interview data. Ben finds that enjoyment, fun and feeling supported are important for his engagement. Table 7.12 presents the data relating to alignment for Ben.
Table 7.12 Situated learning and interview data supporting alignment in the context social practices and contexts in research issue two.

<table>
<thead>
<tr>
<th>Alignment</th>
<th>Aligning our activities with community processes, such as moral codes, that can become deep aspects of our identities</th>
</tr>
</thead>
<tbody>
<tr>
<td>Percentage of transcript data</td>
<td>Overlap engagement by 40% and imagination by 35%</td>
</tr>
<tr>
<td>Examples</td>
<td></td>
</tr>
<tr>
<td>Social contexts</td>
<td>How much I enjoy a class depends on the teacher and their enthusiasm and if they allow the idiots to take over.</td>
</tr>
<tr>
<td></td>
<td>I prefer to be under pressure in the accelerated class because the teachers are better and the kids behave.</td>
</tr>
<tr>
<td>Social practices</td>
<td>When it comes to self-worth, if the teachers say you can do something, you think “yeah – I can do that”. It makes you feel more able to do it.</td>
</tr>
<tr>
<td></td>
<td>My maths teacher is rubbish and he is like all the kids – just mucking around on the laptop. It really wastes my time.</td>
</tr>
</tbody>
</table>

Table 7.12 indicates that Ben related to *alignment* occurring with *engagement* for 40% of his interview and *alignment* occurring with *imagination* for 35%. The examples used in Table 7.12 demonstrate that Ben aims to align with social contexts within the school and has expectations of appropriate behaviours from teachers and peers. The feedback from the teacher is also important for Ben. Table 7.13 presents the data relating to *imagination* for Ben.

Table 7.13 Situated learning and interview data supporting imagination in the context social practices and contexts in research issue two.

<table>
<thead>
<tr>
<th>Imagination</th>
<th>Constructing our truths of the world – imaginative images of the world are essential to our sense-of-self and to our interpretation of our participation in the social world</th>
</tr>
</thead>
<tbody>
<tr>
<td>Percentage of transcript data</td>
<td>55%</td>
</tr>
<tr>
<td>Examples</td>
<td></td>
</tr>
<tr>
<td>Social contexts</td>
<td>I feel most confident, most capable and most safe when I am at home with my Mum.</td>
</tr>
<tr>
<td></td>
<td>I know when I am in a second rate class because I get a second rate teacher and I feel second rate myself.</td>
</tr>
<tr>
<td>Social practices</td>
<td>If I really love a subject I would love it even if I was getting E's – but that has never happened…I am good at the subjects I love.</td>
</tr>
</tbody>
</table>

Table 7.13 gives examples from interview data of how Ben constructs his sense-of-self in the world and how he interprets his participation in the social world. Ben states that he feels safest at home, which supports the BASC-2 data from Ben and his mother when
compared to that of his teachers. Ben perceives that he is successful at the subjects he enjoys, but that teacher feedback and perceived teacher quality has influence with him.

In summary, research issue two sought to discover the social practices and contexts that influence the development of academic self-concept. The analysis of the instrument data show that Ben experiences a scope of perceptions, ranging from clinical, at-risk, or normative ranges, directly or indirectly, and are associated with academic self-concept. The instrument data indicate that different social contexts and practices, namely whether he is at home or school (PH2 data) do influence Ben’s sense-of-self and his academic self-concept. However, there is an overarching sense from the data that his academic self-concept is in the normative range and is primarily influenced by teachers and his perception of enjoyment of the subject. The interview data reinforce the instrument data and adds layers of understanding to the social contexts and practices that influence academic self-concept for Ben.

This section has sought to explore the emergent themes evident from the data and how the data pertain to the theoretical framework of situated learning, participation-in-practice and legitimate-peripheral-participation. As a detailed analysis and discussion of how both the instrument and interview data support the emergent themes are analysed and fully discussed for all three case studies in Chapter 9, a full analysis into how this data support the emergent themes for Ben can be found in Appendix H. The data presented in Appendix H adds another layer to the analysis of the instrument and interview data, and how the data support the emergent themes: BFLPE, significant others, environment, academic achievement, mastery experience, enjoyment, self-understanding, psychological centrality, self-talk and basketball. In order to scaffold cross-referencing, the Table numbers used in Appendix H are continued under the numbering theme of this Chapter.

7.3. Chapter summary

The analysis of the case study data for Ben illustrates that there are nine themes evident that can be overlaid with nine of the eleven identified themes in current literature. The two themes in the literature that have not been identified are gender and age. Perhaps these themes are not of consequence for Ben as his peers are primarily his age, and he is in an all-boys school. To recap, the two Research Issues are:
1. Explore some of the social interactions that influence the development of academic self-concept for twice-exceptional students.

2. Explore some of the social practices and contexts that influence the development of academic self-concept for twice-exceptional students.

The exploration of the Research Issues has indicated that, for Ben, there are influences on his academic self-concept that are linked to social interactions, social practices and social contexts in his school community-of-practice. The assertions made from the analysis and findings of Ben’s case study are presented in Chapter Nine, Discussion.
Chapter 8. Case study findings—Chris

"I love science because you learn a lot… it’s fun learning about chemicals and stuff. I’m not sure why, it’s just fun."

8.1. Defining the case—Chris

Chris is a Year 4 student at a boys’ private school in Queensland and is nine years old. The school recognises that he is both gifted and with disability; Chris has recently been recognised by the school as gifted and invited into the gifted program. He also has adjustments under the learning support program. In accordance with the definition of twice-exceptionality that was presented in the Literature Review, an IQ test showing results in the gifted range, together with a specialist report showing Chris has Asperger’s syndrome have been the defining reports for his identification by the school. Chris’s teachers are aware of his disability and adjustments are made for him in the classroom. Chris’s family presents as a middle-class family with professional parents who report close family ties. Chris is the older child of two and lives with his parents and younger sister. The parents are both specialist teachers.

8.1.1. Parents Structured Developmental History (SDH)

The SDH was completed by Chris’s parents. The family activities together are wide-ranging and social, and include meals, movies, conversations, family visits, trips, sports, games and watching television together. Chris’s parents report that they enjoy his wonderful sense-of-humour, the one-on-one parent time with him and the extra-ordinary questions that he asks. They find that the most difficult aspects to Chris’s personality are his emotional clashes with his younger sister, and his rapid and frequent mood changes. Chris’s ‘worried thoughts’ are of particular concern to his parents. The parental expectations for Chris is that he will be able to choose anything he wants to pursue and they hope he will pursue a career which will make him happy. He currently wants to be a marine biologist and his parents support this. Both parents are involved with the discipline at home but use differing styles: the father is more ‘dictatorial’ (SDH, 2011) and the mother is more placating. The mother claims to be in charge of discipline at home with support from the father. The parents report having very few discipline issues with Chris and incidents primarily involve temper outbursts over homework, or sibling disputes.
Chris’s development through childhood has shown atypical development and delays in key areas. Chris was a late walker and had unclear speech until he was nearly four years old. There have been feeding issues throughout early childhood when clinical reflux led to gagging on solids as an infant. Chris had delayed development with gross motor skills including walking, skipping, catching and throwing. He was an unsettled baby and has had difficulties with sleep throughout childhood. Chris has temper tantrums, separation anxiety and his parents report excessive crying. Chris’s parents report that he is accident-prone, has tics and twitches, which are irregular in presentation. Chris was diagnosed with central auditory processing disorder and Asperger’s syndrome. Although central auditory processing disorder and Asperger’s syndrome are not listed in the DSM5, and does not attract any funding for a school, the school recognises Asperger’s syndrome and central auditory processing disorder as disabilities needing to be supported in the classroom.

Chris’s parents report that he has a friendly disposition with playmates and friends and often takes the role of follower. He is still very young and his parents report that he is not exposed to any drugs, alcohol or tobacco. Chris has high expectations of the behaviour of others and finds difficulty when play is not fair or he has to listen to others for too long. Chris likes to play with younger children as he is allowed to direct the play but with his age peers he tends to be a follower. Chris does not like team games and prefers to interact with one person at a time. Chris loves Pokémon and he also enjoys swimming, cub scouts and playing a clarinet. Chris’s parents also report that he has a short attention span unless in an area of high interest, that he seems unhappy most of the time and withholds affection. Chris dislikes a lack of structure, is over-reactive, requires high parental attention and cannot calm down, particularly at bedtime. Chris finds it hard to hide his feelings and tends to express his thoughts regardless of their appropriateness. He gets angry and his parents report that this is usually concerned with social justice issues or his little sister. Chris does not like school and finds the volume of work and the quick changes in activities overwhelming. He often complains of a sore tummy which, his parents suggest, is related to anxiety. Chris enjoys going to school the day he has his gifted withdrawal class but complains that this is only 45 minutes per week.

Chris’s educational history shows that he has attended one pre-school childcare and one school. His parents do not report any problems at school. They do report that he dislikes school and disliked childcare and has, until recently, had severe separation anxiety.
Chris has always disliked going to school and this has not improved in the current year. His parents report that he has not demonstrated learning difficulties and has been assessed throughout his schooling with year appropriate performance grades. There are no parental concerns about the current school but they are concerned that he finds friendships challenging and, as a non-sporty student, may not fulfil his aspirations of becoming a house-captain in the future.

There are seven characteristics identified by Neihart (2000) that are common to gifted children with Asperger’s syndrome and these have all been identified by Chris’s parents (SDH, 2011) to be evident in Chris. The characteristics are verbal precocity, excellent memory and enjoyment of memorising, a fascination with numbers, intense interest in a topic, constant talk about interests, asking endless questions, and hypersensitivity to noises and food. Another characteristic which has caused the parents concern has been the asynchronous development of Chris’s cognitive versus his social and affective development (Silverman, 1993).

8.1.2. School records
The school records provided the researcher with information about Chris’s school performance history and two specialist reports: the SB5, indicating giftedness, the paediatrician report detailing ASD spectrum, and the neurosensory report detailing central auditory processing disorder. Classroom adjustments were recommended by the otologist and paediatrician and have been implemented by the school.

The SB5 results in Table 8.1 indicate a range in the sub-scales. As detailed in Chapter Two (Literature Review), the average IQ has been normed around 100 and IQs considered to be in the gifted range for this research are those over 120 or above the 90th percentile in the normed population (Gagné, 2007). Students with Asperger’s syndrome typically demonstrate relatively low IQ subscales for working memory in the SB5 (Foley Nicpon et al., 2011) and Chris has a depressed working memory score. Table 8.1 indicates that Chris has a gifted composite IQ score as a result of a gifted score in all subscales except for working memory. Gifted composites are calculated when, for the SB5, the working memory score is eliminated as it differs markedly from the other scores (Rimm et al, 2008) and would skew the full scale IQ score.

Difficulties with oral expression and written language skills have been reported in those with Asperger’s syndrome (Meyer, 2001; Myles, Barnhill, Hagiwara, Grisold, &
The diagnostic severity of Asperger’s syndrome for Chris was not included in the school file report from the paediatrician.

Table 8.1  SB5 - aged 6 years old, 3.5 years prior to study

<table>
<thead>
<tr>
<th>Item</th>
<th>IQ</th>
<th>Likely percentile rank</th>
</tr>
</thead>
<tbody>
<tr>
<td>Gifted Composite IQ</td>
<td>137</td>
<td>99&lt;sup&gt;b&lt;/sup&gt;</td>
</tr>
<tr>
<td>Nonverbal IQ sub-scale</td>
<td>123</td>
<td>94&lt;sup&gt;b&lt;/sup&gt;</td>
</tr>
<tr>
<td>Verbal IQ subscale</td>
<td>132</td>
<td>98&lt;sup&gt;b&lt;/sup&gt;</td>
</tr>
<tr>
<td>FACTOR INDEX SCORES</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Fluid reasoning</td>
<td>135</td>
<td>99&lt;sup&gt;b&lt;/sup&gt;</td>
</tr>
<tr>
<td>Knowledge</td>
<td>140</td>
<td>99.6&lt;sup&gt;b&lt;/sup&gt;</td>
</tr>
<tr>
<td>Quantitative reasoning</td>
<td>122</td>
<td>93&lt;sup&gt;d&lt;/sup&gt;</td>
</tr>
<tr>
<td>Visual spatial</td>
<td>129</td>
<td>97&lt;sup&gt;b&lt;/sup&gt;</td>
</tr>
<tr>
<td>Working memory</td>
<td>109</td>
<td>55&lt;sup&gt;b&lt;/sup&gt;</td>
</tr>
</tbody>
</table>

The range between the high scores, and the relatively low Working Memory score, may be a cause of learning tension as Chris strives to perform and achieve. The SB5 assessor surmised in the report that the variance between the item scores may be frustrating and anxiety provoking for Chris, which might in turn lead to ‘behavioural problems’ (school records, 2011).

Typical of Asperger’s syndrome, verbal and nonverbal abilities are stronger than working memory abilities (Mayes & Calhoun, 2003). Lowered processing speed index or working memory scores may explain academic achievement and behavioural difficulties in gifted children with Asperger’s syndrome (Assouline, Foley Nicpon, & Dockery, 2011).

8.2.  Presentation of the data collected

As detailed in Chapter Four (Methodology), two instruments were used for this research. The first was the BASC-2 which has four forms that are analysed: the classroom observation form (SOS) completed by the researcher in two classes, the self-report form (SRP-C) completed by the participant, the parent report form (PRS-C) completed by the parent, and the teacher report form (TRS-C) completed by two teachers. The favourite and least favourite subject lessons were taught by the same teacher (the classroom teacher). The second instrument analysed is the Piers-Harris 2 (PH2) which was completed only by Chris and reflects different aspects of his self-concept.
8.2.1. Instrument data

Five forms included in the ‘Behaviour Assessment for Children, 2nd Edition’ (BASC-2) were used to collect data from the participant, their parents, their teachers and the researcher. Additionally, the PH2 was also completed by the participant. The instrument data are now presented.

8.2.1.1. Classroom Observations.

Classroom observations using the SOS were conducted in four of Chris’s classes. Two instruments were completed in science, his favourite subject class, and two in maths, which was his least favourite subject class. The aim was to assess if there was any difference in behaviour between the two different subjects. A summary of the SOS is in Table 8.2.

<table>
<thead>
<tr>
<th>Table 8.2 Summary of SOS observations in class</th>
</tr>
</thead>
<tbody>
<tr>
<td>SOS Observation</td>
</tr>
<tr>
<td>Positive behaviours</td>
</tr>
<tr>
<td>Reaction to peer distractions</td>
</tr>
<tr>
<td>Remaining seated</td>
</tr>
<tr>
<td>Appearing focused</td>
</tr>
<tr>
<td>Unrequired movement or fidgeting or trips to toilet</td>
</tr>
<tr>
<td>Head on desk - asleep</td>
</tr>
<tr>
<td>Seating position</td>
</tr>
<tr>
<td>Overall impression</td>
</tr>
</tbody>
</table>

Adaptive behaviours were observed in both classes as Chris did not distract other students or demonstrate any inappropriate movement or vocalisation. He did not interact
with his peers unless to frown at them if they demonstrated inappropriate vocalisation. However, Chris’s behaviour, focus, and work on subjects varied greatly between his most and least favourite class. He was focused and on-task in his favourite class, science, throughout both classes. In maths, his least favourite class, Chris demonstrated high levels of inattention when the teacher was instructing including daydreaming, chair swinging, looking around, yawning, looking at hands, fiddling with objects, and writing on the desk. When the class focus shifted to individual book work, Chris was observed wandering around the room and leaving the room frequently to visit the toilet. Chris also fell asleep in both of the maths classes observed and completed very little of the required work in maths (one question of thirty in both classes). Whether the lesson was teacher, board work, or individual work centred, Chris sat at the front of the class. The noise level in the class did not appear to make a difference as both science and maths had similar noise levels but Chris was highly focused and on task in science. The teacher commented that Chris does leave the room often but, “can’t be asked to cross his legs!” The overarching observations were that Chris has a high standard of conforming behaviour in his favourite classes, and was highly distracted and off-task in the least-favourite class. Additional observations were that Chris was placed by the teacher at the front of the class as a disability adjustment, and never asked questions of the teacher, even when others were asking. In interview he stated that he was, “…shy and don’t like looking stupid” (Chris, 2011).

8.2.2. BASC-2—instrument results completed by participant, parents and teachers

All of the questionnaires presented in this section of the Chapter gave psychometric data about psychosocial perceptions in quantitative format from Chris’, his teachers’ and his parents’ perspectives. Table 8.3 offers a summary of the results of each BASC-2 instrument completed in percentiles normed against the population. There are slight variations between the scales and subscales for the BASC-2 forms which are dependent upon the age category of the form; Chris and his parents and teacher used the ‘C’ forms. For Chris there is only one teacher BASC-2 (TRS-C) form completed as the classroom teacher was the primary teacher for all of his classes.

The results in Table 8.3 indicate that Chris perceives himself to be in none of the clinical ranges but in the ‘at-risk’ ranges for attitude to school, anxiety and attention problems. On the BASC-2 SRP-C form completed by Chris, his results highlighted
scores in critical items. Critical items are “responses that may deserve attention” (BASC-2 SRP-C, 2011).

Table 8.3  BASC-2 summary of Results

<table>
<thead>
<tr>
<th>Scales and subscales</th>
<th>SRP-C</th>
<th>PRS-C</th>
<th>TRS-C: classroom teacher all subjects</th>
</tr>
</thead>
<tbody>
<tr>
<td>Attitude to school</td>
<td>85</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Attitude to teachers</td>
<td>58</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Sensation seeking</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Attention problems</td>
<td>90</td>
<td>61</td>
<td></td>
</tr>
<tr>
<td>Learning problems</td>
<td></td>
<td>65</td>
<td></td>
</tr>
<tr>
<td>SCHOOL PROBLEM COMPOSITE</td>
<td>76</td>
<td>62</td>
<td></td>
</tr>
<tr>
<td>Atypicality</td>
<td>25</td>
<td>97</td>
<td>20</td>
</tr>
<tr>
<td>Withdrawal</td>
<td></td>
<td>99</td>
<td>80</td>
</tr>
<tr>
<td>Locus of control</td>
<td>59</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Social stress</td>
<td>78</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Anxiety</td>
<td>85</td>
<td>99</td>
<td>83</td>
</tr>
<tr>
<td>Depression</td>
<td>56</td>
<td>97</td>
<td>73</td>
</tr>
<tr>
<td>Sense of inadequacy</td>
<td>61</td>
<td>99</td>
<td>21</td>
</tr>
<tr>
<td>INT PROBLEM COMPOSITE *</td>
<td>63</td>
<td>99</td>
<td>67</td>
</tr>
<tr>
<td>Attention problems</td>
<td>90</td>
<td>89</td>
<td>26</td>
</tr>
<tr>
<td>Hyperactivity</td>
<td>51</td>
<td>86</td>
<td>24</td>
</tr>
<tr>
<td>INATTENTION/HYP COMPOSITE **</td>
<td>78</td>
<td></td>
<td>23</td>
</tr>
<tr>
<td>Relations with parents</td>
<td>59</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Interpersonal elations</td>
<td>50</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Self-esteem</td>
<td>45</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Self-reliance</td>
<td>54</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Adaptability</td>
<td>1</td>
<td>36</td>
<td></td>
</tr>
<tr>
<td>Social skills</td>
<td>1</td>
<td>27</td>
<td></td>
</tr>
<tr>
<td>Leadership</td>
<td>3</td>
<td>48</td>
<td></td>
</tr>
<tr>
<td>Activities of daily living</td>
<td>3</td>
<td>22</td>
<td></td>
</tr>
<tr>
<td>Study skills</td>
<td></td>
<td>63</td>
<td></td>
</tr>
<tr>
<td>Functional communication</td>
<td>8</td>
<td>35</td>
<td></td>
</tr>
<tr>
<td>Personal adjustment composite</td>
<td>61</td>
<td></td>
<td>1</td>
</tr>
<tr>
<td>Adaptive skills composite:</td>
<td></td>
<td>41</td>
<td></td>
</tr>
<tr>
<td>EMOTIONAL SYMPTOMS INDEX</td>
<td>66</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Aggression</td>
<td>76</td>
<td></td>
<td>24</td>
</tr>
<tr>
<td>Conduct problems</td>
<td>52</td>
<td></td>
<td>20</td>
</tr>
<tr>
<td>EXT PROBLEMS INDEX ***</td>
<td>76</td>
<td>19</td>
<td></td>
</tr>
<tr>
<td>Atypicality</td>
<td>97</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Withdrawal</td>
<td>99</td>
<td></td>
<td></td>
</tr>
<tr>
<td>BEHAVIOURAL SYMPTOMS INDEX</td>
<td>1</td>
<td>39</td>
<td></td>
</tr>
</tbody>
</table>

*Int problem composite is ‘Internalising problem composite’.
**Inattention/HYP Composite is ‘Inattention/Hyperactivity Composite’.
High scores on the critical items list for Chris include his perception that ‘other kids hate to be with me’, ‘no one understands me’, ‘I hate school’, ‘I feel like my life is getting worse and worse’, and ‘Other people make fun of me’.

Chris’s parents perceive him to be in the ‘clinical’ or ‘at-risk’ ranges for all scales except aggression and conduct problems. Hyperactivity, attention problems and functional communication are, they believe, in the ‘at-risk’ range. Anxiety, depression, somatization, atypicality, withdrawal, adaptability, social skills, leadership, and activities in daily living are in the clinical ranges. The parents also report on the BASC-2 PRS-C critical items that Chris eats too much, is easily annoyed by others, hears sounds that are not there, has toileting accidents, falls down and has eye problems. He also still suffers with nocturnal enuresis which, his parents report, is exacerbated by anxiety.

Chris’s teacher perceives him to be in the normative ranges for all scales and sub-scales on the BASC-2 with the exception of anxiety which is borderline into the ‘at-risk’ range. The teacher reports on the TRS-C critical items that Chris is easily annoyed by others.

The large disparity between Chris’s self-perceptions and those of his parents might be attributed, at least in part, to Asperger’s syndrome as Neihart (2000) proposes that with low metacognition, gifted students with Asperger’s syndrome are not aware of another’s perspective. Indeed, Scholper & Mesibov (1992) suggest that students with Asperger’s syndrome have difficulty understanding the perspective of others which can make their social adjustment challenging.

8.2.3. PH2—instrument results completed by participant

The PH-2 (Piers & Herzberg, 2002) is a self-report instrument for the assessment of self-concept in children and measures six subscale domains: Behavioural Adjustment; Intellectual/School Status; Physical Appearance/Attributes; Freedom from Anxiety; Popularity; and Happiness and Satisfaction. Although the Intellectual/School Status domain is most closely linked to academic self-concept, some of the items also appear
in other domains and can be used to validate consistency of responses and give a wider view on the psychosocial influences on academic self-concept. Table 8.4 offers a summary of the results from the PH2.

Table 8.4  PH2 summary of results*

<table>
<thead>
<tr>
<th>School yr</th>
<th>Percentile</th>
<th>Total</th>
<th>BEH</th>
<th>INT</th>
<th>PHY</th>
<th>FRE</th>
<th>POP</th>
<th>HAP</th>
</tr>
</thead>
<tbody>
<tr>
<td>4</td>
<td>69</td>
<td>88</td>
<td>66</td>
<td>42</td>
<td>42</td>
<td>66</td>
<td>66</td>
<td>82</td>
</tr>
</tbody>
</table>

* BEH is behavioural adjustment scale; INT is intellectual scale; PHY is physical appearance and attributes scale; FRE is freedom from anxiety scale; POP is popularity scale; and HAP is the happiness and satisfaction scale.

Table 8.4 illustrates that the PH2 results are primarily in the average ranges with the exception of behavioural adjustment (BEH), which is in the above average range. BEH measures the admission or denial of problematic behaviour and Chris evaluates himself as well-behaved, but acknowledges that he has a few difficulties with his conduct (Piers & Herzberg, 2002). The scores in the above average range are interpreted, in general, as students who report ‘strong positive self-appraisal’ (Piers & Herzberg, 2002. p. 20). As a result these students are usually involved in numerous activities and are confident of their ability across many domains. They have high motivation, are accustomed to success, view themselves as likeable and have good relationships with others (Piers & Herzberg, 2002).

Chris reports that his behavioural adjustment is in the above average range, showing he perceives that he is well behaved at school and on-task. However the high score may indicate defensive denial of behaviour problems to mask his perceived difficulties “especially if there are suggestions of positive exaggeration elsewhere in the PH2” (Piers & Herzberg, 2002. p. 24). Alternatively, the high score may indicate a demonstration of low metacognition and a lack of awareness of social adjustment, as is typical for students with Asperger’s syndrome (Neihart, 2000).

Although his parents and teacher (via the BASC-2 ‘C’ forms) report high levels of withdrawal, depression, and low scores for social skills, his parents also report clinical levels of anxiety, social stress and atypicality. Chris does not report this in the PH2 and sees himself as at the high end of average with regards to popularity. The dis-connect between the PH2 and his BASC-2, particularly Chris’s high scores on the critical items
list of, for example, ‘other kids hate to be with me’, ‘no one understands me’, and ‘other people make fun of me’, indicate irregularities in his self-perceptions. Chris also scores in the above average range for the ‘happiness’ scale, indicating feelings of happiness and satisfaction with life, which again conflicts with his BASC-2 self-report.

Although other scores are in the average range, they err on the high end of average, particularly ‘total self-concept’, ‘intellectual self-concept’ (INT) and ‘popularity’ (POP). The INT scale reveals that Chris reports confidence in intellectual ability and performance in the classroom and “such students perceive themselves as working rapidly and efficiently in their schoolwork and garnering the admiration of their peers and family members” (Piers & Herzburg, 2002. P.24). Such students also see themselves as able to pay attention to a high standard in the classroom (Piers & Herzburg, 2002); a perception which is not reflected by Chris in the BASC-2.

In summary, the instrument data have revealed average to high self-concept scores (PH2), including that of the INT scale, and at-risk or clinical scores (BASC-2). The BASC-2 has indicated that Chris has a poor attitude to school, has high levels of internalised problems, particularly anxiety, and perceives socialising to be achievable and averagely successful. Chris’s perceptions are, on the whole, supported by his teacher but in total contrast to his parents’ perceptions. The interview data will now be analysed to explore how the theoretical perspectives relating to the Research Issues compare with the themes that emerged from the interview data.

8.2.4. Interview analysis
As described earlier in Methodology, Chapter Four, the interview analysis was conducted through four layers of exploration: Leximancer analysis and independent hand-coding (for triangulation) were used to analyse the transcript data and identify the emergent themes, the themes were then compared with the literature to identify concurrent and discordant themes. Following this the theoretical perspectives relating to the Research Issues were overlaid and themes identified.

8.2.5. Leximancer analysis
An automated system transforming lexical co-occurrence information from natural language to semantic patterns generates a table with numerical values of theme connectivity and a concept map of emergent themes. The interview transcript was thematically analysed using the Leximancer program and provided emergent themes,
and after member-checking using manual coding techniques, and inter-rater checking also using both the program and manual techniques, emergent themes and their connectivity with one another are shown in Table 8.5 below. A Leximancer generated image of the concepts and themes in Table 8.5 is at Figure 8.1.

**Table 8.5** Emergent themes and connectivity form interview data

<table>
<thead>
<tr>
<th>Theme</th>
<th>Connectivity (%)</th>
<th>Concepts</th>
</tr>
</thead>
<tbody>
<tr>
<td>Kids</td>
<td>100</td>
<td>Nice, Chris, relax, science, fun</td>
</tr>
<tr>
<td>Home</td>
<td>14</td>
<td>Favourite</td>
</tr>
<tr>
<td>Dad &amp; sister</td>
<td>10</td>
<td>Dad, sister</td>
</tr>
</tbody>
</table>

Table 8.5 was generated by Leximancer, and indicates the three main themes, in order of relative connectivity to other themes, which were uncovered in the interview data. In addition, subsets of concepts that were assimilated within each theme are listed. The percentage of connectivity indicates how each theme is associated with other themes and concepts in the data. For example, the theme of ‘kids’ is connected with all other themes as it has 100% connectivity. The theme with lowest connectivity at 10%, ‘dad and sister’, is the smallest theme identified. There is also a concept outside of all themes (see Figure 8.1) of ‘school’ which does not have any connectivity with the themes; indicating the remoteness of ‘school’ as an aspect of his life when analysing the interview data. The final theme not included which subsumed all of the other themes was ‘facilitator’, indicating how verbal the researcher was to facilitate Chris through the interview which will have influenced the results despite best efforts to prevent leading the participant.

Table 8.5 is complemented by a generated image of the themes. The connectivity of the themes, how they relate to one another, how the concepts link within and beyond each theme, and their relative connectivity (or rank order- shown through the size of the theme in the image) is illustrated in Figure 8.1. For example, the theme of ‘kids’, a relatively strong theme in the interview data, has connected concepts therein including relax, science and fun. For example, a data linking relax and kids is, for example, “I like to relax with the nice kids, just Joe and Billy, not the others” (Chris, 2011). Science and fun are concepts closely tied with kids in the interview data, “I love science, all the kids do, it’s fun learning about chemicals and stuff. I don’t know why, it’s just fun” (Chris, 2011). Gifted children with Asperger’s syndrome can demonstrate an absorbing interest in a specialised topic, such as science in Chris’s case (Neihart, 2000). The
theme of home is highly connected to the concept of favourite. Chris indicates in data that home is his favourite place as he feels more autonomy to pursue his interests when he states, “I love being at home because I can do fun stuff like experiments and read and stuff, I don’t have to talk to anyone” (Chris, 2011).

The theme of ‘dad and sister’ is unconnected to the other themes but there was sufficient data to create a theme as shown in blue in Figure 8.1. The lack of connectivity is notable. The interview data indicates that, at home, he perceives that his mother is the main support, that his sister is annoying and that his father is impatient with him and he reports, “my sister is a pain and I don’t play with her, that gets my dad angry ‘cos he doesn’t get me but mum does, she lets me do the fun stuff and keeps it all calm” (Chris, 2011). The isolation of this theme indicates how it might be remote from the two larger themes of ‘kids’ and ‘home’ for Chris. A concept that is unconnected to other concepts of themes is ‘school’. Chris shows dichotomous feedback when relating school experiences in his interview for example, “I don’t like school, I hate being alone, the teachers don’t get me” (Chris, 2011) and, “…being gifted makes no difference at school, neither does having Asperger’s” (Chris, 2011). In contrast, within a few minutes of sharing these insights, Chris says, “…my favourite person at school is Joe. The teachers are usually nice, but not as nice as Joe”. The interview data are dichotomous in areas, as similarly noted with the instrument data discussed earlier. The dichotomous nature of the feedback might be indicative of Chris having Asperger’s syndrome (Neihart, 2000). Gifted children with Asperger’s syndrome benefit from social skills training (Neihart, 2000) due to social deficits such as difficulties developing peer relationships. In part of the data Chris indicates such difficulties, and in other parts he indicates the opposite. His parents and teachers perceive that he has social difficulties but this does not explain why he provides the conflicting feedback. It might be that Chris is being more open some of the time but defensive of his social interactions at other times (Piers & Herzberg, 2002) as he is cognisant of the fact that there are difficulties or differences, although he may not have the skill to overcome them.
The themes emergent from the interview data shown in Figure 8.1 were all related to and overlaid with the themes from the literature; each theme was examined in relation to the literature to ascertain confluence or otherwise. All of the themes were determined, and supported by an inter-rater check for reliability; with 80% agreement and 20% negotiated agreement, to have commonality with the themes identified in the literature in Chapter Two (Literature Review).

The theme of *kids* in Table 8.5, and the concepts therein (for example, nice, Chris, relax, science and fun), on review of the interview data, have been related to the themes in the literature of *enjoyment* (Little, 2002), *significant others* (Foley Nicpon et al., 2013) *psychological centrality* (Dweck, 1986) and *mastery experience* (Harter & Mayberry, 1984)

The theme of *home* in Table 8.5, because of the concept link to favourite, has been linked to *enjoyment* (Little, 2002. This is supported by interview data, for example, “…and gardening, I love gardening and I can do that at home. I love watching the seeds grow. I wonder how they know to grow into something” (Chris, 2011).
The theme of *dad & sister* in Table 8.5 is a stand-alone theme, not linked to the other themes. However, interview data imply that the theme is linked to *significant others* (Foley Nicpon et al., 2013) and *psychological centrality* (Dweck, 1986). Interview data supporting the link to *significant others* are, for example, “I like gardening with my dad, we have nice quiet fun” (Chris, 2011). Interview data linking the theme to *psychological centrality* are, for example, “I feel pretty good when I am talking at home because my mum and dad listen to me. My sister is noisy and a pain, I like quiet” (Chris, 2011).

The concept of *school* is a stand-alone concept in the interview data and can be linked with *significant others* in the literature due to, for example, “…and with the teachers being gifted makes no difference at school, neither does having Asperger’s” (Chris, 2011). School can also be related to *environment* in the literature (Marsh, 2011), for example, “…I like playing at school ‘cos there are kids to play with. I don’t have mates at home” (Chris, 2011). The theme of school can also be connected the literature theme of *academic achievement* (Rinn, 2007) for example, “…and I get A’s in most things, lowest C’s, but that doesn’t mean I like any subjects. I like science and get A’s but I don’t mind, I just like science” (Chris, 2011).

The theme identified in the literature and evident in the instrument data (but not evident in the interview data), is *self-talk* (Dai et al., 1998) through the PH2 and BASC-2. Themes identified in the literature but not evident in instrument or interview data are *BFLPE* (Marsh, 2011) *self-understanding* (Vespi et al., 1992, Assouline et al., 2010), *age* (Marsh, 1994) and *gender* (Greenwald & Farnham, 2000). There was no theme identified in the data that was not linked to the literature.

8.2.6. Concurrent themes from data that align with the literature relating to research issue one

The themes concurrent with the literature were then compared and integrated in table format with components of each research issue and theoretical perspectives. The themes that were evident in the literature but not in the interview data have been omitted from the table, namely the themes of *age, gender, BFLPE, self-talk, and self-understanding*.

Table 8.6 shows how the first research issue is addressed by the interview transcript data, and the frequency of the data, and gives the précis of the results. It is notable that there were no examples from the interview text to indicate legitimate-peripheral-
participation. All interview text, for this table analysis, related to participation-in-practice.

For the purposes of this research, the first two processes along the top of Table 8.6 are foregrounded primarily in the intermental plane (for purposes of exploration) and they also coincide with the participation-in-practice theory (there are no interview data relating to legitimate-peripheral-participation). The other aspect of the theory explored for research issue one, situated learning, is demonstrated in Tables 8.6 to 8.8 and is investigated after the presentation of legitimate-peripheral-participation and participation-in-practice. This research argues that academic self-concept is influenced by the processes of participation-in-practice and situated learning.

Table 8.6 Analysis of transcript data, frequency of data relating to theoretical perspectives and concurrent themes with the literature – relating to research issue one: Explore some of the social interactions that influence the development of academic self-concept

<table>
<thead>
<tr>
<th></th>
<th>significant others</th>
<th>environment</th>
<th>academic achievement</th>
<th>mastery experience</th>
<th>enjoyment</th>
<th>psychological centrality</th>
</tr>
</thead>
<tbody>
<tr>
<td>Legitimate-peripheral-</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>participation – Peers</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Participation-in-practice –</td>
<td>0</td>
<td>4</td>
<td>0</td>
<td>0</td>
<td>4</td>
<td>6</td>
</tr>
<tr>
<td>peers</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Legitimate-peripheral-</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>participation – siblings</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Participation-in-practice –</td>
<td>2</td>
<td>4</td>
<td>0</td>
<td>0</td>
<td>2</td>
<td>0</td>
</tr>
<tr>
<td>siblings</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Legitimate-peripheral-</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>participation – teachers</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Participation-in-practice –</td>
<td>6</td>
<td>0</td>
<td>2</td>
<td>0</td>
<td>4</td>
<td>0</td>
</tr>
<tr>
<td>teachers</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Legitimate-peripheral-</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>participation – parents</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Participation-in-practice –</td>
<td>4</td>
<td>4</td>
<td>0</td>
<td>3</td>
<td>10</td>
<td>4</td>
</tr>
<tr>
<td>parents</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Analysis of Table 8.6 indicates that, for Chris, enjoyment and, to a lesser extent, environment and significant others are particularly influential for Chris. The data indicates that Chris’s parents have the largest influence, followed by teachers and then peers in the school context. Social and cultural contexts and practices will be explored in research issue two.
How theoretical perspectives relating to research issue one were present in the data

Instrument and interview data were analysed to inform findings that legitimate-peripheral-participation was not evident in the interview data for Chris.

Chris’s parents reveal, on the BASC-2 SDH, that he has a ‘wonderful’ sense-of-humour but worries a great deal. This is supported by other instrument data. On the BASC-2 PRS-C (also completed by Chris’s parents) the results imply that Chris presents high levels of atypicality, withdrawal, anxiety, depression and somatization. His parents also reveal that he has very poor social skills, functional communication and poor adaptive skills and has ‘at-risk’ levels of aggression. These perceptions are not all shared by the classroom teacher (using the BASC-2 TRS-C). Chris’s teacher did agree with the at-risk range scores for adaptability, social skills, activities in daily living and the low ‘functional communication’ score given by the parents. However, in contrast to the parents assessment, the teacher’s assessment was not in the first few percentiles and, thus, not in the extreme clinical ranges, as the parent reports. The teacher also thought that Chris has an average leadership score, that he did not show any aggression or behavioural and conduct problems.

Chris’s BASC-2 self-report is more in-line with his teacher’s perceptions of him with similar figures for anxiety (high) and atypicality (low). Chris reflected that he was in the more average range for somatization, something that the parents and teacher reflected at the opposite ends of the range. It is possible that the somatization is lower in class as Chris feels less inclined to complain. In addition, the teacher reports to the researcher that, “I have no time for complainers and whingers” (Chris’s teacher, 2011). Chris does reveal that he experiences social stress which is also reflected by the ‘social skills’ assessment by both the teacher and the parents.

In addition, Chris’s parents disclose that their primary concern is around his emotional outbursts and frequent mood changes. Chris’s differing perception about depression and atypicality might be indicative of his lack of life experience as depression problems frequently occur with anxiety problems (Semrud-Clikeman et al., 2003) and conduct problems (Patterson et al., 1989) which are both shown as notable in Chris’s scales.
His parents and teacher also report that they perceive him to be in the at-risk to clinical range for withdrawal. The parents report on the BASC-2 PRS-A a clinical result for aggression and conduct problems that reflects the parent’s concerns in the BASC-2 SDH. Chris’s results for the PH2 indicate that he reports an overall average self-concept in most scales, including popularity.

When considering research issue one and the social interactions, which are relatively strenuous for Chris despite his conflicting reports of success with them, such interactions might exert influence upon his academic self-concept. However, he reflects success at school and gives conflicting feedback about his relationships with peers and teachers. He finds school and academic work boring and tiring but he is perceived as age appropriately successful. Chris does appear to present a different persona at school compared to at home. He has articulated to his parents that he does not like school, sport, peers or teachers (BASC-2 SDH). However, when he was completing the instruments and taking part in the interview, in the context of the school with a researcher he had known as a ‘teacher’, he contradicted himself and his views about school, sport, peers and teachers. There appears no data linking legitimate-peripheral-participation, indicating that Chris may not be aware of the ‘social context’, its periphery, or the social subtleties of his environment. To reiterate, legitimate-peripheral-participation articulates that learners inevitably participate in communities of practitioners and that the mastery of knowledge and skill requires newcomers to partake fully in the sociocultural practices of the community (Lave & Wenger, 1991). As Chris has been diagnosed as having Asperger’s syndrome, the lack of social connection might be indicative of his disability in this case (Neihart, 2000).

8.2.8. Participation-in-practice

Turning now to participation-in-practice for research issue one, participation-in-practice provides opportunities for mutually supportive learning or practices (Sinclair, 2004). Practices are organised by the culture in which a person develops and, although participation in the practice is not compulsory, contexts make the practice more or less accessible. Repeated participation enhances the performance in these practices, and thus the development of cognition, and if the culture values the practices then they are more likely to be repeated and reinforced (Cole, 1996; Scribner & Cole, 1981). Academic self-concept is considered domain specific (Marsh et al., 1995), which resembles the
participation-in-practice conjecture that many practices usually occur within a particular domain and the cognitive development tends to be domain-specific.

![Graph showing the influence of various themes on participation-in-practice](image)

**Figure 8.2 Extended analysis of the literary themes that influence participation-in-practice**

With regards to participation-in-practice, the breakdowns of social interactions that influence Chris are primarily with parents, followed by peers, then teachers, then siblings. Chris is the first case study in this research to show an influence recorded by parents. Figure 8.2 shows extended analysis of the interview data to illustrate both the influence of significant others and the other themes within the influences of participation-in-practice.

With regards to the literature themes, *enjoyment* has the largest single influence for all parties, particularly that of the parents. Chris talks much of enjoyment, whether it pertains to his environment, the people he is with or the subject matter. As the Leximancer generated image shown in Figure 8.1 indicates, his favourite place is at home and he has the highest level of perceived autonomy to pursue his areas of interest and enjoyment at home.

The second most influential theme is *significant others* which features for teachers in the majority, and then parents, followed by siblings. *Environment* is the third most influential theme for Chris followed by *psychological centrality* which related to peers only. Finally, *academic achievement* was represented in the interview data with teachers only for participation-in-practice.
8.2.9. Situated Learning

The final element to be explored for research issue one is situated learning. Situated learning pertains to social co-participation, in a specific environment, community-of-practice, or context that enables a learner to acquire knowledge. Cultural practices in these communities enable learning (Wenger, 1991). This research is using three ways to explore how identities are shaped in situated learning (Wenger, 1996): engagement (doing things together, talking and producing artefacts); imagination (constructing our truths of the world: imaginative images of the world are essential to our sense-of-self and to our interpretation of our participation in the social world); and alignment (aligning our activities with community processes, such as moral codes, that can become deep aspects of our identities). Engagement and alignment activities are foregrounded in the intermental plane and have been explored in both instruments and interview transcript data. It was found that alignment was consistently associated with either engagement or imagination.

The instrument and interview data were analysed to understand how situated learning through the three activities of engagement, alignment and imagination impacted on Chris’s formulation of academic self-concept. Tables 8.6, 8.7, and 8.8 have examples to indicate how situated learning in the form of engagement, imagination and alignment were present in the interview data. Many examples could have been used from the interview data, and although the three ways (engagement, alignment, imagination) are foregrounded for purposes of explication, the data are not so clear-cut because many data could have been used as examples for two or more ways. The data used for the examples have been inter-rater checked for reliability by two independent researchers with 80% agreement and 20% negotiated agreement.

Table 8.7 Situated learning and the interview data supporting ‘engagement’

<table>
<thead>
<tr>
<th>Engagement</th>
<th>Doing things together, talking and producing artefacts</th>
</tr>
</thead>
<tbody>
<tr>
<td>Percentage of transcript data</td>
<td>75%</td>
</tr>
</tbody>
</table>
| Examples from transcript data        | …and gardening, I love gardening and I can do that at home. I love watching the seeds grow.  
...I like playing at school ‘cos there are kids to play with. I don’t have mates at home.  
I like gardening with my dad, we have nice quiet fun. |
Table 8.6 indicates that Chris related to *engagement* in the construct of situated learning during 75% of his interview (there is some overlap of percentages as some segments of text are counted twice as such data can be applied more than once). The three examples highlight his sense of enjoyment in both the home and school context. Table 8.7 shows how the situated learning construct of *imagination* presented in the interview data.

### Table 8.8  
**Situated Learning and the interview data supporting ‘alignment’**

<table>
<thead>
<tr>
<th>Alignment</th>
<th>Aligning our activities with community processes, like moral codes, that can become deep aspects of our identities</th>
</tr>
</thead>
<tbody>
<tr>
<td>Percentage of transcript data</td>
<td>Overlap engagement by 20% and imagination by 25%</td>
</tr>
</tbody>
</table>

#### Examples

- I feel pretty good when I am talking at home because my mum and dad listen to me. My sister is noisy and a pain, I like quiet.

  …I like science because you learn a lot. It's fun learning about chemicals and stuff. Yeah, I'm not sure why, it's just fun. I am good at it but I like it cos its fun.

  …I like dodge ball and swimming in PE. I'm good at those.

(later in the same interview) … I don’t like PE, I don’t like most things at school.

…I have lots of friends at school but have two main friends.

(later in same interview) … the kids are sometimes mean to me, they don’t say things or hit me, I just feel it and I know they don’t like me.

Table 8.7 indicates that Chris associated with *alignment* in the construct of situated learning during 45% of his interview: alignment in the context of *engagement* by 20% and *alignment* in the context of *imagination* by 25%. The quotations are examples from each context. Table 8.8 shows how the situated learning construct of *alignment* presented in the interview data.
Table 8.9  Situated learning and interview data supporting ‘imagination’

<table>
<thead>
<tr>
<th>Imagination</th>
<th>Constructing our truths of the world – imaginative images of the world are essential to our sense-of-self and to our interpretation of our participation in the social world</th>
</tr>
</thead>
<tbody>
<tr>
<td>Percentage of transcript data</td>
<td>60%</td>
</tr>
</tbody>
</table>
| Examples | …and I get A’s in most things, lowest C’s, but that doesn’t mean I like any subjects. I like science and get A’s but I don’t mind, I just like science.  
…I don’t know what the other kids get as scores, never thought about it before.  
…having Asperger’s or being gifted can make things harder I think, but the teachers don’t really get it. |

Table 8.8 indicates that Chris pertained to *imagination* in the construct of situated learning during 60% of his interview. The examples highlight the diversity he used that pertained to his *imagination* in school.

### 8.2.10. Summary of Instrument and Interview data relating to research issue one

In summary, research issue one sought to discover the social interactions that influence the development of academic self-concept, for example perceived attention problems. The analysis of the instrument data show that Chris experiences a scope of perceptions, ranging from clinical, at-risk, or normative ranges, some directly associated with academic self-concept, for example a negative attitude to school, and others that indirectly influence other areas of self-concept, such as his perceived inattention. The instruments also indicate how such perceptions align with and differ from his parents’ and teachers’, thus highlighting how Chris’s *imagination*, his sense-of-self in the world, is situated. When completing the instrument in the school environment, Chris presented a persona to the researcher that aligned with the persona he presents to his teacher, but one that conflicts with his parents’ perceptions of him. The interview data reinforces the instrument data and adds layers of understanding to the perceptions that influence academic self-concept: namely *significant others, environment, academic achievement, mastery experience, enjoyment, self-understanding and psychological centrality*; all of which are viewed through the lens of participation-in-practice and situated learning. The conflicting nature of the data may be as a result of the environment in which the data were taken (school rather than home), the school context (the researcher was a
former teacher at the same school), aspects of his Asperger’s syndrome, and his
cognisance of his perceived ‘difference’ whilst attempting to ‘normalise’ himself. His
teacher was familiar with his anxiety, depression and withdrawal, all possible
characteristics of Asperger’s syndrome, but was not aware of the other aspects. His
parents, in the BASC-2 SDH commented that, “Chris is all zipped up at school and, like
a pressure cooker, bursts when he gets home” (BASC-2 SDH).

The case study presentation turns now to research issue two, which provides the enquiry
platform to explore the social practices and contexts that influence the development of
academic self-concept.

Research issue two aimed to explore the social practices and contexts that influence the
development of academic self-concept. The social practices and contexts are based in
the construct of situated learning (Lave & Wenger, 1991). Social and cultural contexts
and practices are explored to explicate how different situations, environments, and
institutions influence the cultural practices and hence the academic self-concept.

8.2.11. Concurrent and discordant themes with the literature
relating to research issue two

The concurrent themes with the literature were then compared and integrated in table
format with components of research issue two and the theoretical perspectives as seen in
Table 8.9. Table 8.9 shows how research issue two is addressed by the interview
transcript data and gives a précis of the results. As with research issue one, the themes
shown in Figure 8.1 were related to and overlaid with the themes from the literature
based on the concepts within each of them. The themes will be explored with regards to
social practices and contexts.

<table>
<thead>
<tr>
<th>Table 8.10</th>
<th>Analysis of transcript data overlaid with theoretical perspectives and concurrent themes with the literature – relating to research issue two: Explore some of the social practices and contexts that influence the development of academic self-concept</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Significant others</td>
</tr>
<tr>
<td>The context</td>
<td>5</td>
</tr>
<tr>
<td>The practice</td>
<td>14</td>
</tr>
</tbody>
</table>

For the purposes of exploration for this research, the first two processes along the top of
Table 8.9 are foregrounded primarily in the intermental plane. They also coincide with
the theory concerning social practices and contexts. This research argues that academic self-concept is also influenced by the social practices and contexts.

Analysis of the above Table 8.9 indicates that, for Chris, the influences of enjoyment, significant others, and environment are the most dominant, and have influenced the development of academic self-concept. The social practice was more influential than the social context.

8.2.12. How theoretical perspectives relating to research issue two were present in the data

With regard to social practice and social context, the relative influences of the emergent themes from the interview data, which coincide with the literature, are presented in Figure 8.3 and show that social practice is about 50% more influential than social contexts. However both are particularly influenced by enjoyment. Additionally in the interview data, for social practices and social contexts, environment, mastery experience, psychological centrality, academic achievement and significant others are key contributors for Chris.

![Figure 8.3](image)

Figure 8.3 Relative contributions that different themes identified in the literature make to social contexts and practices for Chris

Enjoyment and environment play a majority role in social practices and enjoyment and academic achievement and significant others for social contexts. Turning now to how social contexts and practices sit within the theoretical framework of situated learning.
8.2.13. Situated learning

The instrument and interview data were analysed to understand how situated learning through the three activities of engagement, alignment and imagination impacted on Chris’s formulation of academic self-concept.

Engagement (doing things together, talking and producing artefacts) was interpreted through the BASC-2 self-report and the PH2. From the PH2, the indication of engagement might be seen through the ‘behaviour’ element as this indicates engagement and, thus, interest and cooperation with education. His perceived behaviour was in the above average range on the PH2 completed by him. Chris reports on the PH2 that he perceived himself as very well behaved at home and at school (Piers & Herzburg, 2002). Notably his parents report moods and aggression at home and the researcher recorded high levels of inattention in the classroom on the BASC-2 SOS; Chris was recorded as demonstrating behaviours that included daydreaming, yawning, sleeping, wandering around the room and leaving the class to visit the toilet regularly in the classes he claimed to dislike. However, in science, Chris’s favourite class, he was focused and on-task. “Of course, an above average BEH score might also indicate defensive denial of behaviour problems in order to mask real difficulties” (Piers & Herzburg, 2002. p.24). In the BASC-2 Chris reports ‘attention problems’ in the clinical range which would support the behaviour observed, rather than the BEH self-concept reflected in the PH2. However, the behaviour indicated engagement for Chris in the science classes, his favourite subject. The interview data relating to situated learning and ‘engagement’ is shown in Table 8.11.

Table 8.11 Situated learning and interview data supporting engagement in the social practices and contexts in research issue two

<table>
<thead>
<tr>
<th>Engagement</th>
<th>Doing things together, talking and producing artifacts</th>
</tr>
</thead>
<tbody>
<tr>
<td>Percentage of transcript data</td>
<td>70%</td>
</tr>
<tr>
<td>Examples</td>
<td>Social contexts:</td>
</tr>
<tr>
<td></td>
<td>I feel pretty good when I am talking at home because my mum and dad listen to me.</td>
</tr>
<tr>
<td></td>
<td>Social Practices:</td>
</tr>
<tr>
<td></td>
<td>…yeah, I prefer just playing with two other kids.</td>
</tr>
</tbody>
</table>
Table 8.11 indicates that Chris pertained to *engagement* in the construct of situated learning, relating to social contexts and practices, for 70% of the interview data.

An indicator of *alignment* for Chris was his perceived alignment with the social contexts and practices around him, and although he reports that he did not like school, in the BASC-2, he also reports that he had an average attitude to teachers and, thus, indicates alignment with them. However, as his attitude to school was negative and in the ‘at-risk’ range indicating that he does not align with the institution, the ‘attitude to teachers’ scale indicates that he perceives his teachers, “as being caring, fair and motivated” (Reynolds & Kamphaus, 2004. p.75). Dichotomous alignment was also reflected in the interview data when Chris reports, in the same interview, of his like of teachers and school and peers, and his feeling of being misunderstood by teachers and peers with an intense dislike of school. It is possible that Chris does not completely affiliate his activities with his community-of-practice processes that can become deep aspects of identity, and thus contribute to his academic self-concept (Valentine et al., 2004). The BASC-2 self report shows an ‘at-risk’ response to the school problem composite, indicating that he is not fully aligned to the processes, practices and contexts presented in the institution of his school which may also be indicative and as a result of Chris having Asperger’s syndrome. The BASC-2 classroom observations, wherein he was observed as both complying and being inattentive in class, further supports this. Research issue two, exploring the practices and contexts influencing academic self-concept, is more thoroughly reflected from the interview data below. The interview data relating to situated learning and ‘alignment’ is shown in Table 8.12.

<table>
<thead>
<tr>
<th>Table 8.12</th>
<th>Situated learning and interview data supporting alignment in the context social practices and contexts in research issue two.</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Alignment</strong></td>
<td>Aligning our activities with community processes, such as moral codes, that can become deep aspects of our identities</td>
</tr>
<tr>
<td>Percentage of transcript data</td>
<td>Overlap engagement by 40% and imagination by 45%</td>
</tr>
<tr>
<td><strong>Examples</strong></td>
<td><strong>Social contexts</strong></td>
</tr>
<tr>
<td></td>
<td>I don’t have a favourite teacher or a favourite person, I’ve never really noticed and it’s probably not very fair anyway.</td>
</tr>
<tr>
<td></td>
<td><strong>Social practices</strong></td>
</tr>
<tr>
<td></td>
<td>… I don’t think that the teachers really get me, they try but they don’t! I’m not sure why.</td>
</tr>
</tbody>
</table>
Table 8.12 indicates that Andrew related to alignment occurring with engagement for 40% of his interview and alignment occurring with imagination for 45%. Chris aims to align with social contexts.

*Imagination* for Chris in the context of situated learning is exploring how he constructs his truths of the world; images of the world that are essential to his sense-of-self and to his interpretation of his participation in the social world. A part of Chris’s reported sense-of-self can be drawn from his SRP-C instrument in the BASC-2. Chris demonstrates a perception of at-risk or clinical levels for the scales of attention problems, attitude to school, social stress, and anxiety. These perceptions are supported by his parents but only one scale, anxiety, is supported by his teacher. All scales on the PH2 reflect the sense-of-self that Chris reports, although these scales are all in the average or above average ranges; thus indicating contradictory data that might reflect the school context in which he was generating the data, defensive denial or masking of his perceived problems (Piers & Herzberg, 2002), or the outcome of learning disabilities and anxiety that cause him elements of uncertainty when addressing the instruments or interview contexts. The interview data relating to situated learning and ‘imagination’ is shown in Table 8.13.

<table>
<thead>
<tr>
<th>Table 8.13</th>
<th>Situated learning and interview data supporting imagination in the context social practices and contexts in research issue two.</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Imagination</strong></td>
<td>Constructing our truths of the world – imaginative images of the world are essential to our sense-of-self and to our interpretation of our participation in the social world</td>
</tr>
<tr>
<td>Percentage of transcript data</td>
<td>60%</td>
</tr>
</tbody>
</table>
| Examples | Social contexts  
I don’t know if I’m the best in my science class… [I’ve] never really noticed.  
Social practices  
I don’t like asking questions in class. I don’t talk to anyone ‘cos I’m shy and I don’t like looking stupid. |

Table 8.13 gives examples from interview data of how Chris constructs his sense-of-self in the world and how he interprets his participation in the social world. This data might indicate that Chris presents himself and sees himself as quite isolated; he does not interact in class with others, he feels that his classmates do not like him, and he does not notice how others perform or compare him with them. He is very much on the periphery
of his social contexts and practices although he does not observe this, he just perceives that he is isolated which may be as a result of his Asperger’s syndrome.

In summary, research issue two sought to discover the social practices and contexts that influence the development of academic self-concept. The analysis of the instrument data show that Chris demonstrates a scope of perceptions, ranging from clinical, at-risk, or normative ranges; directly or indirectly associated with academic self-concept. The instrument data indicated that different social contexts and practices, namely whether he is at home, in the classroom or playground (PH2 data) do influence Chris’s sense-of-self and his academic self-concept, but the data are contradictory. However, there is an overarching sense from the data that he does have low general-self-concept and some of the subscales of self-concept will influence his academic self-concept. The contradictory nature of the data are suspected to be due to cognisance of his difficulties and his attempt to mask them or be in defensive denial (Piers & Herzberg, 2002.p.24), in addition to the influence of his Asperger’s syndrome. The interview data reinforces the instrument data and adds layers of understanding to the social contexts and practices that influence academic self-concept for Chris.

This section has sought to explore the emergent themes evident from the data and how the data pertains to the theoretical framework of situated learning, participation-in-practice and legitimate-peripheral-participation. As a detailed analysis and discussion of how both the instrument and interview data support the emergent themes are analysed and fully discussed for all three case studies in Chapter 9, a full analysis into how this data support the emergent themes for Chris can be found in Appendix I. The data presented in Appendix I adds another layer to the analysis of the instrument and interview data, and how the data support the emergent themes: BFLPE, significant others, environment, academic achievement, mastery experience, enjoyment, self-understanding, psychological centrality, self-talk and basketball. In order to scaffold cross-referencing, the Table numbers used in Appendix I are continued under the numbering theme of this Chapter.

8.3. Chapter summary

The analysis of the case study data for Chris reveals that there are nine themes evident of the eleven identified themes in current literature. The two themes in the literature that have not been identified are gender and age. Perhaps these themes are not of
consequence for Chris as his peers are primarily his age, and he is in an all-boys school.

To recap, the two Research Issues are:

1. Explore some of the social interactions that influence the development of academic self-concept for twice-exceptional students.

2. Explore some of the social practices and contexts that influence the development of academic self-concept for twice-exceptional students.

The exploration of the Research Issues has indicated that, for Chris, there are influences on his academic self-concept that are linked to social interactions, social practices and social contexts in his school community-of-practice. Assertions for the findings of this case study are presented in Chapter Nine, Discussion. The following Chapter, Discussion, will present the assertions for each case study, how the data converged with the literature, and how the data informed the Research Issues through the theoretical lens.
Chapter 9. Discussion

There are no extra pieces in the universe. Everyone is here because he or she has a place to fill, and every piece must fit itself into the big jigsaw puzzle (Deepak Chopra, 2008).

9.1. Introduction

In the previous three Chapters the case studies are presented with a summary of the participants’ experiences at school, and a description of how they are reflected in the literature, and how they influence academic self-concept in the theoretical framework. The data presented for Andrew, Ben and Chris suggest that academic self-concept is informed by their experiences in the school context.

This research employed case study methodology to explore two Research Issues. The literature revealed that academic self-concept is important in predicting students’ academic success, future achievement, and life success and satisfaction throughout schooling and for up to a decade after leaving school (Field et al., 2003; Marsh et al., 2008; Skinner, 2003).

The aims of the research were to:

- Measure academic self-concept and related perceptions of self in twice-exceptional students.
- Explore school experiences for twice-exceptional students.
- Explore the perceptions of significant others (parents, siblings, peers, and teachers) of twice-exceptional students.
- Investigate academic achievement histories of twice-exceptional students.
- Explore the relationship between academic self-concept and school experiences.

From these aims the following Research Issues emerged:

1. Explore some of the social interactions that influence the development of academic self-concept for twice-exceptional students.
2. Explore some of the social practices and contexts that influence the development of academic self-concept for twice-exceptional students.

The Research Issues provide a platform to explore academic self-concept in twice-exceptional students. The purpose of this Chapter is to identify the overarching influences from all three case studies in the context of the Research Issues. First, assertions from each case study will be presented. Second, the data are considered in terms of how it converges with the literature to provide a link to current research, and to provide a first layer of analysis discussion to the framework that enables exploration into the research inquiry. Following this will be a discussion of how this study has contributed to an identified gap in the literature. The penultimate section provides a second layer of discussion revealing how the data provides insight into the Research Issues through the theoretical lens, and finally, a summary of this Chapter will be presented.

9.2. Insights relating to Andrew

The analysis of the case study data for Andrew illustrates that there are nine themes evident of the eleven identified themes in current literature, and one other theme, basketball, that is not. The two themes in the literature that have not been identified are gender and age. Perhaps these themes are not of consequence for Andrew as his peers are primarily his age, and he is in an all-boys school. However, age has come through as a minor theme in a different regard in that, as a sixteen year old student, typical of his culture, he now looks beyond the immediate family for social feedback to find a sense-of-self in his world (Chan & Chan, 2013).

The exploration of the Research Issues has indicated that, for Andrew, there are influences on his academic self-concept that are linked to social interactions, social practices and social contexts in his school community-of-practice. To reiterate, for the purpose of this study, the school community-of-practice includes not just the school community but the community [concurrent with school experience] beyond the physicality of the school walls.
Research issue one was concerned with the social interactions influencing academic self-concept through the exploration of legitimate-peripheral-participation, participation-in-practice and situated learning. Legitimate-peripheral-participation is evident primarily with teachers and peers for Andrew. Figure 6.3 indicates that the primary contributing themes from the literature to legitimate-peripheral-participation are big-fish-little-pond-effect (BFLPE) and psychological centrality with peers, closely followed by significant others and academic achievement with teachers. It is noteworthy that Andrew articulated that significant others often overlapped with academic achievement when discussing teachers, including how the teachers responded to his academic work, when he stated, “I wasn’t sure if I’d done good but I was fairly confident and, when I saw I got an ‘A’ I was, inside, so invincible because I had done so well”. With peers, Andrew’s perception of his comparative status or comparative success informed his academic self-concept and can be related directly to BFLPE.

There is a sense that Andrew’s perfectionistic tendencies have become socially prescribed perfectionism (SPP) in that they have had a negative influence on his self-concept, particularly his academic self-concept. Pathological aspects of perfectionism include working towards impossible goals and measuring self-worth entirely in terms of productivity and comparative performance (Burns, 2000). Christopher & Shewmaker’s study is reinforced by Andrew’s experiences as they found that there is a relationship between perfectionism, depression and anxiety which are all evident for Andrew. Students with SPP show characteristics of endogenous depression involving difficulty experiencing pleasure, loss of energy and a sense of isolation.

Figure 6.4 shows that participation-in-practice is evident primarily for teachers at triple the second influence for peers, and half again for siblings, and none for parents. The three largest contributing identified themes for teachers are significant others, academic achievement and enjoyment. Participation-in-practice indicates how Andrew perceives his social interactions in his social and cultural setting; primarily the teachers themselves, their feedback to him, and his enjoyment of their classes are the main influences for participation-in-practice.

The second research issue as indicated in Table 6.10 shows that, for Andrew, the influences of environment, significant others, self-understanding and academic achievement are the most dominant in influencing his school experiences for both social contexts and social practices. The social practice is doubly more influential than the
social context for Andrew. Environment is articulated by Andrew to include conditions in the environment that influenced his motivation, his acceptance by peers, and his sense of inclusion in the gifted classes, “I barely ever feel inadequate because, for me, [gifted classes] are such an easy place to come into, and just connect with heaps of people, it is a real easy place to talk to everyone” (Andrew, 2011). Significant others include, for Andrew, the influence of predominantly teachers and peers within the school context, and less predominately siblings and parents. As stated earlier, it is possible that the influence of parents is reduced because of Andrew’s age. Academic achievement for Andrew refers to his perception of the feedback he receives for academic work in school. The feedback is oral, written and gestural, and primarily from teachers with a smaller yet consequential influence from peers.

Situated learning, relating to both Research Issues, is evident for Andrew primarily amongst his peers and teachers. For the three aspects of situated learning, namely engagement, alignment, and imagination, the data support evidence of all three taking place for Andrew. For research issue one, his engagement is primarily associated with his interactions with teachers in doing things, talking and producing artefacts, with teachers again having a key influence on the resultant academic self-concept. Alignment overlaps both engagement and imagination and pertains to Andrew’s alliance with community processes and moral codes. The interview data indicates that Andrew wants to be part of the team, to be part of the school, to feel part of the community; contrary to this desire, the instrument data indicates that he ‘feels’ on the periphery. Imagination pertains to Andrew’s sense-of-self and interpretation of his world. Andrew referred primarily to work and discipline when discussing aspects of imagination. There are differences evident in the instrument data that show how Andrew’s perceptions differ markedly at times with those of his parents and teachers, indicating how his sense-of-self in the world is situated, and how it differs from the perceptions of others.

For research issue two, Andrew’s engagement is evident in over half of the interview data and indicates that engagement is a very positive experience with his feeling of success in social practices. For social contexts, Andrew indicates that feelings of inadequacy further reflect his sense of being on the periphery, and are enhanced by ‘others’ as he feels inferior in social contexts which again relates back to social comparison theory (Festinger, 1954) and BFLPE (Marsh, 1990). Alignment is evident with his articulation of wanting to conform and to feel part of the community-of-practice. For social practices, the sense of inferiority and inadequacy Andrew feels
around other people is noteworthy. *Imagination in social contexts*, through his recognition and inclusion in the gifted program, enhances his self-perception, whereas social practices highlight the importance of enjoyment and his overarching sense of inadequacy.

There is a sense that Andrew is in his brother’s shadow and that, as the youngest boy (and therefore the last to commence playing basketball) he always has been. The data for Andrew indicate his sense of having little control over his life; reinforced by his ‘lack of time’ to do anything really well. His sense of inadequacy, possibly stemming from his (relative to his brother) perceived lower ability in sport, appears to have overrun into his other social interactions. The data suggest that this fuels a sense of inadequacy, particularly when he is comparing himself to his peers in his *community-of-practice* thus illustrating social comparison and BFLPE (Festinger, 1954; Marsh, 1990).

The sense of inadequacy for Andrew has also been systemically evident in school since the early years and has contributed to his low academic self-concept. Andrew particularly recalls low academic self-concept in primary school due to lack of understanding (by himself and by his teachers) and rigid teaching curriculums with focus on handwriting, “I couldn’t understand that they weren’t interested in my ideas, they just wanted me to write neatly” (Andrew, 2011). He has articulated this through his perception of failure and perceived inability to fit into the ‘normal’ expectations. Initially this appears to have been due to low academic performance that, in turn, led to his perceived disapproval from teachers and, to some extent, peers. The data imply that, despite Andrew’s efforts, his apparent inability to conform has led to a low academic self-concept that has permeated other facets of his self-concept in all environments of his *community-of-practice*. The teacher practices and interaction are overwhelmingly the largest influence for Andrew, particularly teacher feedback, social interactions and his sense of approval (or otherwise) from them. It is noteworthy that Andrew expressed a positive sense-of-self in school on two occasions: when his disability is identified in primary school to which he attributes his underperformance, and when he is identified as gifted in secondary school and included in the gifted program.

In summary, Andrew highlights two key areas that are at play in influencing his academic self-concept; *social comparison* and *academic feedback* with both teacher and peers. Additionally, the data indicate that social interactions are more influential than
the social contexts. The social interactions with his teachers, in the context of his *community-of-practice*, influence his academic self-concept primarily through feedback. The primary area of teacher feedback is associated with academic achievement, verbally, written or gestural, and leads to his self-talk and his academic self-concept. Teacher feedback can lead to high anxiety and negative perfectionistic tendencies for Andrew that became entrenched in his primary education. Teacher interactions are most influential for *participation-in-practice* and Andrew’s *engagement* with his school *community-of-practice*. Andrew’s sense of belonging to his school *community-of-practice* is influenced by his peer interactions. Although Andrew acknowledges that his peer interactions are positive, he feels that he is on the periphery of his community and so *legitimate-peripheral-participation* is mainly at play with peers. There is a sense from the data that Andrew’s twice-exceptionality, leading to a lack of understanding by him and his teachers, has underpinned his perception of being an outsider. A very small but powerful element of the data are Andrew’s perception of being in his sibling’s shadow and that, for him, he will never be ‘good-enough’. Finally, Andrew perceives that his engagement at school became productive and positive when he was recognised by the school as gifted and was included in the gifted program.

### 9.3. Insights relating to Ben

The analysis of the case study data for Ben illustrates that there are nine themes evident that can be overlaid with nine of the eleven identified themes in current literature. The two themes in the literature that have not been identified are gender and age. Perhaps these themes are not of consequence for Ben as his peers are primarily his age, and he is in an all-boys school. The exploration of the Research Issues has indicated that, for Ben, there are influences on his academic self-concept that are linked to *social interactions*, *social practices* and *social contexts* in his school *community-of-practice*.

Research issue one was concerned with the social interactions influencing academic self-concept through the exploration of *legitimate-peripheral-participation*, *participation-in-practice* and *situated learning*. *Legitimate-peripheral-participation* is
evident primarily with teachers and peers for Ben. Figure 7.7 indicates that the primary contributing themes from the literature to legitimate-peripheral-participation are significant others and academic achievement primarily with teachers, closely followed by BFLPE and self-talk primarily with peers. Ben articulates that significant others often overlapped with academic achievement when discussing teachers, including how the teachers responded to his academic work when he reports, “I was real down ‘cos I missed out on the ‘Dean’s list’ by one ‘A’ in the last term and that sucked…”. With peers, Ben’s perception of his comparative status or comparative success informs his academic self-concept and is articulated when he states, “I know my writing is bad and messy, not as good as the other kids in my classes and I am now in the smart classes so it is really bad”.

Figure 7.8 shows that participation-in-practice is evident primarily for teachers and less than half again for peers, with around one eighth for siblings, and a tiny contribution (one fortieth) for parents. The three largest contributing identified themes for teachers are significant others, academic achievement and enjoyment. Participation-in-practice indicates how Ben perceives his social interactions in his social and cultural setting; primarily the teachers themselves, their feedback to him, and his enjoyment of their classes are the main influences for participation-in-practice.

The second research issue as indicated in Table 7.33 shows that, for Ben, the influences of environment, significant others, academic achievement and enjoyment are the most dominant in influencing his school experiences for both social contexts and social practices. The social practice is doubly more influential than the social context for Ben (see Figure 7.9). Environment is articulated by Ben to include conditions in the environment that influence his sense of adequacy, enjoyment, his acceptance by peers, and sense of inclusion with peers, “I have stayed in the ‘normal’ class for Maths but in the smart classes for the other subjects. We get all the good teachers but in Maths we don’t and the kids are not disciplined so it’s hard to work” (Ben, 2011). Significant others included, for Ben, predominantly the influence of teachers, and also peers, within the school context, and to a lesser degree siblings and parents. Academic achievement for Ben referred to his perception of feedback for academic work in school. The feedback is oral, written and gestural, and primarily from teachers with a smaller yet consequential influence from peers. The prominent discussion around academic achievement is the ‘Dean’s list’ for Ben and his disappointment at missing out by one mark.
*Situated learning*, relating to both Research Issues, is evident for Ben primarily when referring to his peers and teachers. For the three aspects of *situated learning*, namely *engagement*, *alignment*, and *imagination*, the data support evidence of all three taking place for Ben. For research issue one, his *engagement* is primarily associated with his interactions with teachers in doing things, talking and producing artefacts, evident primarily when Ben is observed in class as a conforming, well-behaved student. For Ben the data indicates that teachers are key in influencing Ben and his resultant academic self-concept. *Alignment* overlaps both *engagement* and *imagination* and pertains to Ben’s *alignment* with community processes and moral codes. The interview data indicates that Ben wants to be popular, to be part of the school, to feel part of the community as exemplified by his quote that, “I have lots of friends, I enjoy being with them, in my house room at school we have fun, it is like a little community”. Contrary to this desire, the instrument data indicates that he ‘feels’ on the periphery and inadequate. *Imagination* pertains to Ben’s sense-of-self and interpretation of his world. In interview Ben refers primarily to enjoyment and having fun but also wanting to be a hard-working and successful student. There are differences evident in the instrument data that show how Ben’s perceptions of himself differ markedly at times from those of his parents and teachers, particularly with popularity, atypicality and anxiety. However, his mother’s feedback on the BASC-2 is more closely aligned with Ben’s perceptions, but not as extreme, thus indicating that he has an insightful sense-of-self although more severe, but in the school context with his teachers he keeps these perceptions hidden and acts the part of ‘a fun-loving, hard-working and all-round nice kid’ (Mr M, favourite teacher, BASC-2).

For research issue two, Ben’s *engagement* (see Figure 7.34) is evident in nearly half of the interview data and indicates that *engagement* is a positive experience with his feelings of success in *social practices*, alongside feeling isolated and inadequate. For *social contexts*, Ben also indicates that feelings of inadequacy, further reflecting his sense of being on the periphery, are enhanced by ‘others’ and he felt inferior in social contexts. Alignment is evident with his articulation of wanting to conform and to feel part of the *community-of-practice*. Ben also articulates that he likes to be in the ‘smart classes’ as, despite the pressure, the teachers are better and the work outcomes are higher. It appears that these experiences are positively serving his academic self-concept. *Imagination in social contexts* (Figure 7.36), through his recognition and inclusion into the smart classes and the high results achieved for this academic year,
enhances his self-perception and academic self-concept. Social practices highlight the importance of enjoyment and having fun, despite his continued sense of inadequacy.

There is a sense that Ben, despite his recent academic success, still feels inadequate and has a relatively low academic self-concept. His sense of inadequacy, possibly stemming from his primary school years “where I was always rubbish” (Ben) might take some time to address. The good news is that Ben says “senior school is much much better, more choice, more chances, just better”. Things have changed for Ben since he has transferred to the senior school, and he is, in his opinion, more understood by his teachers, and has a sense of control over his academic career. Ben’s perceptions of his lower ability in art and academic subjects appear to have run over into his social interactions. This has manifested as, and continues to fuel, a sense of inadequacy, particularly when he is comparing himself with his peers in his community-of-practice, primarily in the classroom. He has articulated this through his perception of failure by not gaining a place on the ‘Dean’s list’ despite the progress he has made during the first year at senior school, which the data suggest, is as a result of the BFLPE and his social comparison with peers in the ‘smart classes’. Ben expresses a positive sense-of-self in school on three occasions: when he describes his inclusion in the smart classes in senior school, when he articulates that senior school teachers understand him more, and when he describes his positive (yet still insufficient) improvement during the year. Enjoyment is important for Ben but so too is being recognised and supported to be a successful student when he reports, “I know when I am in a second rate class because I get a second rate teacher and I feel second rate myself” (Ben, 2011).

In summary, Ben’s data show his need for fun in his learning and environment. As with Andrew, Ben’s data indicate that social interactions are more influential than the social contexts. The areas fall into two main categories: his teachers and his peers. As with Andrew, the social interactions with Ben’s teachers are important within his community-of-practice, and the influence on his academic self-concept is primarily through feedback. The primary area of teacher feedback is associated with academic achievement, verbally, written or gestural, and like Andrew, high anxiety from teacher feedback became entrenched during his primary education. Similarly to Andrew,
teacher interactions are most influential for participation-in-practice, but for Ben, also legitimate-peripheral-participation; so Ben’s engagement at school and his sense of being on the periphery are influenced by his interactions with teachers. Additionally, legitimate-peripheral-participation is, similarly to Andrew, influenced by Ben’s peer interactions. Although Ben now acknowledges that his social interactions are positive, like Andrew he still feels that he was on the periphery of his community. There is a possibility that, like Andrew, Ben’s twice-exceptionality led to a lack of understanding by him and his teachers, and has underpinned his perception of being an outsider. Like Andrew, Ben’s perceived engagement at school became productive and positive when he was recognised by the school as gifted and was included in the gifted program.

9.4. Insights relating to Chris

The analysis of the case study data for Chris reveals that there are nine themes evident of the eleven identified themes in current literature. The two themes in the literature that have not been identified are gender and age. As with the other participants, these themes may not be of consequence for Chris as his peers are primarily his age, and he is in an all-boys school. The exploration of the Research Issues indicate that, for Chris, there are influences on his academic self-concept that are linked to social interactions, social practices and social contexts in his school community-of-practice.

Research issue one was concerned with the social interactions influencing academic self-concept through the exploration of participation-in-practice and situated learning (as legitimate-peripheral-participation is not evident in the data for Chris). Figure 8.2 indicates that the primary contributing themes from the literature to participation-in-practice are enjoyment, closely followed by significant others and environment, then psychological centrality, academic achievement and mastery experience. Parents have the largest influence for participation-in-practice followed by peers and then teachers for Chris. With peers, Chris’s perception of his comparative status or comparative success is negligible in the data and his academic self-concept appears to be informed by significant others and the environment.
The second research issue as indicated in Table 8.9, and Figure 8.12 shows that, for Chris, social practices have a greater influence than social context. However, the influences of enjoyment are the largest contributors for both social context and practices. Environment is the second largest contributor and is notable in social practices. Environment is closely associated with enjoyment for Chris; his access to activities he enjoyed, feeling safe and understood is important for his enjoyment, and this primarily occurred in his home environment rather than the school. Enjoyment and acceptance in the environment are influenced by his perceived acceptance by teachers and peers when he states, “... I don’t think that the teachers really get me, they try but they don’t! I’m not sure why.”

Significant others include, for Chris, the influence primarily of teachers, followed by parents and then siblings. Chris appears to lack confidence and feels misunderstood by his teacher. Academic achievement for Chris refers to his perception of feedback for academic work in school. The feedback is oral, written and gestural, and only evident in the data from his teacher.

Situated learning, concerned with both Research Issues, is evident for Chris primarily with his parents and teachers. For the three aspects of situated learning, namely engagement, alignment, and imagination, the data support evidence of all three taking place for Chris. For research issue one, his engagement is primarily associated with his enjoyment of an activity and, thus, his engagement with it. Alignment overlaps both engagement and imagination and pertains to Chris’s alignment with community processes and moral codes. The interview data indicates that Chris wants to be part of the team, to be part of the school, to feel part of the community; however the data are conflicting and this may be because Chris is aware of his ‘difference’ and is attempting to mask it (Piers & Herzberg, 2002).

Chris appears to be an outsider in his community-of-practice, rather than on the periphery. Imagination pertains to Chris’s sense-of-self and interpretation of his world. Chris refers primarily to feeling misunderstood, wanting to be seen as a good student, enjoyment of his school work, and a lack of awareness of how he compares to other students in his class. There are differences evident in the instrument data that show how Chris’s perceptions differ markedly at times with those of his parents and teachers, indicating how his sense-of-self in the world is situated, and how it differs from the perceptions of others.
For research issue two, Chris’s engagement is evident in the interview data and indicates that engagement is a very positive experience with his feeling of success in social practices. For social contexts, Chris indicates a feeling of satisfaction when he is being ‘heard’, and that this occurs only at home, indicating a sense of inferiority at school. Alignment is evident with his articulation of wanting to conform, to be fair, and to feel understood. Imagination in social contexts, through his enjoyment of the science class (but not how he compares himself to his peers), indicates an inconsistent externalising frame of reference as he does feel sensitive to peers’ reactions. Chris enjoys the gifted classes but they have had less influence on him; as his parents articulate, “he only gets to go once a week for 45 minutes”. Chris states that being gifted and having Asperger’s have no impact on his schooling.

There is a sense that Chris is counterbalancing the confusing feedback of being emotionally cognisant of other people and their perceptions of him, whilst being unaware of his peers when considering how he compares in the classroom. This is likely to be the interplay of his giftedness with the disability. On both counts this leads to him feeling isolated and misunderstood, socially inferior at school, and only engaged and content in activities he enjoys (primarily at home). There is an overarching sense that Chris feels inadequate at school, although the BASC-2 does not report on this (unlike for the older participants). Chris reveals that he does not feel safe or enjoy the majority of his classroom time and is concerned that he will ‘look stupid’ – an indicator of low academic self-concept. However, he does state that he is primarily an ‘A’ grade student and seems very comfortable with this. Perhaps the fact that academic self-concept requires external frames of reference (Marsh, 1990) may indicate that he does not experience it to a measurable degree as he does not externally refer to his peers. He does worry about the teachers’ perceptions of him and wants to please. His apparent inability to conform consistently has led to a poor attitude to school and an element of inadequacy with the teacher, and would probably be a portent of low academic self-concept.

The fact that Chris is gifted but also has Asperger’s syndrome does tend to muddy the waters for interpretation of the case study findings. Shared traits do exist between gifted and Students with Asperger’s syndrome such as intense focus, visual thinking, difficulty in friendships and negative behaviours (Cash, 1999), introversion and shyness (Jackson & Moyle, 2009), excellent memory, verbal precocity, sensory hypersensitivity, range of abilities and asynchronous development (Neihart, 2000), perfectionism,
creativity, frustration, school drop-out (Jensen, 2008), disruptive behaviours, self-criticism, and anxiety and stress (Peterson, 2009). However, other similarities are the sensory sensitivities (Gere, Capps, Mitchell, Grubbs, & Dunn, 2008; Grandin, 2008), social emotional needs (Assouline et al. (2009), and asynchronous development (Lovecky, 2004; Attwood, 2007).

Table 9.1 gives an overview as to how a gifted student and a gifted student with Asperger’s syndrome can differ in presentation, and this is observed with Chris.

<table>
<thead>
<tr>
<th>Differentiating characteristic</th>
<th>Ordinary gifted</th>
<th>Gifted with Asperger’s syndrome</th>
</tr>
</thead>
<tbody>
<tr>
<td>Speech patterns</td>
<td>Normal but may have language of older child</td>
<td>Pedantic, seamless speech</td>
</tr>
<tr>
<td>Responses to routines</td>
<td>May passively resist but will often go along</td>
<td>Very low tolerance for change, agitation, aggression</td>
</tr>
<tr>
<td>Awareness of difference</td>
<td>Know they’re different</td>
<td>Poor awareness of how others see them</td>
</tr>
<tr>
<td>Disturbance of attention</td>
<td>If disturbance exists it is usually external</td>
<td>Disturbance is internal</td>
</tr>
<tr>
<td>Humour</td>
<td>Engages in socially reciprocal humour</td>
<td>Can do word play but typically does not understand humour that requires social reciprocity</td>
</tr>
<tr>
<td>Motor clumsiness</td>
<td>Not characteristic</td>
<td>50-90% Asperger’s children will manifest</td>
</tr>
<tr>
<td>Inappropriate Affect</td>
<td>Not a characteristic</td>
<td>Nearly always observed</td>
</tr>
<tr>
<td>Insight</td>
<td>Insight is usually good</td>
<td>Usually remarkably absent</td>
</tr>
<tr>
<td>Stereotypy</td>
<td>Not a characteristic</td>
<td>May be present</td>
</tr>
</tbody>
</table>

The distinguishing trait is metacognition (Attwood, 2007; Neihart, 2000) and a characteristic of Asperger’s syndrome is that metacognition is a clear weakness. Metacognition is viewed as highly developed in gifted students (Shore, 2000) whilst developmentally delayed in Asperger’s syndrome (Baron-Cohen, 1989). It includes awareness of one’s own mental state and that of others. Students with Asperger’s syndrome can eventually use compensation techniques to compensate for lack of intuitive awareness of others. Secondly, attention is another distinguishing trait. As a generalisation, gifted children pay closer attention, stay focused and remember longer than those with Asperger’s syndrome (Jensen, 2007), something that is supported by the classroom observation data for Chris. Also supported by the classroom observation is the intense focus on the special interests; students with Asperger’s syndrome have no trouble paying attention and remaining focused. It is only outside of their area of special interest that they have trouble paying attention, have interrelational difficulties and difficulty with encoding learning in memory (Attwood, 2007). The third area,
stereotypy, refers to persistent, repetitive actions such as hand flapping, rocking (Assouline et al., 2008), which was observed for Chris in the classroom observations in his least favourite class.

In summary, Chris’s data show his need for enjoyment in his preferred environment with his parents. This is similar to Ben but the data imply that, for Chris, it is also about feeling safe in addition to the fun that Ben experiences. As with both Ben and Andrew, Chris’s interactions with his teachers lead to him feeling misunderstood and lacking in confidence. Chris’s data varies from Ben and Andrew’s in that the data do not give firm evidence as to legitimate-peripheral-participation which might be as a result of his Asperger’s syndrome traits. There is, however, a sense from some of the data that Chris does want to feel as though he belongs to his community-of-practice and he does care how he is perceived which, on the whole, is negative for him. Unlike the previous participants, Chris’s social contexts are highly important in addition to social interactions. Context, the preferred place being home, is perceived by Chris to be highly influential on his learning. The home context is preferred because he has more choice of activities and more positive feedback from his parents. Like Andrew and Ben in their primary school experience, Chris indicates that he feels isolated, misunderstood and does as much as he can to be unnoticed. Also, like Andrew and Ben during primary school, Chris reports an intense dislike of school and resists it on a daily basis. As with the others, Chris’s highlight of his week is the gifted class where he enjoys being able to think more freely and express himself more fully. Focus on his giftedness helps him in this class whereas neither aspect of his twice-exceptionality is, in his opinion, recognised or supported in the regular classroom.

9.5. How the data converged with the literature

The data are presented in five parts in order to discuss how it converges with the literature. First discussed are the participants’ learning disabilities and how the characteristics of those learning disabilities, as highlighted in the literature, are evident in the data. Second is how the data relate to the literature concerned with self-concept, academic self-concept for gifted students, and academic self-concept for students with learning disabilities. Third, a discussion is presented of how the data point to the construction of academic self-concept in twice-exceptional students, and how they
connect with the influences on academic self-concept as identified in Chapter Two, Literature Review. Finally, a brief summary of how this research contributes towards a gap in the literature will be presented.

9.5.1. A presentation of the participants’ learning disabilities
As previously discussed, all three participants, Andrew, Ben and Chris, have specialist reports diagnosing learning disabilities. They all have a neurosensory report detailing central auditory processing disorder. Ben also has a paediatrician report diagnosing ‘diminished hearing’, and Chris has a paediatrician report detailing Asperger’s syndrome. Classroom adjustments were recommended by the otologists and paediatricians and had been implemented by the school. All participants, as a result of the reports, have adjustments under the school’s learning support program. Each disability will be discussed in light of the data presented and how they converge or diverge from the literature.

9.5.1.1. Diminished hearing
Ben has been identified, as a result of specialist reports, to have two disabilities: diminished hearing which is comorbid with central auditory processing disorder. Stewart & Kluwin (2001) report that students with diminished hearing experience delays in language development and gaps in consequential knowledge. However Ben’s mother reports (SDH, 2011) that he did not experience language development delays as a consequence of partial loss of his hearing at an older age (seven years). However, she does report (SDH, 2011) that subsequent to his diminished hearing he has developed a stutter. Adjustments provided by the school (Bernsden & Luckner, 2012) have included appropriate seating (front and centre of the class). The sense of isolation and frustration that Ben reports to occasionally feel (Ben, 2011; BASC-2 SRP-A, 2011) might be a result of mild to moderate hearing loss in one ear, consistent with published research (Good & Brophy, 2007), or it may be as a consequence of other factors which may also be contributing, as discussed later.
9.5.1.2. **Central auditory processing disorder**

Central auditory processing disorder results in difficulties with: understanding when listening, expressing clearly in speech, reading, remembering instruction, understanding spoken messages, and maintaining focused attention (Ahmed, Musiek & Chermak, 2008). Andrew, Ben and Chris each have specialist reports that diagnose central auditory processing disorder. There are two main issues identified by the literature that create barriers for students with central auditory processing disorder: increased psychosocial difficulties (Kreisman et al., 2012), and difficulty in hearing in the presence of background noise (Ryan & Logue-Kennedy, 2013) which places the student under significant stress when managing auditory information. As a result, students may present as being easily distracted, unfocused or anxious.

In support of the literature, all of the participants present with psychosocial issues such as anxiety and depression that may, in part, be attributable to central auditory processing disorder. Increased psychosocial difficulties are suggested by Andrew’s parents (SDH, 2011) who express concerns that he isn’t equipped to handle situations “without going into the depths of despair” (SHD, 2011). They also report that he can have aggressive outbursts that may stem from frustration (SDH, 2011). All three participants report at-risk or clinical levels of anxiety (BASC-2 SRP). Parents and teachers, on the whole, agree with such perceptions but also believe that all three participants have at-risk or clinical levels of depression (BASC-2).

Difficulty hearing in the presence of background noise is observed by Andrew in his interview when discussing his ability in the context of basketball “I have great peripheral vision, I need it ‘cos I don’t hear everything in that noise” (Andrew, 2011). Ben and Chris both report in interview that they prefer a quiet classroom where they feel less distracted. All participants are similar in that they report that they find the classroom noise distracting and that they want opportunities to be in quiet surroundings and to be reflective. Adjustments for central auditory processing disorder include being placed front and centre, eliminating background noise, and providing quiet space (Ryan & Logue-Kennedy, 2013). All three participants sit front and centre of the classroom but did not report provision of any other adjustments. All parents and teachers report that the
participants are easily distracted by noise and that they perform much better, and seem calmer, in quiet environments. Andrew and Ben report that they perceive high levels of hyperactivity but no attention problems, whereas parents’ and teachers’ perceptions are that Andrew and Ben had neither attention nor hyperactivity problems. In interview, both Ben and Andrew report that their perceived hyperactivity is either due to boredom or because the difficulty in focusing made them want to move (Andrew, 2011; Ben, 2011). Chris did not perceive hyperactivity issues but assessed himself to be in the clinical range for attention problems that are supported by his parents but not by his teacher.

9.5.1.3. Asperger’s syndrome

Chris is diagnosed with Asperger’s syndrome and, aligned with the literature, his parents report that he demonstrates impairment in social interactions, with restrictive patterns of behaviour, without any significant delay in language, cognitive functioning, self-help, or interest in the environment (Foley Nicpon et al., 2012; Asperger, 1944). Impairments for Chris were first recognised later in life (Assouline et al., 2009) when he was around four years old, with asynchronous development of cognitive, social and affective development which included: unclear speech, gross motor skill development delays, intense interests, and social isolation (Neihart, 2000). Intellectual giftedness was assessed and recognised at age six. Therefore for two years Chris was diagnosed only with his Asperger’s syndrome and, it was not until later that his giftedness was identified. The data imply that this caused him and his family frustration and schooling issues that became hurdles during his primary education (Assouline et al., 2009; Barton & Starnes, 1989; Neihart, 2000).

The parents report characteristics that are common to gifted children with Asperger’s syndrome (Neihart, 2000; Silverman, 1993; Wing, 1991): verbal precocity in subject of interest, excellent memory; fascination with numbers; intense interest in certain subjects (particularly science); asking endless questions; hypersensitivity to noise and food; ability to excel in some areas and perform in the average range in others. Chris’s parents report that he is considered unusual and different and thus his characteristics converge with the literature (e.g. Atwood, 1998; Grandin, 2008 ; Neihart, 2000; Webb et al., 2005) and are supported by comments in his school records by his gifted education teacher.
The data imply that Chris has low metacognition as he does not infer understanding of the ‘social big-picture’ and the social nuances in his community-of-practice, a distinguishing characteristic of gifted students with Asperger’s syndrome (Neihart, 2000; Schopler & Mesibov, 1992). He perceives a unique perspective of himself in his environment and feels socially challenged. It is noteworthy that there is a discrepancy between the self-ratings of children with disability and the ratings by their parents and teachers (Ayres & Cooley, 1990; Vaughn & Haager, 1994). Instrument data from parents reveal percentiles pointing to low social competence, but the results by Chris’s parents are much lower compared to Chris’s self-perceptions. Some students with Asperger’s syndrome perform poorly in school whereas others excel. Although Chris’s parents suggest that he is an ‘A’ grade student, a claim supported by school records, they regard him as performing below his cognitive ability as recorded by the Stanford Binet 5th Edition (SB5). As Chris has been diagnosed with Asperger’s syndrome he demonstrates many of the psychosocial issues that are reflected in the literature.

9.5.2. How the data converges with the literature relating to self-concept, academic self-concept for gifted students and academic self-concept for students with learning disabilities

Self-concept is environmentally influenced (Bahr, 2007), describes an individual’s thoughts and feelings around their perception of ‘self’ (Rosenburg, 1989), is formed over time (Shavelson, 1976), and is a multidimensional construct (Shi et al., 2008). Self-concept is based on Festinger’s (1954) social comparison theory, contributes to identity development (Steinberg, 1996), and is formed through environmental experiences with significant others (Shavelson et al., 1976). Academic self-concept is part of self-concept and has a causal, reciprocal relationship with academic achievement (Hattie, 2009; Sanchez & Roda, 2003; Valentine, 2001). Self-concept is divided into two parts; social self-concept and academic self-concept. Academic self-concept, although influenced by other domains within social self-concept, refers primarily to individual’s perceptions about their academic performance and beliefs (Piers & Herzberg, 2004). Academic self-concept includes emotional reactions to academic domains (Lipnevich et al., 2012).
including enjoyment, anxiety, pride, anger and boredom, the first two being most prominent (Goetz, Frenzel, Pekrun, Hall, & Ludtke, 2007).

Academic self-concept will now be considered in light of the data for the three case studies. Researchers have suggested that high performing gifted students have high academic self-concepts and comparatively low social self-concepts, whereas underperforming gifted students have lower academic self-concept and low social self-concepts (Colangelo & Assouline, 1995; Cunningham & Rinn, 2007; Enerson, 1993; Kolloff & Moore, 1989; Lister & Roberts, 2011; Yong & McIntyre, 1991). Students with learning disabilities have been reported to have low academic self-concepts and relatively high social self-concepts (Kloomak & Cosden, 1994). For this study, the PH2 measures intellectual self-concept’ which is most closely associated with academic self-concept (Reynolds & Kamphaus, 2004), and the PH2 results show low intellectual self-concept for Andrew, but average or above for Ben and Chris. However, for Ben, the interview data point to low academic self-concept due to feelings of being ‘useless’ and ‘second rate’ (Ben, 2011). Thus the academic self-concept for Andrew and Ben aligns more with the low academic self-concept reported for underperforming gifted students and students with disability. The critical difference between the two are the social competencies: underperforming gifted students perceive social difficulties but are likely to be socially competent, whereas students with disability have low social competencies (Baum & Owen, 1988; Bear, Minke & Manning, 2002; Field et al., 2003; Elbaum & Vaughn, 2003; Kavale & Forness, 1996; Pierson et al., 2008; Reis, Neu, & McGuire, 1997). Andrew and Ben’s data indicate social competence despite anxiety, perceptions of atypicality, and finding interpersonal relations strenuous, whereas Chris does not suggest the same social challenges as his parents and teacher. Either way, all participants indicated feelings of loneliness and isolation.

Chris’s BASC-2 results show that he experiences at–risk ranges of social stress, which is supported by interview data and reveals his sense of isolation. However, he reports feeling highly ‘typical’ in instrument data, something not supported by interview data wherein he implies that he feels on the periphery, if not outside of, his community-of-practice. Chris appears to align more with the higher academic self-concepts reported for gifted students and, in primary school, he achieves at a higher grade than Ben and Andrew. However, the data do not suggest that Chris’s high academic self-concept is due to the reflected glory effect of high-ability programs (the affiliation with others’ success which influences the perception of success for the individual), or the influence of his
Asperger’s syndrome, as his data imply that he is relatively unaffected by the influences of social comparison theory and is content with his academic performance.

The reflected glory effect occurs when high-ability students experience a boost of self-concept upon acceptance into a selective program due to their association with a successful group of people (Aberson, 1999; Burger, 1985; Cialdini et al., 1976). All three participants reveal that they have experienced the reflected glory effect but, as discussed later, Andrew and Ben experience imposter syndrome and BFLPE (whereas Chris, who has Asperger’s syndrome, did not report such social comparison experiences).

Ben reports in interview that his academic ability has improved over the previous year since moving into the senior school. Ben attributes the change from feeling academically inferior to feeling more capable as a result of being understood by teachers, having curriculum choices, and receiving improved grades. Wei & Marder (2012) report that academic self-concept for students with disability declines throughout primary school but rebounds in secondary school, unlike students without disability whose academic self-concept declines, on average, only during middle school and slowly increases towards the end of senior school. These assertions are supported by the data and, in terms of academic self-concept, the participants’ data indicate that the disability aspect is the dominant influence in fluctuations of academic self-concept: all participants and their parents report that their academic self-concept declined rapidly from the commencement of primary school and rebounded in secondary school. However, the parents also report that the disability is the predominant focus of teachers in primary school.

The participants report in interview data that their enjoyment and connection with school and academic self-concept improved on three occasions: when they were identified as gifted, when they were identified as having disability, and for Andrew and Ben, in their first year of senior school. Anxiety and depression are observed by all participants, their teachers and parents, and that these conditions were at their worst in primary school. Koenig (1988) attributes the decline into anxiety or depression as exacerbating social difficulties, lowering self-concept particularly in the school context, thus reducing academic self-concept.

Ayres, Cooley & Dun (1990) also suggest that students with disability are rated by their teachers to be less persistent at school when compared to their non-disability peers. But the data do not suggest this: the BASC-2 TRS reports completed by teachers do not
specifically report on ‘persistence’ but show varying results by all participants, from different teachers, as to perceived learning problems, attention problems, internalised problems composites, aggression and conduct problems. Possibly the disability aspect is not a dominant characteristic when informing an individual’s persistence for these participants.

Andrew and Ben’s data support studies that show that academic and teacher feedback is important for students with disability (Renick & Harter, 1989; Zhang et al., 2011) and interview data imply that positive and encouraging teacher comments leads to improved grades, improved enjoyment, and improved connection with school, which results in increased academic self-concept. Chris does not indicate that teacher feedback and grades are influential for him. Renick and Harter (1989) reveal that the school environment and context emphasises grades and various forms of praise, adding to the element of competition and social comparison, thus influencing academic self-concept.

In summary, the case study data confirm alignment with the literature for underachieving gifted students who present with low social self-concepts. In addition, the data support the literature that gifted and twice-exceptional students feel they lack social skills and feel atypical in the cases of Andrew and Ben. Literature also suggests that students with disability do not always perceive such issues but their parents and teachers report a lack of social skills, and this is reflected in the data for Chris (Tabbasam & Grainger, 2002; Vespi & Yewchuck, 2008; Zelke, 2004). For Andrew and Ben, the interview data imply low academic self-concepts and, for all three participants, low social self-concepts. In this way the data point to the participants responding in the same way as underperforming gifted students rather than students with disability; indicating that, for these participants, they are gifted first. For Chris however, the data are not conclusive but raise the question as to whether his Asperger’s syndrome dominates some aspects of his identity development. In this study, academic self-concept has been considered separately for gifted students and students with disability as there is no literature reporting on the academic self-concept of twice-exceptional students. However, the challenge of separating two integral aspects of one child will now be addressed by applying the findings to academic self-concept for twice-exceptional students.
9.5.3. How the data point to academic self-concept in twice-exceptional students

Coleman (2001) reports that twice-exceptional students have feelings of frustration due to the pressure to perform (their giftedness), and having barriers to their performance (as a result of their disability) which leads to social difficulties as students perceive parental, teacher and peer expectations are high and they are unable to live up to them. This is not implied in the data by any of the participants, although their levels of perfectionism and imposter syndrome, discussed later, may be connected to perceived expectations. Twice-exceptional students face social difficulties, especially when compared to their gifted or nonidentified peers (Barber & Mueller, 2011), and feel high levels of isolation and interpersonal difficulties. Data, both instrument and interview, imply social difficulties with feelings of isolation and poor interpersonal relations. Data reveal that these perceptions are grounded in high levels of anxiety and perceptions of atypicality which supports the literature that twice-exceptional students feel different and are aware of social difficulties contributing to lowering self-concept (Swiaeks, 2001).

Social coping mechanisms are related to some areas of self-concept (Swiaeks, 2001) to help a student feel as if they are fitting in, for example, using humour to downplay giftedness and wanting peer acceptance, and this is also related to a low global self-worth. The data imply that for Andrew, honing his social skills and being able to ‘fit-in’ is his coping mechanism with social acceptance. Ben, on the other hand, uses humour and ‘fun’, placing those qualities higher in importance than status in school (e.g. he prefers to play in the lower level rugby team to have ‘fun’ with his peers). Chris infers that he does not have peer- acceptance and has low self-worth. All data indicate that the participants are quiet in the classroom and do not disrupt their peers. Connection with peers appears to be important and difficult for all participants, and the data support Nielsen’s (2002) claim that twice-exceptional students have difficulty identifying with the gifted students, with the students with learning disabilities, and with the general peer group, thus find it harder to fit-in.

Trail (2008) reports that twice-exceptional students need opportunities to interact with students of similar abilities for peer relationships to flourish, and this is reflected in the data for all participants, predominantly when they discussed their gifted classes. Despite the older participants indicating imposter syndrome, they all enjoyed gifted classes and
enjoyed the academic and social interactions therein thus supporting Olenchak’s (1995) findings that personally tailored enrichment programs for twice-exceptional students ultimately improved all areas of self-concept. Furthermore, in support of Trail (2008), the participants’ psychosocial wellbeing improved when they perceived support from their parents and teachers, and when they were identified and supported with their learning disabilities. The data support the claim that, as a result of lack of understanding and identification of twice-exceptional students in the education system, twice-exceptional students have lower self-concept, lower self-efficacy, higher hypersensitivity, and higher emotional lability (Dole and Mueller, 2001); all participants perceive enhanced connection to school after identification and subsequent support.

Parents of twice-exceptional students specify a propensity for their children to ask probing questions at home, probably feeling safer in their home environment (Griffin, 2001) thus implicating the importance of environment in the development of self-concept. All participants express a preference for their home environment. For social support, all participants indicate that they prefer the company of older individuals, thus supporting Rimm’s (2002) findings, but Andrew reveals that he is not entitled to socialise with older people.

The data support the findings of Barber & Mueller (2011) and Reis & Renzulli (2004) that the participants perceive to be at an intellectual disadvantage in the classroom and avoid opportunities to demonstrate their talent (Barber & Mueller, 2011). As the data indicates that the perception of being different drives behaviours (Reis & Renzulli, 2004; Rimm, 2002), the data also indicates that the participants all remain very quiet in the classroom, not verbally participating, as they feel they would show lack of ability.

If twice-exceptional students do not typically demonstrate levels of giftedness in the classroom with high levels of academic performance, they are likely to be disengaged and present disruptive classroom behaviours, and an overall resistance to school – possibly due to the difficulty in finding true peers in the classroom context (Barber & Mueller, 2001). However, the participants did not exhibit disruptive classroom behaviours but the data imply that there is disengagement, particularly when the participants do not connect with the teacher or the subject. Resistance to school is evident in the data for all participants during their primary school years. However, Andrew’s instrument data shows that he now has a positive attitude to school and Ben’s
attitude, now in the average range, is reported to have improved greatly during the last year since leaving primary school.

Academic self-concept, like self-concept, can be influenced by attribution theory. As discussed in Chapter Two, Assouline et al. (2006) report that gifted students are more likely to attribute academic failure to lack of work effort rather than lack of ability. Andrew and Ben both suggest that their grades are dependent upon their work effort, but that when they experience ‘imposter syndrome’ in their gifted classes, they attribute it to lack of ability. As Assouline et al. (2006) suggest, environment can be important and therefore might be useful for explaining the data, which may also be attributable to BFLPE as discussed later. Identity as a ‘smart’ student is also important and the data imply that Andrew and Ben do not perceive that they have the ‘smarts’ for gifted classes, thus leading to their inferred imposter syndrome. However, the older participants do not enable their perceived lack of ability to inform their motivation, as the data reveal their strong work ethic since leaving preschool (although the data indicate that they did not work hard in primary school and, on probing, implied support for the notion of, “If I’m no good at it, why should I try?” (Dai et al., 1998; Dweck, 1986; Weiner, 1985)). Assouline et al. (2006) suggest that realistic attributions for successes are important as misattributions may lead to negative outcomes including underachievement. Underachievement can be labelled as ‘lazy’ in lay terms (Gilmore & Boulton-Lewis, 2009) and this is reported to be the case by the participants and their parents during the primary years, and data imply that such labels have a negative influence on academic self-concept. The data point to misattributions for Andrew and Ben in primary school and attributions for success in secondary school.

The data do reveal similar negative school experiences that Reis et al. (1997) uncovered in a study of twice-exceptional university students. All participants recall or infer negative school experiences which include critical and hostile feedback primarily from teachers, and to a much lesser degree, from peers; the feedback observed by Reis et al. (1997) ranged from direct, verbal feedback, to subtle, inferred body language thus reinforcing the social sensitivity that gifted students can demonstrate.

Olenchak (1995) suggests that the lived experiences beyond school enable twice-exceptional students to survive and positively construct their negative experiences in school, enabling them to develop attitudes to help them succeed later. This is revealed by the data in this study for all participants who demonstrate non-academic strengths,
such as basketball for Andrew, art for Ben, and gardening for Chris. The data imply that a perception of success in the non-academic pursuits creates a positive psychosocial influence. However, notable are Andrew and Ben’s perceptions that they do not fully deserve the accolades that they have received in such activities, as they are not as capable as their peers.

9.6. How data interconnect with the influences outlined in the literature

Both environmental and psychological influences, as observed by researchers, on academic self-concept are explored in the ‘Case study findings’ Chapters (Kurtz-Costes, Rowley, Harris-Britt, & Woods, 2008; Nota, Ferrari, Soresi, & Wehmeyer, 2007; Shi et al., 2008; Shogren et al., 2007; Wehmeyer et al., 2011; Zeidner & Schleyer, 1999; Zheng et al., 2012). Influences operate through the sociocultural lens in the environmental (intermental) plane and on the psychological (intramental) plane (Dole, 2001). Figure 9.1 maps the influences highlighted by the literature, which are now discussed in light of the data.

Figure 9.1 Summary of Intermental and Intramental Influences on academic self-concept

9.6.1. BFLPE
Liem et al. (2013) submit that academic self-concept is directly influenced by BFLPE in that students compare themselves with those around them, significant others, and environment (Marsh, 1987), and is thus a critical factor to facilitate educational outcomes. BFLPE is evident in the data provided by Andrew and Ben. Chris does not refer to or imply the influence of BFLPE on his academic self-concept; this might be because it does not influence him, or because his Asperger’s syndrome influences do not overtly favour social comparison (Neihart, 2000). The complexity of BFLPE, and the number of influences affecting academic self-concept, were highlighted by Jonkman et al. (2012) who suggest that personality traits can also moderate BFLPE and academic self-concept, implying that students with Asperger’s syndrome may not find BFLPE influential, and similarly they found the same with other students such as those with narcissism who share many traits with students with Asperger’s syndrome 3.

The interview data supports the literature by indicating that BFLPE is the largest influence for legitimate-peripheral-participation with peers for both Andrew and Chris. This indicates that the social comparison with peers is implied most often in interview data and pertains primarily to a sense of inclusion and social comparison with peers, in the community-of-practice (Hattie, 2002; Marsh, 2007; Trautwein et al., 2006). The instrument data show that both Andrew and Ben had a sense of inadequacy in the clinical range, inadequacy being one of the negative outcomes of BFLPE (Marsh, 1987). In addition, Andrew’s instrument data also indicates low self-concepts in all sub-scales except ‘popularity’. However, Ben’s instrument data are not consistent between the instruments used, as his self-perceptions in the at-risk and clinical ranges do not align with the results in the PH2. The instrument results also show that both participants perceive themselves to be atypical, something supported by parents and/or teachers, as evident in Andrew’s comment, “…I feel I am not a normal person…”. They also show high scores for a ‘sense-of-inadequacy’ and social stress. As Ben comments, “…my mates laugh at me”. Both Andrew and Ben claim to have to work hard at social situations although they are perceived by others as sociable. Although the effect of the

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3 Asperger’s syndrome can be misdiagnosed as Narcissistic Personality Disorder (NPD), as both share traits of being self-centred and engrossed in a narrow range of interests and activities. Social and occupational interactions are severely hampered and conversational skills: the body language of the individual with Asperger’s syndrome - eye to eye gaze, body posture, and facial expressions - is constricted and artificial, akin to the narcissist's. Nonverbal cues are virtually absent and their interpretation in others lacking. Yet there are large differences between a student with Asperger’s syndrome and one with pathological narcissism (Vaknin, 2013).
BFLPE was evident in the data, the contradiction with some of the data is an indication that the participants have low academic self-concept when they compare themselves with their peers, but are not always at liberty to share this with the researcher, one of the complexities highlighted by Jonkman et al. (2012).

Similarities between Andrew and Ben’s data imply that the effect of BFLPE influences their academic self-concept. Both participants believe that, although they enjoy inclusion in the gifted classes, they are the lowest performers and have to justify their attendance as they perceive that they should not be included, “…there were so many bright and intelligent kids in there and I felt like I was on the lowest spectrum of intelligence” (Andrew, 2011). Ben infers that his stutter undermines his status socially and, as Andrew also specifies, he interacts minimally in the classroom in case, as he states, “they find out I’m stupid” (Ben, 2011). Andrew and Ben also experience feelings of inferiority beyond the classroom, with their specialist interests of basketball and art. However, the data imply that their self-perceptions in the extra-curricular activities are not as challenged or as negative as they are within the school context. The findings for Andrew and Ben support the literature as the data suggest that students use social comparisons in their environment to establish their academic self-concept (e.g., Coleman & Fults, 1982; Li & Shi, 2005; Marsh et al., 2008; Marsh & Hau, 2003; Marsh, Hau & Craven, 2004; Zeidner & Schleyer, 1999). However, Marsh et al.’s (2008) research reports an increasingly negative impact on academic self-concept the longer a student remains in a high average-ability grouping, but this is not supported by the older participants who report that their inclusion in the gifted program served to regularly remind them that they could be successful.

In summary, the BFLPE proposed by Marsh (1987; Marsh et al., 2008) is supported by the data for the participants in that there is a negative impact on academic self-concept when they are placed in homogenous high-ability contexts. The findings additionally support the assertions that BFPLE is robust in relation to social comparison theory (Marsh et al., 2008) but is subject to many influences that can cause tensions in the data analysis (Jonkman et al., 2012). However, alongside this, the alternative theory of ‘reflected glory’ is also evident; the participants prefer to be in the top streams and the gifted classes so they could ‘work and achieve’ (Ben, 2011) and “get the best out of school” (Andrew, 2011) and this supports the conjectures made by researchers that gifted students benefit from high ability groupings (Gross, 2010; Dai & Rinn, 2008).
9.6.2. Significant others

Significant others are those who interact with students in the school and home contexts; namely parents, teachers, siblings and peers. The primary influence from significant others is in the form of social interaction or feedback: the verbal, gestural or written feedback, subtle or otherwise, has been found to be effective and influential in all arenas including the academic (Niznikowski, 2013).

All three participants report that, when significant others such as teachers and parents support them, they are reminded of their potential to excel and they achieve more highly and their academic self-concept is enhanced. The participants indicate that feedback is most influential from teachers and, for Chris, from his parents. This may be as Chris is younger and his parents are still strong influences in his development (Chan & Chan, 2013).

The data point to teacher feedback as being important for motivation in class, for example, "I wasn’t getting very good grades and that and I felt I was going into a hole and was digging it deeper. But it just takes one small good thing to happen – and you get real motivation out of it – and it takes you out of the hole and you work to get things better and you feel better. I then got an ‘A’ grade - it was uphill from there" (Andrew, 2011). Both Ben and Chris discussed the positive response and motivation resulting from positive teacher feedback, which led positive self-talk and higher academic self-concept.

Craven, Marsh and Debus (1991) also identified that teachers have a positive influence on self-concept through the enhancement of the school relationships. Andrew and Ben imply that relationships with teachers are instrumental in creating a positive learning experience. Chris suggests that his positive learning relationships are at home with his parents. Positive relationships might be intertwined with how the talk of significant others impacts causal attributions, the foundations of which are embedded early in the skill experience. Assouline et al. (2006) suggest that recognising causal attributions can assist educators to understand motivation in the academic environment; a strong identity from being smart or good at something relates to a positive academic self-concept in that area, a notion revealed by the data, for example, “…when it comes to self-worth, if the teachers say you can do something, you think ‘yeah – I can do that’ and it makes you
feel more able to do it” (Ben, 2011). However, on the other side, negative outcomes might occur if experiences of failure are attributed to lack of ability and lead to lack of motivation and the feeling of ‘If I’m no good at it, why should I try?’ (Dai, Moon & Feldhusen, 1998; Dweck, 1986; Weiner, 1985). Assouline et al. (2006) suggest that realistic attributions for successes are important, as misattributions may lead to negative outcomes including underachievement.

The data point to positive teacher statements leading to positive self-talk, which supports the literature (Burnett et al., 2002), and leads to a sense of self-efficacy that has a positive effect on academic self-concept. Instrument data for the participants show varying results for ‘attitude to school’ and ‘attitude to teachers’. Both Andrew and Ben’s data show average attitude to school whereas Chris’s data result is highly negative and in the clinical range. Chris’s parents report that he dislikes school and has suffered with separation anxiety since commencing pre-school. Chris states in interview that he does not like school. Andrew specifies that, particularly over the past four years at senior school, he has experienced very positive interactions with his teachers; his instrument data support these statements but Andrew imply in interview that this has not always been the case, as is evident in the statement “[M]y teachers are awesome now… it’s not what you might think in the early years, they are real easy to talk to and I feel much better around them compared to primary school when I felt pointless and stupid” (Andrew, 2011). Ben’s instrument data shows that he has a low average attitude to teachers, but in interview Ben suggests that his ‘attitude to teachers’ has improved greatly during the year, “school is definitely getting better workwise and teacher wise – it changed for me this year when I came to senior school” (Ben, 2011). Chris’s BASC-2 SRP also shows an average ‘attitude to teachers’ and he implies a sense of isolation from his teachers in interview, “I don’t really like my teachers, or not, I don’t really have much to do with them” (Chris, 2011). Connection with the teachers appears to be important for the participants to feel valued and connected within their community-of-practice. Chris states, “I don’t like school, I hate being alone and the teachers don’t get me” (Chris, 2011) indicating his sense of isolation due to lack of connection with his teachers. Other forms of feedback, primarily gestural and verbal through social interactions, are equally important for all participants: they all implied in interview a sensitivity to others and this is reinforced by instrument results for Ben and Andrew showing perceptions of atypicality, social stress, anxiety, sense-of-inadequacy, and difficult interpersonal relations. Chris does not show such results but implies sensitivity
to feedback from others when he states, “I like being at home cos I can do fun stuff….I don’t have to talk to anyone, they don’t like me anyway” (Chris, 2011).

Teacher feedback for academic work is also suggested by participants as important for their academic self-concept. The influence of feedback from teachers is a strong theme for Andrew and Ben; Chris did imply some influence but it is not as compelling as with the other participants. The interview data of all three participants indicates that the grades they receive are important and are positively correlated with their enjoyment of a subject, and positively correlated with their connection to the teacher. Ben, having missed out by one ‘A’ grade from being on the ‘Dean’s List’ felt disappointed and judged himself to be a low performer despite his high results for the first time in school. Andrew echoes this sentiment when discussing his subject choices and grades when he states, “I chose the subjects I did because….I get good grades, so I feel more interested in the learning and I can compete with my classmates”. However, Andrew reports a sense of being an imposter in the gifted and high-streamed classes as evident in his interview when he reports “[B]ut, when I don’t get a good grade I say to myself “what am I doing here? Everyone is so much smarter than me, why am I here?” (Andrew, 2011).

Interactions with, and feedback or advice from, parents vary in importance with each participant; the data imply this may be due to their age with the highest importance with Chris to the lowest with Andrew. This may be as a result of social awareness moving beyond the family sphere during adolescence (Chan & Chan, 2013). The instrument data show relationships with parents varied, from average with Andrew, to a higher average for Chris. Ben’s result for the subscale is very low, in the clinical range, and is probably skewed as he implies having a poor relationship with his father and a great one with his mother “his father acts like his ‘mate’, and he gets sick of all of the attention being focused on the older brothers” (Ben’s mother, SDH, 2011). Andrew implies a very positive relationship in interview with his parents “we all get on so well, I can speak my mind and even swear if I feel strongly about something, but when they say ‘that’s it now, time to work’ I do – we understand each other”. Chris implies that he is particularly close to his mother who advocates for him in school and “she understands me” (Chris, 2011).

For all of the participants, school records indicate that each mother is the primary advocator for her son’s learning requirements at school. This supports the claims made
by Simons-Morton and Rusan (2009) who discovered that school students are more likely to engage with school if parental practices, monitoring, and connection with the school are established, although Chris has yet to experience such engagement with school. There are no data supporting the claims that parents and teachers are an important influence on academic choices (Hodkinson & Sparkes, 1997; Knowles, 1998), but suggestions by Andrew in interview data may imply that without his parents’ strong support of his education and basketball, he would not have achieved the success that he has. All parents state that they want their children to be happy but, as highly qualified professionals themselves, they all listed performance-achievement, high qualifications, affluent career choices for their sons, thus reinforcing that parents’ education achievements and family income had implications on their attitude to school and career choices (May, 1991).

Interaction with peers is influential for all participants, thus supporting Simons-Morton & Rusan (2009) who report that school students are more likely to engage with school if their peer interactions are both positive and supportive of the school environment. The data indicate that, for all three participants, peers have a significant but often subtle influence primarily through the BFLPE and psychological centrality. Inferences from data for all participants indicate that peers have a large influence when relating to their feeling on the periphery or ‘part-of-the-crowd’: Chris states in interview “the kids are mean to me, they don’t say things or hit me, I just feel it and know they don’t like me” (Chris, 2011); Andrew’s data imply a sense of isolation, imposter syndrome, and feeling on the periphery “although I know I appear to get along with everyone but it can be hard work” (Andrew, 2011); Ben implies that having fun and being popular are very important for him, although he prefers to sit alone in class in order to achieve as evident in his comment, “I have lots of friends….it is fun….like a community…they make you feel you belong” (Ben, 2011). The social interactions with peers become increasingly important with age for Andrew and Ben (Chan & Chan, 2013; Neilson & McNally, 2013) and they both acknowledge that they chose their friends based on their positive attitudes to things such as school, “I don’t do parties and drugs and that – that is a different set of kids and they made different choices” (Ben, 2011).

Finally, there is a small amount of data revealing the influence of siblings. For Chris, the eldest of two, he implies in interview that his sister is “annoying but I do love her”. Ben is the youngest with older twin brothers who have been successful in the school and sporting arenas; however Ben rarely refers to them but implies a solid and mutually
respectful friendship “my brothers are great, they do good, and we are great mates” (Ben, 2011). The influence of Andrew’s older brother appears to have had a greater influence on his identity. Andrew regularly in interview refers to his brother’s comparative prowess, for example, “he is smarter, stronger, more disciplined and better at everything compared to me”. Andrew spoke about his brother with affection and respect throughout the interview and considered him to be “a good mate and I can rely on him” (Andrew, 2011). The data imply that Andrew is in his brother’s shadow, particularly in the academic domain and basketball, and Andrew does not expect to achieve to the same high level.

The interactions with significant others can lead to positive or negative influences on identity and academic self-concept. In the school context, teachers are the most highly influential for these participants in all of their feedback, subtle and otherwise. Peers appear to be most influential in the social domain and in creating a feeling of being on the periphery or part of the community.

9.6.3. Environment

Mendaglio (2013) demonstrated that academic self-concept is a self-evaluated perception formed through the school environment. The participants imply that they have context specific experiences at school that have an influence on their construction of identity, cultural belonging and, thus, academic self-concept (Bunning & Steel, 2007). The school environment also influences emotional reactions during learning (Lipnevich, MacCann, Bertling, Naemi & Roberts, 2012; Pekrun, Elliot & Maier, 2009; Pekrun & Frese, 1992), which is also revealed in the data. Interview data suggest that environment is a small influence for legitimate-peripheral-participation but, for all participants, the most influential for participation-in-practice, particularly with teachers. In addition, environment is the most prevalent influence in social practices for all participants, which is implied in the data as positive and negative school experiences seen through emotional reactions to the experiences. Negative experiences are primarily reported from the primary school years, as exemplified in the following quote “[I]n primary school you only had one teacher and that is what you were stuck with, whether you liked it or not” (Ben, 2011). Andrew concurs about primary school and the impact of having one classroom teacher: “If [the teachers] don’t
like what they are teaching, it passes to the students and they will go down…. And if they don’t like you that’s it! And in the early years if that happens you have just that teacher for the year and you are stuffed” (Andrew, 2011). Chris, still in the primary years states, “I don’t like being at school, I hate being alone, the teachers don’t get me” (Chris, 2011).

Positive experiences are recorded for Ben and Andrew in their senior school experiences, for example, “I prefer senior school, there is more choice and the teachers seem better at understanding you and giving you the chance of working hard” (Ben, 2011). Andrew relates his positive experiences at school with his group work experience when he states, “I love group work in senior school, peers bring extra things to the learning so when you answer the question you all bring things and it is more solid and I learn heaps extra by group work” (Andrew, 2011). Environment is a positive experience for Chris when he is at home, as evident in the following quote, “I feel pretty good when I am talking at home because my mum and dad listen to me.” (Chris, 2011).

All participants imply emotional reactions to their experiences. The most positive reactions are when they discuss being identified with giftedness, with disability, and when they feel that they are in an environment that supports their learning needs. Chris, when talking about his learning needs offers, “…being gifted makes no difference at school, neither does having Asperger’s” (Chris, 2011). However, his parents report that “Chris’s favourite day is Wednesday when he gets to go to the gifted class, but he only gets to go once a week for 45 minutes” (Chris’s parents, SDH, 2011). Likewise, Andrew and Ben report positive experiences when having their learning needs recognised, for example when Andrew states “[When I was diagnosed with a disability] I felt I had a reason for not having done so well but knew now that, if I worked hard, my grades would be better and I would get more [emotional] highs”. Having their learning needs supported is also a positive experience and highlighted by Andrew, “I barely ever feel inadequate since I started gifted classes because, for me, it was such an easy place to come to and just connect with heaps of people”. Ben supports this notion and said “[T]he highlight of my primary school was when I got into the gifted classes” (Ben, 2011). Thus the data support the recommendations suggested that a supportive environment is essential for gifted children to flourish (Dai & Rinn, 2008; Little, 2012; Wendell, 1976).
9.6.4. Age and gender

Age and gender have been highlighted by the literature as having an impact on academic self-concept. Gender, as an influence on academic self-concept, is not evident in the data except that, by implication, all of the participants had low social self-concept which is evident in the literature for male students (Zeidner & Scheyler, 1999).

The influence of age is not evident in the data. The claim made by Litster et al. (2011) that academic self-concept is at its lowest at age 13 is not evident in the data. The lack of evidence might be interpreted as support for Tong and Yewchuck’s (1996) findings that age had no effect on academic self-concept, but the data do not indicate either way.

However, the influence of age on academic self-concept with respect to school phase (i.e. primary, middle, and senior school) is implied. For all participants, academic self-concept diminished constantly and throughout primary school, and for the older participants, academic self-concept rebounds in secondary school, which supports the claim made by Wai and Marder (2012). Data from Chris, who is still in primary school, shows a clinical score for his negative attitude to school. Andrew recalls primary school experiences as “I couldn’t understand that they weren’t interested in my ideas, they just wanted me to write neatly” (Andrew, 2011). Although still in middle school but on the secondary school campus, Ben also implies that primary school was not as enjoyable as his current year at secondary school, when he says, “I think it is better in senior school, definitely better than primary school. I wasn’t confident there but now, with academics and sport and stuff, I am now… I think that is because we have choice and better teachers” (Ben, 2011). The data imply that the experiences in primary school are not so much due to ‘age’ but are suggested by the data to be due to educational and teacher practices and the varying foci between primary and secondary education. Practices, data suggest, include the lack of identification of learning needs, the possible negative teacher feedback, and the lack of flexibility in learning and teaching (Reis et al., 1997; Foley Nicpon et al., 2013). The data support the notions from the literature that age can influence academic self-concept and appears dependent upon teaching practices, the subsequent psychosocial influences (Assouline et al., 2010; Reis et al, 1997), and academic performance and recognition (Cunningham & Rinn, 2007.)

9.6.5. Academic achievement
Effects on academic self-concept are complex but literature appears to be supporting a ‘reciprocal effects’ model in which academic self-concept both affects and is affected by academic achievement. Although the data do not offer support or otherwise for Guay et al.’s (2003) assertion that academic achievement affects academic self-concept in primary school and vice versa in secondary school, the data do imply that academic achievement is influential for the participants.

Interview data show that, for all participants, academic achievement is influential only when associated with participation-in-practice and teachers. Academic achievement is of relatively similar influence in practice and contexts, although social practices are more dominant. Andrew and Ben imply that academic achievement is primarily influential for legitimate-peripheral-participation with teachers, and to a lesser degree with peers and siblings. The latter association might be closely tied with BFLPE. The data suggests that all participants experience low academic self-concept in primary school; the parents all report relatively low academic achievement in primary school (either in year normal gradings or in achievement of potential) which is supported by the school records. Chris’s grades are, on average, ‘A’s but his parents report that he is not achieving at his optimum. The turning point for academic achievement for both Ben and Andrew is year 8, on entering the secondary school, and both participants report that their school relationship and attitude to school have improved since commencing secondary school. However, the data do not imply a causal link with academic achievement and academic self-concept.

The data do support the notion that academic achievement levels, and academic self-concept, can be influenced by compensatory learning (support of special learning needs), teacher-talk, enjoyment levels and school relationships (Bong et al., 2003; Liem et al., 2013). Ben suggests that enjoyment is enhanced by achievement “I get high marks in the subjects I enjoy. If I got low grades I probably wouldn’t enjoy them” (Ben, 2011.) Teacher talk and teacher relationships are highlighted by all participants for example Chris’s view that “…having Asperger’s or being gifted makes things harder I think, the teachers don’t really get it” (Chris, 2011). Andrew’s similar recollection of teacher-talk and relationships with school is highlighted by “if you are doing good my teacher would be happy and would let you know it …and it makes you feel good”.

All participants suggest that attending gifted classes, in addition to compensatory support for learning disabilities, enhances academic achievement. Both Andrew and
Ben report that enjoyment of school has increased since being identified as gifted, particularly since commencing senior school when their grades also improved, for example, “I know I am doing okay because I’m in the smart classes at school” (Ben, 2011). For Andrew and Ben, it would appear that recognition and teacher-talk initially influence academic achievement, then academic success influences academic self-concept (Hampton & Mason, 2003).

The data support the claims made by Bong et al. (2003) that academic achievement levels can be influenced by compensatory learning, teacher-talk, self-talk, academic self-concept, self-efficacy, enjoyment levels and school relationships (Bong et al., 2003). Academic successes in specific domains reinforce academic self-concept in those domains and lead to autonomous academic motivation which enhances academic achievement (Guay et al., 2010), as is demonstrated by Andrew’s assertion that due to success, and having the resultant self-efficacy, a subject is enjoyable, when he states “My favourite and most enjoyable to learn has been maths. But lately geography….. and I am doing well - you feel so awesome, when I saw I had got an ‘A’ I was, inside, so invincible because I had done so well” (Andrew, 2011). This implies that Andrew, therefore, achieves more highly because he perceives a stronger work ethic as a result of experiencing success.

9.6.6. Mastery experience

There is a cliché that ‘practice makes perfect’, and that individuals are more inclined to practise (and thus master) a skill if they also enjoy it. One of the major sources of self-efficacy is mastery experience and Bandura (1994) suggests that self-efficacy, developed in early childhood, is the belief in one’s capabilities to succeed in a particular situation. Bandura describes the beliefs in one’s capabilities as determinants of how people think, behave, and feel (1994). The ability to perform a task successfully, or otherwise, is partially dependent upon the perception of how well one can perform it, and their experience of performing it, or the mastery experience.

The data from the instruments do not provide insights into the influence of mastery experience. However, interview data from all participants reveals a small
influence of mastery experience, which pertains primarily to participation-in-practice: with teachers for the older participants and with parents for Chris; and the influence is in ‘practice’ rather than context. Andrew’s assertion that “[after practice] we then know what to do, and then we are able to practise essays which helps everyone’s overall performance” supports the notion that practising a task strengthens self-efficacy (Pajares & Urdan, 2006) and implies the benefit of supporting learning needs and enabling practice (Gallagher et al., 1997). Ben’s self-efficacy is strengthened through his mastery experience (Bandura 1994) and is evident when he reveals, “I like doing things, getting on with it, that’s how I get good” (Ben, 2011). Chris also implies that mastery experience is gained through exposure to a subject, which is made more accessible for him if he enjoys it, “…[Y]eah, I’m not sure why [science] is fun. I am good at it and I like it cos it’s fun” (Chris, 2011). The data imply that mastery experience is more likely to be gained if the task is enjoyed; thus enjoyment is inter-connected with mastery experience and will be considered next.

9.6.7. Enjoyment

Enjoyment is the level of satisfaction, interest in, and happiness gained from engaging with a task that results in positive feelings which are important for learning and achievement (Ely et al., 2013; Seligman et al., 2009). Enjoyment leads to motivation and engagement with curriculum (Little, 2012) and enables more positive outcomes which, in turn, may enhance academic self-concept. School experiences that are positive can promote learning and enjoyment at school, and enjoyment at school can promote learning and positive experiences (Gallagher et al., 1997; Rogers, 2007). In interview data, enjoyment is, for all participants, more highly evident with social practices. There is equal weighting for the implied influence of enjoyment for legitimate-peripheral-participation with teachers and peers, and for participation-in-practice, the teachers are the major influence. The interview data thus suggests that social practices by teachers influence the enjoyment of the practice, or participation-in-practice, of learning. Furthermore, for legitimate-peripheral-participation, the enjoyment experienced with both peers and teachers equally contributes to the influence of feeling part of the community-or-practice, and the subsequent development of identity and academic self-concept.
The data also implies support for the claim made by Little (2012) that, if a student finds curriculum and academic tasks appropriately challenging, meaningful and enjoyable, they will likely be more highly motivated and achieve better academic outcomes (Little, 2012). Andrew states that, “[I]f I get a good grade I feel I enjoy the subject more and the subject matter” (Andrew, 2011).

Enjoyment is the ‘feeling’ aspect of learning, “the feeling of being engaged, caught-up, fascinated, and curious. There is a feeling of wanting to investigate, to become involved” (Izard, 1977, p.216). Andrew reports that his favourite lessons are really interesting and he feels he loses the sense of time in them when he states, “[gifted classes] for me are so easy, it [is] such an easy place to come to and connect with heaps of people and do interesting things”. Chris reports his love and fascination with gardening with the following comment, “I love gardening; I can do that at home. I love watching seeds grow; I wonder how they know to grow into something”.

Fredrickson (2001) identified that enjoyment is associated with enhanced creativity and problem solving, and Rathunde and Csikszentmihalyi (1993) submit that enjoyment and interest support talent development in adolescents. Ben’s interview data imply that if there is support of his creativity and enjoyment in a subject, it supports his talent development, for example, “I am good at the subjects I enjoy, if I had a bad grade for Art I would still enjoy it, but not as much” (Ben, 2011).

The enjoyment aspect can stem from the emotional reactions when faced with a task, maybe a visceral reaction when having to complete, for example, maths or an essay. The participants unanimously expressed enjoyment in the subjects in which they are successful, and they imply the highest levels of self-efficacy and academic self-concept in such subjects. The chicken and egg scenario can be applied to this aspect of academic self-concept as it is not determined exactly how academic self-concept, enjoyment and motivation interplay with one another. The teacher influences enjoyment for the older participants, as Andrew states, "I have never been able to enjoy a subject that the teacher did not enjoy. Enthusiasm is everything and it is infectious". Ben adds to this by saying that he still finds it hard to study a subject he does not enjoy, for example, "I need to enjoy what I do, whether it is school or rugby or whatever". The data hint that positive emotional experiences at school lead to positive school experiences and enhanced academic self-concept.
9.6.8. **Self-understanding**

Self-understanding for this study is the insight and the ability to articulate how an individual perceives themselves; how they integrate their perceptions of their traits and characteristics (Muratori et al., 2003), and make sense of who they are (Dillon, 2009). Self-understanding is self-awareness to which self-knowledge is defined, and thus influences self-concept (Ayduk, Gyurak, & Luerssen, 2009).

Self-understanding was initially measured by examining the BASC-2 instrument results and how a participant’s perceptions align with his parents’ and teachers’ perceptions. The similarities and differences, it was hoped, might imply levels of self-understanding, an approach used by Assouline et al. (2009) when parental perceptions are compared to participant perceptions using the BASC-2, and the authors revealed that the large discrepancy was attributed to ASD (Assouline et al., 2009; Reynolds & Kamphaus, 2004). Andrew and Ben, on the whole, have similar scores to their parents, and often similar scores to their teachers. Exceptions are where, for example, their teachers may not be exposed to somatization as parents might. For Andrew and Ben, anxiety and depression yielded similar results to those of their parents. Atypicality, not observed by Andrew’s parents, is perceived by Andrew and his teachers. Ben had a similar outcome in that he and his mother believed him to be atypical, anxious and depressed, but his teachers thought him to be in the normal range; Ben states in interview that he does not let people outside his home see the ‘real me’. The instrument results have limitations and this is highlighted by Ben’s PH2 self-concept results which contradict aspects of his BASC-2 self-esteem results. Although self-concept and self-esteem are separate constructs, they have similarities that have been observed in the PH2 (Piers & Herzberg, 2004). Chris, on the other hand, has results from the PH2 that place his self-concept in the high or above average ranges. Similar to the results experienced by Assouline et al. (2009), Chris’s BASC-2 shows large discrepancies between his perceptions, those of his teacher, and those of his parents. For atypicality, Chris and his teacher place him in a very low percentile range whereas his parents placed him in the clinical (97th percentile) range. The researcher, having spent some time with Chris, would err towards the parents’ assessment as being most insightful but the results may indicate that the parents have a biased perception, or that Chris (and maybe his teacher) demonstrates lower levels of self-understanding. This would align with Students with ASD (Assouline et al.,
In addition, the parents scored his adaptive skills composite at the first percentile whereas the teacher scored him in the low average range. Chris agrees with his parents regarding clinical range levels of attention problems, whereas his teacher did not. Chris, his parents and teacher all agree that he has clinical range levels of anxiety.

In interpreting interview data for Chris, there is no evidence of self-understanding. Andrew’s and Ben’s data imply a small influence of self-understanding, primarily in legitimate-peripheral-participation, with peers. This data imply that peers, and the sense of acceptance into the community-of-practice, or of being an outsider, influences self-understanding for Andrew and Ben.

School experiences, due to late or non-identification of giftedness and/or learning disabilities, can give rise to psychosocial issues relating to anxiety and depression. If the student is unidentified, there will be frustration in part as a result of limited self-understanding. Lack of, or late, identification of either or both exceptionalities can have a negative impact on the student (e.g. Dole, 2001; Olenchak, 1995; Vespi & Yewchuk, 1992). If the student has no knowledge of either exceptionality, as the data indicates, they may feel isolated, misunderstood and depressed or anxious (Coleman, 1992; Reis et al., 1995, 1997, 2000; Vespi et al., 1992). Behaviours might include disruption, disengagement, poor performance, perfectionism and symptoms of anxiety (e.g. Baum et al., 1998; Brown, 2012; Moon et al., 2001). Instrument data for Andrew and Ben demonstrate clinical anxiety, and in interview they imply that school anxiety was as a result of late identification, feeling misunderstood and isolated in primary school, as exemplified in the following quote “I felt I had a reason for not doing well but knew that now [I had been identified with disability], if I worked hard, my grades would get better and I would have more highs” (Andrew, 2011).

Ben states that school felt more supportive once he had had his disability supported, but that he felt much more engaged with school once his giftedness was accepted. Although this data are not attributed to self-understanding, Chris implies unease at school compared to home where he is more relaxed and self-accepting with comments such as, “Mum understands me, she lets me do the fun stuff and keeps it all calm” (Chris, 2011). However Chris does not perceive any change in support as a result of the identification of his learning needs “being gifted makes no difference at school, neither does having Asperger’s” (Chris, 2011). However, Chris’s parents report that his favourite day is the day that he has his gifted class. Both Ben and Andrew indicated self-understanding and
self-acceptance exemplified by comments such as, “…I can find ‘out there’, like ‘way out there’, ways of solving [subject issues]. I feel I am not like a normal person that uses normal thinking to get answers” (Andrew, 2011). Self-understanding had been implied by the data to be of some influence in the formation of academic self-concept for the participants. Another influence identified in the data are psychological centrality.

9.6.9. Psychological centrality

The concept of psychological centrality is based on the premise that the more central that a component is to the person’s identity, the greater impact it will have on self-concept (Breytspraak, 1984; Rosenberg, 1979; Stryker & Serpe, 1982). How much an individual identifies with something is their psychological centrality and it is influenced by their psychosocial well-being. There are variations in the literature defining psychosocial well-being and, for the purposes of this research, it includes social, emotional, or psychological influences on an individual and how they are assimilated by the individual. These influences will be discussed to highlight how they inform psychological centrality.

Instrument data for all three participants indicate social and emotional issues in the clinical or at-risk ranges: anxiety, sense-of-inadequacy, social stress, depression, and somatization. These psychosocial issues are manifested as perceived issues within psychological centrality for all participants including: attention problems, hyperactivity, atypicality, withdrawal, and aggression. The interview data suggest the highest influence of psychological centrality from peers, particularly in the areas of legitimate-peripheral-participation, and a small amount for participation-in-practice with teachers.

Gifted and twice-exceptional students share common characteristics such as perfectionism, excitability, sensitivity, intensity, a desire for recognition of academic achievement, nonconformity, questioning of rules or authority, a strong sense of justice, imposter syndrome and idealism (Lovecky, 1992; Silverman, 1993b; Sowa et al., 1994; VanTassel-Baska, 1998). In support of the literature, all participants’ parents report that each had a strong sense of justice, excitability, intensity and sensitivity. These characteristics can create social and emotional difficulties in school and can lead to perceptions of isolation from peers, thus supporting the data, for example, “…the kids
are sometimes mean to me, they don’t say things or hit me, I just feel it and I know they
don’t like me” (Chris, 2011).

Psychosocial wellbeing in gifted students can be threatened by risks and pressures such
as perfectionism, imposter syndrome, an anti-intellectual school environment (Rimm,
2003), environmental demands, and emotional and behavioural issues (Neihart, 1999).
All of these can contribute towards underachievement and low academic self-concept,
and therefore, perfectionism, imposter syndrome, an anti-intellectual environment, and
emotional and behavioural issues will each now be discussed in terms of the findings.

9.6.9.1. Perfectionism
Twice-exceptional students may not attempt to succeed for many reasons including
perfectionism (with the perceived inability to commence or complete work) or the fear
they will be ‘discovered’ as being of low ability (Rimm, 1993). The complex construct
of sensitivity, intensity and perfectionism produces common characteristics and
counselling concerns for gifted children and adolescents (Christopher & Shewmaker,
2010). Perfectionism is grounded in anxiety and depression (Christopher & Shewmaker,
2010; Hewitt & Flett, 1991; Neihart et al., 2002; Rimm, 1992) and, despite all three
participants having high anxiety, only Andrew’s data imply perfectionistic tendencies
with low self-concepts and perfectionism in school and basketball, revealed by
comments such as, “when I go to a basketball trial at state level I feel so out of place
because, even though I am not the worst player there, there are so many who are on
such a high level” (Andrew, 2011). This perfectionistic attitude also spills into his
academic self-concept as he perceives himself as comparatively low performing when
he states “I feel I am overall a bright kid but not over super-intelligent like the kids in
this school are” (Andrew, 2011). Also when comparing himself to his high achieving
brother, he believes his efforts are shadowed by comparison “my brother is so good and
disciplined….. unlike me” (Andrew, 2011).
Research relating to the construct of perfectionism supports three conclusions: first that perfectionism may result in pathological problems, secondly that perfectionism in gifted students may contribute to high achievement, and finally, attributions of perfectionism fall along a range of continuums (Chrispher & Shewmaker, 2010; Stornelli et al., 2006; Silverman, 1993). Andrew’s high level of anxiety and low self-concepts may be a result of his perfectionism. However, the perfectionism appears to have contributed to a high level of achievement and so the data imply support for Chrispher & Shewmaker’s (2010) assertions that attributions of perfectionism occur along a continuum. Assouline (2006) associated aspects of perfectionism with misattributions, which the data imply is the case for Andrew when he stated “[N]o, I didn’t learn it myself, I got it from bright people at school and people like my brother”. The data suggest that Andrew has a combination of adaptive and maladaptive perfectionism (Parker, 2002) which seems to be unbalanced in favour of maladaptive but which has improved since primary school when “I knew I was no good at everything then” (Andrew, 2011). Perfectionism has been observed alongside imposter syndrome (Reis, 1987; Stornelli, Flett, & Hewitt, 2009), which will now be discussed.

9.6.9.2. Imposter syndrome
The second part of psychological centrality for this study, featured in gifted education literature, is the imposter syndrome (Clance, 1985; Machlowitz, 1982; Warschaw, 1985), interpreted as very low self-esteem. This occurs when individuals attribute their success to factors other than their own efforts, or as being undeserved or accidental. Ben commented that, when he first started the gifted program, he experienced imposter syndrome: “my mates laughed when I got in and I didn't know what to say because I felt like a fake”(Ben, 2011). Andrew felt that his success is undeserved in basketball which is exemplified by the following comments, “... I felt pretty bad because I didn’t feel as though I deserved it. I didn’t feel that I was the best player”, and “I don’t see that – I don’t think I was the best player at all” (Andrew, 2011). Imposter syndrome for Andrew, although subtle, appears to have spilled over into his academic work as he attributes perceived failures to his lack of ability when he states, “I may not get the best grades but I try so hard, and if I don’t get the grade I should have I don’t get angry at the teacher but at myself” (Andrew, 2011).
9.6.9.3. Environmental demands and anti-intellectual school environments

The third part of of psychological centrality to be explored investigates two of the aspects of environmental demands and anti-intellectual school environments. First, some literature proposes that environments are important for supporting, or otherwise, psychosocial wellbeing (Neihart, 1999; Rimm, 2003; Saranli & Letin, 2012). In many cases, researchers have discovered that, if provided with optimal home and school environments, gifted students have stronger psychosocial outcomes when compared to their non-gifted peers. The optimal environments include understanding and support from significant others, primarily parents and teachers. Assouline et al. (2009) observed the importance of environment in a study that identified three types of gifted students with social difficulties: Type A who have well-developed social skills; Type B who exhibit some behaviours that indicate social/emotional difficulties due to a mismatched environment; and Type C who have severe social impairments due to disability. Type B students can be misdiagnosed with ASD spectrum (Assouline et al., 2009) but when placed in the appropriate environment with intellectual peers, the ASD spectrum behaviours disappear (Assouline et al., 2009; Foley Nicpon et al., 2011; Norris & Dixon, 2011).

All participants imply that the support from their parents and teachers is important for their psychosocial wellbeing. For Andrew and Ben the focus of support in interview is primarily with the teachers, although the parental support is implied as ongoing and long established. When recalling their primary school experiences, both Andrew and Ben reflect that they felt misunderstood, unsupported and with little scope for their ‘thinking’, “I couldn’t understand that they weren’t interested in my ideas, just wanted me to write neatly” (Andrew, 2011). Ben’s recollections concur and, when discussing his primary school environment, he recalls, “I always had a hard time with my handwriting in primary school, the teachers had nothing good to say to me as they were stuck on my handwriting…I couldn’t help it” (Ben, 2011). Chris does not like school and his attitude to school is recorded in the clinical range indicating his dislike of and disassociation from school. His parents report that he still cries every day when he goes to school. Chris wants to be at home which is something that both Ben and Andrew report from their primary school years, thus supporting the assertions by Foley Nicpon et al. (2010), that twice-exceptional students are often not identified early in their school experience and that their academic and psychosocial patterns can become deeply
ingrained (Foley Nicpon et al., 2011). However, both Andrew and Ben perceive that the senior school experience is more supportive, that the teachers understand them, that the work is challenging and interesting, and that they feel recognised and understood. The particular turning point for Andrew and Ben was the recognition of giftedness and inclusion in the gifted program.

9.6.9.4. Emotional and behavioural aspects

Literature indicates that gifted students are emotionally well adjusted and aware of their limitations and social environment (Neihart et al., 2002). However twice-exceptional students do not experience this to the same degree because of traits that lead to social and communication issues, which in turn lead to frustration, anxiety, self-criticism, and the undermining of resilience (Assouline et al., 2009; Assouline et al., 2010; Neihart et al., 2002; Reis et al., 2002). Data reveal for all participants unhealthy levels of anxiety, social stress, low self-concepts and worthlessness. However, there is no data supporting disruptive behaviours in the classroom (Vespi et al., 2009), although Chris demonstrates avoidance behaviours in his class. All parents report that the participants have aggressive outbursts at home “..like a pressure cooker waiting to explode at the end of the school day” (Ben’s mother, 2011).

The data imply variable social and emotional functioning for the twice-exceptional participants which supports published research (e.g. Assouline et al., 2010; Neihart et al., 2002). Due to the perception of an improved school environment, both Ben and Andrew imply that they have adapted to, and can now deal with, significant school stressors (Coleman, 1992). Also implied in the data for all participants is that negative issues, such as anxiety and self-criticism, lead to psychosocial problems, reduced self-concept and, at times, perceived underperformance (Assouline et al., 2010).

In summary, the data imply that psychological centrality for twice-exceptional students can be addressed by early identification and provisioning. For a twice-exceptional student, the psychological centrality problems that might exacerbate low academic self-concept as a result of low achievement include frustration, lack of understanding, perfectionism, unsatisfactory peer and teacher relationships, negative school attitudes, and an imperfect connection to school and environmental demands.
9.6.10. Self-talk

The concept of self-talk is based on the premise that self-talk can be an acquired strategy to enable self-regulation of higher mental processes (Reis 2004). Self-talk assists students to evaluate their actions, understand the consequences of their actions, reflect upon their actions, reinforce, and self-motivate (Reis, 2004). Self-talk is a phase of self-reflection that primarily involves a reflection on performance (Reis, 2004). Self-talk is suggested in interview data only for Andrew and Ben and is similarly influential for legitimate-peripheral-participation and participation-in-practice with both peers and teachers. In addition, self-talk is primarily evident for social practices. There is no implication of self-talk in Chris’s data. Thus, the data for Andrew and Ben implies that self-talk can be seen as a consequence of interactions with significant others, particularly teachers, thus supporting Burnett and Proctor’s assertions (2002).

A study exploring self-talk and self-concept (Burnett & Proctor, 2002) discovered that negative statements made by teachers are predictive of negative self-talk for boys. In the data both Andrew and Ben imply that teacher interactions influence their self-talk and, thus academic self-concept, as both report that teachers in primary school were focused on their handwriting and “had nothing positive to say” (Ben, 2011). Teacher positive statements led to positive self-talk in boys (Burnett & Proctor, 2002) and this notion is implied by both Andrew and Ben in interview, for example, “[a good teacher] is enthusiastic and always wants you to do stuff…they make you feel you belong” (Ben, 2011). Ben goes on to say “[W]hen it comes to self-worth, if the teachers say you can do something you think ‘yeah – I can do that’. It makes you feel more able to do it”. Andrew recalls “if you were doing good work [the teacher] would be happy and show people, and it makes you feel good” (Andrew, 2011). The data support the literature in that positive teacher statements indirectly affect self-concept through self-talk (Burnett & Proctor, 2002; Craven et al., 1991).

9.7. How this research contributes to the field

Whilst there is literature informing the development of academic self-concept for gifted students, students with disability, and non-identified students, the literature review (Chapter Two) demonstrates that there is a gap associated with the influences of academic self-concept in twice-exceptional students. Revealed by the data are
implications that most of the key themes identified in the literature to influence academic self-concept in non-twice-exceptional students also influence academic self-concept in twice-exceptional students. In addition, the theme of basketball, not identified in the literature, is revealed for one of the participants. The themes revealed by the data to be influential for academic self-concept in the twice-exceptional participants, in support of the literature, are BFLPE, significant others, environment, academic achievement, enjoyment, self-understanding, psychological centrality and self-talk.

9.8. How Research Issues are addressed through the theoretical framework

The Research Issues are addressed through the sociocultural framework combining the work of Wertsch (1998) exploring inter- and intra-personal processes, and Lave and Wenger (1991) exploring the participants in their school community-of-practice. To briefly recap, sociocultural theory pertains to the idea that learning is embedded within the learner’s interactions in their social environment (Vygotsky, 1986). Ways of knowing (epistemology) and ways of being (ontology) are intertwined with the social dynamic of relationships, and learning occurs through participation (Lave & Wenger, 1991). Learning in communities-of-practice emphasize the social and participatory aspects of learning which, in turn, emphasizes the influence of social, cultural and historical contexts on human interactions, human development, and thus the development of academic self-concept.

The model devised to clarify how processes operate in the ZPD (Figure 3.1) indicates how the externalised social environment, the intermental plane, interacts with the internalised, intramental plane within the ZPD. By integrating the works of Wertsch (1998) and Lave & Wenger (1991), a platform for exploring the processes that influence academic self-concept is used to explore the Research Issues. Each research issue will be briefly discussed in light of the data and presented through the sociocultural theory presented in Chapter Three. Figure 9.2 provides the overview of the findings that show the influences on academic self-concept within the theoretical framework as originally illustrated in Figure 3.1. The similarity between Figures 3.1 and 9.2 is that the model expounds the theoretical perspective used, in a ying yang design, which is aimed to demonstrate that the two planes are not distinct and there is an interactive flow of
influences across the blurred borders of the intermental and intramental planes. The circles within each plane are the influences that have been revealed by the data, concurrent with the literature, that impact academic self-concept. Each research issue, which framed this study, is now discussed in light of Figure 9.2.

9.8.1. Research issue one

The first research issue aimed to explore some of the social interactions that influence the development of academic self-concept for twice-exceptional students. To do this, the notions of legitimate-peripheral-participation, participation-in-practice, and situated learning were employed to provide a framework for understanding. The data imply that legitimate-peripheral-participation for two of the participants, Andrew and Ben, is a large influence on their social interactions and academic self-concept. For Chris, the data do not imply influences of legitimate-peripheral-participation and this might be
because of Chris’s Asperger’s syndrome, and the fact that he is relatively unaffected by some social norms. Legitimate-peripheral-participation is evident primarily with peers, followed closely by teachers for both Andrew and Ben. This might be indicative of the higher influence of peers for influencing a sense of inclusion in the community-of-practice. The key contributing themes from the literature that are supported by data are BFLPE and psychological centrality with peers, closely followed by significant others and academic achievement with teachers. With respect to the influence of peers, both Andrew’s and Ben’s perceptions of their comparative success with peers informed academic self-concept, their identity, and thus can be related directly to BFLPE.

Participation-in-practice is evident for all participants and is primarily associated with teacher interactions followed by peer interactions. The three largest contributing themes for all participants are from the teachers and are significant others, academic achievement and enjoyment. Participation-in-practice for the participants indicates, therefore, how they perceive their social interactions in their community-of-practice. The data are relatively cogent in indicating that, for the participants, the primary influence is from the teachers themselves, their feedback, and the enjoyment of the classes as main influences for participation-in-practice.

Situated learning for the first research issue, relating to social interactions, is evident for all participants primarily with peers and teachers, and additionally with parents for the youngest participant, Chris. For the three aspects of situated learning, namely engagement, alignment, and imagination, the data imply that all are actively involved and influential in the development of academic self-concept. Engagement is primarily associated with teacher interactions: doing things, talking and producing artefacts, teachers again having a key influence on academic self-concept. Alignment overlaps both engagement and imagination and pertains to participants’ alignment with community processes and moral codes. The interview data imply for all participants that they want to feel part of the community, and have a sense of belonging; contrary to this desire, the instrument data shows that the participants ‘feel’ on the periphery.

Imagination pertains to sense-of-self, identity, and interpretation of the world. Andrew refers primarily to work and discipline when discussing aspects of imagination. There are differences evident in the instrument data that show how Andrew’s perceptions differ markedly at times from those of his parents and teachers, indicating how his sense-of-self in the world is situated, and how it differs from the perceptions of others.
The data support the literature (Cross, 2013) that being twice-exceptional defines part of identity (and thus influences academic self-concept). The data shows that when schools cater for twice-exceptional students’ needs, both academically and socially, the students can thrive (Cross, 2013). By thrive Cross (2013) suggests “students demonstrate psychological wellbeing, and appropriate levels of academic achievement” (p.32). Hence social interactions, the data imply, are influential for academic self-concept, particularly with teacher practices and interactions.

9.8.2. Research issue two

The second research issue is addressed by exploring some of the social practices and contexts that influence the development of academic self-concept for twice-exceptional students. For all participants, social practices are doubly influential on academic self-concept compared with social contexts, thus implying that it is the actual ‘practices’ of people that are more influential than the actual environment or context. The instrument data do not show results to inform research issue two.

Social practices are impacted by all of the influences identified in the literature and, for all participants; enjoyment is a dominant influence indicating that their enjoyment of a practice predominantly influences their academic self-concept. Other dominant influences for the participants are significant others and academic achievement. Bearing in mind that Andrew and Ben point to academic self-concept development being most influenced by teachers, particularly with respect to participation-in-practice and academic achievement, the data suggests that teacher practices are the most influential for these participants. For Chris, environment is a dominant influence for social practices perhaps echoing his claimed dislike of school and preference to be at home. For Andrew and Ben, environment is also a key contributing influence for social practices and, again, indicates that their perception of their environment is aligned with the social practices they engage with.

Social context, as discussed in Chapter Three, is the relationship between learning and the social contexts (or social co-participation) in which it occurs. Wenger (1996) argues that the success of organisations (such as schools) depends on their ability to design themselves as social learning systems which, in turn, shape identities by participation in these systems. Social contexts are not as evident in interview data as social practices but the data did indicate some dominating influences. For all three participants, significant others is a dominant theme from the literature which is influential for social
context, thus indicating that teacher and peer interactions in the school context are influential for academic self-concept formation; the interview data suggests that social interactions with teachers and the BFLPE with peers are influential. Additionally, enjoyment is the other dominant influence evident in the data, particularly for the youngest participant, Chris. Chris prefers to be at home as he enjoys being in that environment.

9.9. Chapter summary

In summary, the data from the three case studies indicate that intermental and intramential influences are at work in the development of academic self-concept, both in terms of social interactions, social practices and contexts, and in terms of the influences identified in the literature. As academic self-concept relates to students’ perceptions of their academic accomplishments, academic competence, expectations of academic success or failure, and academic self-beliefs (Marsh, 2011), the data imply that academic performance for these participants is underpinned by academic self-concept. Thus, in concurrence with the literature, the data suggest that academic self-concept is important for academic success and is underpinned by achievement criteria such as: educational aspirations (Davis et al., 2011; Marsh et al., 1997), academic interest (Marsh et al., 2004; Marsh et al., 2008), and achievement over time (Marsh & Yeung, 1997b).

The data point to convergence with the theoretical framework, and all of the influences listed in the literature, except for ‘age and gender’. For the participants in this research, the data indicate that as twice-exceptional students have the traits of both being gifted and having a disability, it is possible that both aspects will influence the academic self-concept of the student. The data support the notion that twice-exceptional students present as a dual paradox for education systems, both in terms of being gifted and having a disability, as these students experienced delays in identification and effective intervention, and in terms of the lamentable nurturing of a potential resource on both an individual and societal level. The following Chapter provides a conclusion for this thesis with a brief review of the Chapters presented, a discussion of limitations, and proposed recommendations.
Chapter 10: Conclusion, limitations and recommendations

“Intellectually gifted individuals with specific learning disabilities are the most misjudged, misunderstood, and neglected segment of the student population and community. Teachers, counsellors, and others are inclined to over-look signs of intellectual giftedness and to focus attention on such deficits as poor spelling, reading, and writing. Expectations for academic achievement are generally inaccurate – either too high and unrealistically positive or too low and discouraging of high aspirations” (Whitmore & Maker, 1985.p 204-205).

10.1 Introduction

As Whitmore and Maker (1985) note, twice-exceptional individuals often experience their intellectual giftedness being ignored because a focus on the disability takes precedence, or because both exceptionalities are undiagnosed, and this may manifest in lowered expectations, both by the students and by others, leading to a negative influence on academic self-concept. It is well documented, however, that academic self-concept is important for predicting academic success, future achievement, and life success and satisfaction (Field et al., 2003; Marsh et al., 2008; Skinner, 2003). The importance of the academic self-concept of students, both in school and beyond, has long been acknowledged in published research, including studies of those with learning disabilities, those who are gifted, and those who are unidentified. However, there has been no published research reporting on the academic self-concept of twice-exceptional students. This study makes a unique contribution to the field by providing insight into this phenomenon. In addition to highlighting and addressing the gap in the research about the academic self-concept of twice-exceptional students, this research utilises a sociocultural framework as a platform for the investigation. The framework, which has not been commonly utilised in the field of gifted education, proves to be a robust mechanism to explore phenomena when there is a large gap in the research (Penvel & Wertsch, 1995).
The aims of this research were to:

- Utilise case study methodology to measure academic self-concept and related perceptions of self in three twice-exceptional students.
- Explore school experiences for twice-exceptional students.
- Explore the perceptions of significant others (parents, siblings, peers, and teachers) of twice-exceptional students.
- Investigate academic achievement histories of twice-exceptional students.
- Explore the relationship between academic self-concept and school experiences.

From these aims, the following Research Issues have shaped this study:

1. Explore some of the social interactions that influence the development of academic self-concept for twice-exceptional students.

2. Explore some of the social practices and contexts that influence the development of academic self-concept for twice-exceptional students.

The Research Issues provide a platform to explore academic self-concept in three twice-exceptional students. In this Chapter the overarching influences found for the three case studies are revealed, in light of the Research Issues. The data are first considered in terms of how it converges with the literature: to provide a link to current research, and to provide a first layer of analysis and discussion to the framework that enables exploration into the research inquiry. Second is a discussion of how this research contributes to the identified gap in the literature. Following this is a second layer of discussion showing how the data provides insight into the Research Issues through the theoretical lens. Importantly, details of the limitations of this research are shared. All research is dependent upon reliability and validity concerns and these parameters enable the generalisability and replicability of the findings of the study to be considered. Finally, the recommendations for future policy and practice are presented to provide directions for educators and policy makers working with twice-exceptional students.
9.10. The story so far

Literature in the field reveals that the academic self-concept of a student serves as an important predictor for academic success, future achievement, and life success and satisfaction throughout schooling, and for up to a decade after leaving school. However, although this is well known in the context of gifted students and students with learning disabilities, there has been a lack of evidence about the effects for twice-exceptional students. This study specifically sought to investigate this phenomenon in the context of a school in Queensland, Australia.

A selective review of the key debates, issues and arguments in the literature related to giftedness, learning disabilities, self-concept, and academic self-concept served as a framework for understanding. The literature review exposes a gap in research concerning academic self-concept for twice-exceptional students and, although this provides a clear opportunity to focus a research investigation, the lack of literature also highlights the very real gap for comparative purposes as the research evolved. However, by reviewing the research associated with self-concept for twice-exceptional students, academic self-concept for gifted students and academic self-concept for students with learning disabilities, an informed space to guide this research was scaffolded into place. The literature is framed by the cultural understandings, contexts, environments, and the psychosocial influences that together influence academic self-concept.

In order to address some of the key issues around academic self-concept for twice-exceptional students, the sociocultural and theoretical perspectives have been structured to provide a rigorous lens for research. The theoretical framework enabled an exploratory investigation into the academic self-concept of twice-exceptional students including provision to explore how learning is embedded within the learner’s interactions in their social environment. The platforms of legitimate-peripheral-participation, participation-in-practice, and situated learning are used to analyse the data, exploring inter- and intra-personal processes within a community-of-practice. The influences of the externalised social environment, termed the intermental plane, and how they interact with the internalised, intramental plane within the ‘zone of proximal development’ have been explored. The ‘zone of proximal development’ encompasses and enables the interchange between the intermental plane and the intramental plane.
The intermental, sociocultural forces dynamically interact with the intramental plane, and inform the development of academic self-concept in twice-exceptional students.

The concepts of *learning by doing* and *learning through participation*, and the resultant influence on academic self-concept, have been explored using the theories of situated learning and communities of practice. Emphasis is on the social, participatory aspects of learning, which highlight the interconnection of social, cultural and historical contexts on human interactions. Such interactions characterise learning and development, including the development of academic self-concept, and are part of the processes of being and becoming, of shaping and developing identity. The methodological framework that supports this research has been outlined. The use of case studies for this research is argued primarily around the dearth of case studies published in the field of gifted education. In addition, researchers in the field have recommended the use of case studies to provide context and deeper understanding through the personal experiences of twice-exceptional students.

The thesis has moved from the broader research considerations to the discussion of each case study in light of the literature and theoretical framework. Each case study participant’s background has been described and all instrument and interview data analysed in two layers: first with the theoretical framework and then, second, with the emergent themes in the literature. A collective discussion of the case study findings has been presented along with a description of how the Research Issues have been addressed. Insights and findings from the research have been presented in the two layers and each is now presented.

### 10.2 Key findings

The findings present similarities which, although not generalisable, are worthy of attention as they are as distinctive as they are complex and novel. Similarities between all three case study participants fell into two general areas: the psychosocial presentations of each participant and their reported school experiences. Each will be outlined followed by an appraisal of how the findings provide insight to the Research Issues.
The psychosocial profiles of the three participants reveal that there are similarities between them in that they experienced intense emotions and they experienced feeling conflicted. The instrument data concurred with the findings by Assouline et al. (2009) in that the two participants without Asperger’s Syndrome had scales in the at-risk range for social stress and interpersonal relationships, whereas the participant with Asperger’s Syndrome, Chris, did not perceive this on instrument data but did suggest it in interview. It might be that, due to a lack of intellectual peers in primary school, the participants have experienced interpersonal difficulty, which manifested in stress and dislike of school, and contributed to low academic self-concept.

The second area is the participants’ school experiences. They all reveal experiencing a sense of ‘difference’ in school; and while they all want to fit in, at the same time they also desire to stand out. The three participants experience similar emotions and attitudes towards school at similar ages, and the data suggests similar insights in terms of their academic self-concept. The data reveal that they have all experienced negative school experiences, mainly in primary school due to school practices and the educational foci such as a focus on handwriting and reading rather than on ideas and innovation; perceptions of difficult interactions with teachers; perceived ‘threats’ of having to repeat a year or attend special needs classes; and detentions for lying that the individual prepared for the test when ‘clearly’ the test performance indicated otherwise. The three participants have been accused of being lazy in their earlier years and told that, if they worked harder, they would achieve. The resultant influence on the participants’ self-talk led to low academic self-concept in primary school. Issues with peers in primary school are also implied through perceptions of feeling an ‘outsider’, name calling by peers and exclusion from games.

Two areas highlighted by data that support the participants in their school experiences are out-of-school experiences and support mechanisms. Due to positive out-of-school experiences, the older participants suggest that they are able to survive and adapt, and the youngest participant implies that his favourite place is out of school where he can be himself. Support mechanisms are reported to be both in and out of school. The primary source of support for all participants is their parents (usually the mothers) who advocate for their children to be recognised, supported, nurtured, and rewarded in school.
support mechanisms for these participants come from the classroom teachers in primary school and the support programs in secondary school. However, the primary school experience of support, they suggest, is variable due to different teachers, different understandings, late identifications, and lack of a coherent program. The support mechanisms that do work, either provided by individual classroom teachers, or as part of a coherent school program, include compensation strategies; discreet support of the learning disabilities; interaction and learning opportunities with gifted peers; positive teacher talk; the use of computers; counselling and learning self-advocacy; learning life strategies especially organisation, time management, metacognition, and planning techniques. All three participants are strong visual thinkers and all report that, for them, the most scaffolded learning is when teachers use concrete, literal pictures and when verbal instructions are kept short.

Using the Research Issues to guide the investigation, it became evident that some intra- and interpersonal practices contributed to the formation of academic self-concept through the social, cultural and historical contexts of human interactions. Through the consideration of research issue one, it is highlighted how social interactions, particularly with teachers, closely followed by peers, contribute to academic self-concept formation. Understanding of situated learning provides insights into interactions with teachers and implies that teacher practices influence the formation of academic self-concept for these participants: namely their teaching practices, academic achievement, feedback, and enthusiasm are of key importance to the participants, followed by social interactions with peers. The influences of social comparison theory, both through ‘big fish little pond effect’ and ‘reflected glory’ effects, inform the psychological centrality of the participants which, in turn, contributes to their academic self-concept formation. Teaching practices, particularly through participation-in-practice are of primary importance to participants for their sense-of-self-efficacy, and social comparison through legitimate-peripheral-participation is of primary importance to participants for their sense of inclusion (or otherwise) in their community-of-practice.

Research issue two provided a platform for exploration into some of the social practices and contexts that might inform the development of academic self-concept. Social practices, primarily with teachers, are the most influential in the development of
academic self-concept for these participants, based primarily on social interactions, feedback, and academic achievement. Social contexts are implied by data to be of lesser, yet relevant, influence mainly in relation to school context in which the social practices occur, particularly when relating to interactions with teachers. So the data suggests that, in terms of the Research Issues, social interactions, social practices and social contexts are influential and a useful lens through which to observe the formation of academic self-concept. However, it is important to view the data in light of the limitations of this research.

10.3 Limitations of this research

Case study research enables deep investigation of a phenomenon. For this study, the research design utilises case study methodology to better understand the similarities and differences of the experiences of three twice-exceptional students with regard to their academic self-concept. This study did not set out to enable generalisations to the wider community of twice-exceptional students. Cross (2013) reminds us that although drawing generalisations from the three single participant case studies in this study can be considered to be risky, the study is of value in two important ways. One is the comparison of data drawn from the twice-exceptional participants and how it converges with the published literature. This alignment confirms a practical tie to other peer-reviewed research in the field of learning disabilities, of gifted education, and of self-concept. The second value represents areas that are specific to the theory, and to the twice-exceptional population, and how the theoretical framework can provide insights into educational and cultural practices.

The limitations of this study are presented in Chapter Four, Methodology, and include the small sample size and the fact that all participants are male. As such, conclusions drawn are not generalisable to the twice-exceptional population. Additionally, limitations are acknowledged for selection bias as the research engaged participants from one school; however this might be considered as adding an advantageous dimension, as similarities between the participants’ education enabled consistency and clearer focus on the Research Issues. The age range, from 9 years to 16 years, provided participants from each school stage (primary, middle, and senior school) and thus some
similarities relating to life experiences are negated. Different clinicians provided the reports used to recognise and support the learning disabilities, which might imply less consistency between reports. Additionally, the instruments used had inherent limitations, which are presented as part of the Methodology (Chapter Four). All limitations remained as a consideration in the collection and analysis of the data.

The value of this study is the analysis of the three case studies, and the unique insight provided by this deep analysis. Recommendations arising from this study are made in two domains: first those for policy and practice, and second those for further research.

10.4 Recommendations for policy and practice

Academic self-concept is an important factor underpinning the academic success and life satisfaction of all students, and this research confirms it is likely also for twice-exceptional students. There are three recommendations emanating from this research, which, it is suggested, are consequential in determining the academic self-concept of twice-exceptional students and thus ensuring that they thrive in school and in life. It is recommended that:

1. Comprehensive assessments are used to enhance the identification and recognition of twice-exceptional students.
2. Counselling is provided at all levels to support the psychosocial needs of twice-exceptional students.
3. Environmental and programming adjustments are made available to twice-exceptional students, which recognise that they are gifted first, but may require additional support for learning disabilities.

10.4.1 Recommendation One

In support of the recommendations made by Foley Nicpon et al. (2011), the first recommendation is that future research includes suggestions on how to improve the identification of twice-exceptional students in order to enhance their recognition and remediation. Assouline et al. (2009) strongly recommend that a comprehensive assessment must include a psychoeducational battery of tests that thoroughly measure
psychosocial behaviour and cognitive ability. Awareness of the different types of gifted students can provide a useful platform to ensure that twice-exceptional students are neither misdiagnosed nor missed. Identification is critical to ensuring that the educational and psychosocial needs of twice-exceptional students are met.

10.4.2

Recommendation Two
Provision of counselling support for twice-exceptional students must be provided to accommodate psychosocial needs dependent on individual needs. All gifted children can participate from time to time in counselling which can be provided in the classroom or at a more intense level if required. Counselling is useful for enhancing prosocial skills (including understanding the perspectives of others), communication skills, strategies to deal with stress and frustration, to manage negative emotion, and to wait for other students to catch up, or how to cope with being behind. Also useful is dialogue concerned with what it means to be gifted, how to work hard, to build resilience and practice in domain of talent. Discussion of friendships is also important. Subjects including the emotionality and perspectives of others would be of particular importance to students with Asperger’s syndrome. Programs such as sensory integration therapy can reduce sensory sensitivity and help students organise, concentrate, attend, anticipate and prepare for change. All of these suggestions can reduce anxiety and promote self-understanding. Counselling with regards to anxiety issues such as perfectionism can help provide students with realistic expectations whilst enabling them to consistently engage with challenge.

10.4.3

Recommendation three
Environmental and programming considerations underpin the third recommendation. All twice-exceptional students should be considered gifted first and knowledge should be presented at the level of cognitive ability, not mechanical skill. Gifted programs are essential for all gifted students as they enhance self-esteem as a result of participation and identification. Although some twice-exceptional students report challenges in keeping up with regular gifted classes, they also report enjoyment of the creative outlets,
and learning skills such as self-confidence, motivation, organisation and the ability to work with peers. As Cross (2013) suggests, providing a supportive and accepting intellectual environment in school will decrease social stigmatization of either the giftedness or the disability. Spending time with other gifted students, regardless of perceived ability or performance, is recommended to increase protection against risk of compromised psychosocial functioning. To enable inclusion, use of non-verbal tests or alternative assessment measures can enable twice-exceptional student’s access to gifted programs. Intervention at school needs to be individualised: it is rare for a twice-exceptional student to meet a ‘true peer’ as so many variables are in play. Focusing only on areas requiring support in the early years might lead to lowered academic self-concept and a lowered acceptance of intellectual challenge. In short, it is important to match student’s academic needs to the school curriculum. Additionally, recommendations for further research will contribute to enabling changes to practice and policy.

10.5 Recommendations for further research

In many ways these recommendations resemble those that might be made for all students. However what this thesis draws out is the assertion that teachers must be trained to identify and subsequently support twice-exceptional students. There is the potential for multiple strands of future research stemming from this study. The marketization of education has proceeded apace, and schools are advertising their strengths as being, among many, meeting the needs of all students, including those with diverse learning challenges. While this study has explored the importance of academic self-concept for twice-exceptional students, further research is needed to establish the knowledge and conditions that allow policy and practice to become embedded within the school pedagogies to enhance the optimal performance of twice-exceptional students and, thus, negate the dual paradox they experience. There are three recommendations for further research emanating from this study:

1. Investigate and make explicit accessible methods that enhance the identification of twice-exceptional students in schools.

2. Systemise the counselling needs of twice-exceptional students including how to effectively address psychosocial needs of twice-exceptional students.
3. Classify the environmental and programming adjustments, employing optimal pedagogical approaches, to inform and enable practice and policy.

The further research recommendations should be implemented using a variety of methodologies that allow for trends to be observed and in-depth analysis to be facilitated. It is recommended that further research allow for the sense of difference experienced by twice-exceptional students in their school context; highlight and classify the outcomes to enable accessibility of practices to be employed within classrooms; and inform intervention studies that lead to the evaluation of outcomes and experiences. Optimally, the further research should inform policy makers and result in legislation that provides for the spectrum of diversity found amongst school students, particularly twice-exceptional students, including the giftedness, to be enshrined in law.

10.6 Conclusion

Academic self-concept is an important predictor for academic success and life satisfaction. It relates to students’ perceptions of their academic accomplishments, academic competence, expectations of academic success or failure, and academic self-beliefs. Academic self-concept has been identified in literature, and supported by this thesis, as being a critical component for academic success in school. Although the general self-concept for twice-exceptional students has been explored, as has academic self-concept for gifted students and students with disability, the academic self-concept of twice-exceptional students has, until now, not been the focus of intensive research. This research suggests that there are three key influences on academic self-concept for twice-exceptional students: recognition and identification; psychosocial support including positive teacher interactions; environmental adjustments which enable twice-exceptional students to be recognised as gifted first and to receive support for their disability second. For example, inclusion in gifted programs that ensure twice-exceptional students are with gifted peers has a positive impact, and insensitive teacher feedback can have a negative impact. The gifted field has discouraged the prohibition of twice-exceptional students from participating in gifted programs and this research supports such assertions.
Twice-exceptional students can thrive in environments when they are explicitly taught effective compensation strategies for their learning disabilities. This research converges with the literature in recommending that twice-exceptional students need specialised programs for their areas of strength as well as remediation for areas of disability. Additionally, sociocultural theory has provided a platform for in-depth exploration into the phenomenon.

The sociocultural theory used as a framework for investigation in this research has enabled contribution to scholarship in the gifted education field. The use of sociocultural theory has provided insight from the perspective that learning and identity formation, both of which inform academic self-concept, do not occur in isolation but are embedded within an individual’s interactions with their social environment. Researchers exploring twice-exceptionality have adopted a largely psychological theoretical approach and this sociocultural theoretical approach contributes another lens of theory to the field. Understanding of how the formation of academic self-concept is influenced by twice-exceptional students’ interaction with significant others in their lives, within their community-of-practice, can inform understandings and future practices by educators as their interaction with twice-exceptional students is critical in this research.

This research utilised a case study design underpinned by a qualitative methodological framework that enabled in-depth exploration of phenomena informing the academic self-concept of twice-exceptional students. Additionally, the research used quantitative instrument data to reinforce the qualitative data, using instruments that have been utilised for research that has informed the understanding of twice-exceptional students. The methodology used for this research has incorporated some approaches used previously within twice-exceptional research, has added to, and has combined some approaches.

The dual paradox of twice-exceptional students requires ongoing research attention. It is recommended that further research investigate how the behaviours of twice-exceptional students manifest in the classroom to assist with both identification and appropriate interventions. The perceptions of the parents and teachers have differed from the perceptions of the participants in many aspects of their school context, especially their psychosocial well-being. This may account for the teachers’ commonly reported misunderstandings of twice-exceptional students. This research reveals that intermental and intramental influences shape academic self-concept. As twice-exceptional students
are considered to be at very high risk of academic underachievement, this research asserts that understanding the influences on academic self-concept by teachers and parents is pivotal to improving psychosocial and educational outcomes, and in progressing the field of educating twice-exceptional students.
References


Rogers, K. B. (2011). Thinking smart about twice-exceptional learners: Steps for finding them and strategies for catering to them appropriately. In C. Wormald & W. Vialle (Eds.), *Dual exceptionality* (pp. 57–71). Wollongong,
Australia: Australian Association for the Education of the Gifted and Talented.


## Appendix A  
### Case study format template

<table>
<thead>
<tr>
<th>Section</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Defining the case</strong></td>
<td>Present body of incontestable data (Stake, 1995: The data are not interpreted and is stated as it is) - description: Parents Structured Developmental History. Reports from school records.</td>
</tr>
</tbody>
</table>
| **Presentation of the data collected** | Background information  
Instrument data  
Interview analysis - Leximancer analysis, supported by manual coding, and emergent themes.  
Concurrent and discordant themes with literature relating to research issue one.  
How theoretical perspectives relating to research issue one were present in the data.  
Concurrent and discordant themes with literature relating to research issue two.  
How theoretical perspectives relating to research issue two were present in the data. |
| **Development of issues and descriptive detail** | (Develop key issues - not for the purpose of generalizing beyond the case but for understanding complexity of the case.)  
Themes concurrent with the literature.  
Themes discordant from the literature. |
| **Assertions and summary**   | Summarise what I (the researcher) feel I understand about the case and how my generalizations about the case (above in development of issues) have changed conceptually. |
### Appendix B

Descriptive data relating to eight participants not presented in this thesis

<table>
<thead>
<tr>
<th>Name</th>
<th>Sex</th>
<th>School stage</th>
<th>Socioeconomic status</th>
<th>Ethnicity</th>
<th>Gifted ID</th>
<th>disability</th>
<th>Comments</th>
</tr>
</thead>
<tbody>
<tr>
<td>Daniel</td>
<td>M</td>
<td>Primary Year 2</td>
<td>Child of professional status parents, middle</td>
<td>White Australian</td>
<td>WISC IV FSIQ 136</td>
<td>ASD spectrum</td>
<td>Low academic self-concept, low self-concept across all domains. Dislike school. Quiet.</td>
</tr>
<tr>
<td>Edward</td>
<td>M</td>
<td>Primary Year 5</td>
<td>Child of professional status parents, middle</td>
<td>White Australian</td>
<td>SB 5 FSIQ 139</td>
<td>ADHD</td>
<td>Low academic self-concept and self-concept across all domains except popularity in low normal range. Disruptive in class</td>
</tr>
<tr>
<td>Finbar</td>
<td>M</td>
<td>Middle Year 6</td>
<td>Child of professional status parents, middle</td>
<td>White Australian</td>
<td>WISC IV FSIQ 144</td>
<td>central auditory processing disorder, Dyslexia, Irlen syndrome</td>
<td>Low academic self-concept and self-concept across all domains. Unpopular and bullied. Informs on peers.</td>
</tr>
<tr>
<td>George</td>
<td>M</td>
<td>Middle Year 7</td>
<td>Child of professional status parents, middle</td>
<td>White Australian</td>
<td>WISC IV FSIQ 128</td>
<td>Dysgraphia &amp; Dyslexia</td>
<td>Low academic self-concept and self-concept across all domains. Quiet and a teacher pleaser.</td>
</tr>
<tr>
<td>Henry</td>
<td>M</td>
<td>Senior Year 9</td>
<td>Child of professional status parents, middle</td>
<td>White Australian</td>
<td>SB5 FSIQ 142</td>
<td>Asperger’s syndrome</td>
<td></td>
</tr>
<tr>
<td>Ian</td>
<td>M</td>
<td>Senior Year 10</td>
<td>Child of professional status parents, middle</td>
<td>White Australian</td>
<td>WISC IV FSIQ 132</td>
<td>central auditory processing disorder &amp; dyslexia</td>
<td></td>
</tr>
<tr>
<td>Justin</td>
<td>M</td>
<td>Senior Year 10</td>
<td>Child of professional status parents, middle</td>
<td>White Australian</td>
<td>ADHD &amp; spectrum ASD</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Note: ADHD is attention deficit and hyperactivity disorder, ASD spectrum is autism spectrum disorder, CAPD is central auditory processing disorder.
Example of parental feedback on BASC-2
Appendix D  Example explication of SOS (2011) form for Andrew as shown in Table 6.2

The BASC-2 student observation system (SOS) is designed to enable the researcher to evaluate classroom behaviour in the school setting. Among the BASC-2 components, the SOS is unique as it is the only assessment instrument that is used directly by the researcher. Inter-rater checks were conducted on two of the classes simultaneously with the researcher. The SOS is designed to assess a broad spectrum of behaviours, both adaptive and maladaptive. The purpose of the SOS is to identify appropriate or inappropriate behaviours compared with peers, how the student responds to the teacher and the lesson, when is the student most attentive or otherwise. Both the Geography and Maths classes were observed in the same week. The observed behaviours in both classes were highly similar.

The SOS is in three parts. The first part is a check list of specific behaviours that follow a 15 minute observation for both types and frequency. This can be useful for identifying specific behaviours. In both classes Andrew demonstrated similar behaviour. Frequently observed were positive behaviours including responding to the teacher/lesson, doing work and staying seated. Andrew did not react to peer distractions and worked alone.

The second part involved a 15 minute observation period. Thirty observations are made during the period; each observation for three seconds at the end of a 30 second interval and a check-mark or tally being placed, as appropriate, in the behaviour chart. Also in this section, comments were made to record overall behaviour impressions and to describe the student-teacher interactions. On the whole, adaptive behaviours were observed in both classes. Whether lesson is teacher, board work, or individual work centred, Andrew sat at the front of the class and remained focused. The observations that indicated subtle maladaptive behaviour were 12 tallies of subtle movement including knee jigging and nail biting. On one occasion, Andrew held his head in his hands in the least favourite maths subject class. The comments made about the observations were that Andrew had exceptional behaviour and appeared to be a focused, hardworking student thus reinforcing the perceptions of both teachers.

The third and final part is done once the observation is completed to record teacher’s interaction with the student in more detail. In both classes the teacher is at the front of
the classroom and instructions were visually supported by board work, a supportive technique for Andrew’s central auditory processing disorder. As there were no behaviour issues, the teachers did not use any techniques to change behaviours. Both teachers verbally commented to the researcher that they never have behaviour issues with Andrew. Additional observations were that Andrew sat at the front of the class to cater for his central auditory processing disorder and that he never asked questions, even when others were asking. In interview he commented that he prefers to keep quiet and work things out alone rather than to draw attention to his self-perceived inability.
Appendix E  Example explication of PH2 and SRP for Andrew as shown in Figures 6.3 and 6.4

(Note that the PH-2 indicates that the following categories were all scored as average: Behaviour, Intellectual and school, anxiety, popularity, happiness and satisfaction.

**Physical attributes - Low average.** This is surprising as he is highly capable in basketball. He is tall, athletic and good-looking. When this score is in the low average range, the student is expressing more dissatisfaction with his appearance and attributes than the typical student in the standardised sample. However, the overall level of self-criticism is still considered to be within normal limits. Because the PH2 items cover several personal qualities (some of which also cover other aspects of self-concept), inspection of individual responses can help clarify the nature of the negative self-appraisals.

Andrew scored a lower score as he replied that he did not see himself as smart, his looks bother him, he does not have nice hair, he is not good-looking, he does not have a pleasant face and is not popular with girls. However, he does see himself as a leader, and as strong, and he reports that his friends and classmates like his ideas, and that he is popular with boys.

**BASC-2**

**SRP Self-perception**

The SRP sales review and quantify the participant’s thoughts, feelings and self-perceptions in areas related to multiple aspects of emotional disturbance.

- **School problem Composite**  26th percentile
- **Attitude to school**  46th percentile

Andrew’s score indicates an average general opinion of school and that he is generally comfortable with school-related activities.

- **Attitude to teachers**  10th percentile
This low score indicates that Andrew holds teachers in high regard and sees them as being caring, fair and motivated to help students.

**Sensation seeking** **46th percentile**

This indicates that Andrew is in the normative range for risk-taking and thrill seeking.

**Internalizing Problems composite** **88th percentile**

At-risk range: This is a broad index of inwardly directed distress that reflects internalizing problems. This composite is useful in identifying students who may have problems more serious than initially believed (Reynolds et al., 2004).

**Atypicality** **81st percentile**

Although elevated, this is not in the at-risk range and thus excludes issues such as severe emotional disturbance. It may indicate mild levels of social alienation.

**Locus of control** **73rd percentile**

Andrew’s score is in the non-clinical range and indicates his perception over his level of control over external events. It is slightly elevated and this may indicate that, even when he is behaving as expected, rewards will not be systematically or appropriately distributed.

**Social stress** **67th percentile - normal range**

**Anxiety** **99th percentile – clinical range**

This scale indicates that Andrew has extremely high levels of anxiety. This will include generalised fears, nervousness and irrational worries. As a high scorer, this indicates that Andrew feels a sense of dread and is troubled by negative thoughts that, at this clinically significant level ((Reynolds and Kamphaus, 2004) may produce confusion in decision-making and that obsessive-compulsive behaviour may be present. The presence of emotional and psychological distress at this level indicates a tendency to respond negatively to one’s environment and small slights can be taken as major disappointments.
Depression 62\textsuperscript{nd}  Normal range

Sense of inadequacy 89\textsuperscript{th}  percentile – at risk range

Andrew demonstrates scores in the at-risk range. This may manifest in low achievement expectations and a tendency not to persevere and an a perception of being unsuccessful (particularly in academic endeavours, Reynolds et al, 2004). This scale is also related to the concept level of aspiration, in that Andrew may set unrealistically high goals. Although high scorers may appear self-assured, they often show evidence of depression or anxiety (Reynolds et al., 2004) and are often associated with academic failure, underachievement and a disability.

Somatization 88\textsuperscript{th}  percentile – at risk range

This indicates the level that Andrew assesses his tendency to complain about relatively minor physical problems as an expression of psychological difficulties. This score is associated with anxiety, internalization, and suppression of true feelings. As personal adjustment composite is relatively low, Reynolds et al., 2004, posit that a mild identity disorder may be present. Given the polarity of the gifted and disability brain, this might be indicative of the twice-exceptional student.

Inattention/ Hyperactivity Composite 87\textsuperscript{th}  percentile

This scale new and added for use in diagnosing symptoms of ADHD.

Attention problems 38\textsuperscript{th}  percentile

This is relatively low. Hartley (1999) argue that inattention is more highly correlated with academic problems than is hyperactivity. This score indicates that there are no attention problems for this student and, thus, possibly no academic problems.

Hyperactivity – 98\textsuperscript{th}  percentile - clinical range

This scale focuses on the hyperactivity aspect of ADHD and assesses behaviours such as having trouble standing still, talking whilst others are talking, and being too noisy. The clinical range indicates that such behaviour is pervasive and is at a level that will result in significant behaviour problems (Reynolds et al., 2004). Some research suggests that adolescents are better able to describe hyperactivity
symptoms than those of impulsivity and inattention (Smith, Pelham Jr., Gnagy, Molina & Evans, 2000). Other findings indicate that adolescents have difficulty reporting both inattention and hyperactivity problems (Hope et al., 1999). However, BASC-2 results imply strong reliability and validity evidence for both the hyperactivity and attention problems scales.

**Adaptive profile**

<table>
<thead>
<tr>
<th>Scale</th>
<th>Percentile – Normal Range</th>
</tr>
</thead>
<tbody>
<tr>
<td>Relations with parents</td>
<td>77&lt;sup&gt;th&lt;/sup&gt; percentile – normal range</td>
</tr>
<tr>
<td>Interpersonal relations</td>
<td>25&lt;sup&gt;th&lt;/sup&gt; percentile – normal range</td>
</tr>
<tr>
<td>Self-esteem</td>
<td>25&lt;sup&gt;th&lt;/sup&gt; percentile – normal range</td>
</tr>
<tr>
<td>Self-reliance</td>
<td>36&lt;sup&gt;th&lt;/sup&gt; percentile – normal range</td>
</tr>
</tbody>
</table>

Relationship with parents is a high score and indicates positive adjustment with parents and a strong sense of being an important member of the family. By contrast, although just in normative range, the interpersonal relations is a low score and reflects Andrew’s perceptions about how he relates to others and enjoys social interactions. Lower scores end to be guilt-prone (Reynolds et al., 2004) indicating that Andrew would most likely blame himself for lack of success and, although he may desire good relations, he feels unsuccessful. Self-esteem is also low and reflects a low self-satisfaction with reference to both physical and more global characteristics. Pervasive shyness and tension are typical especially when alongside high levels of anxiety. For Andrew, a non-confrontational environment which engenders trust and acceptance is crucial for him to thrive in the classroom (Reynolds et al., 2004).

**Emotional symptoms index** 81<sup>st</sup> percentile

Is the most global indicator of serious emotional disturbance, particularly internalised disorders. The six scales that contribute to this index are social stress, anxiety, depression, sense of inadequacy, self-esteem and self-reliance. It indicates emotional disturbance that is broad based in its impact on the thoughts and feeling of the individual. The ESI is sensitive to the cumulative effects of numerous emotional difficulties, no single one of which is considered serious.
The scales for the PRS-A measure maladaptive behaviours. Andrew’s parent have scored him in the at-risk or clinically significant range in most of the scales. High scores indicate that the parent perceives negative characteristics that cause impaired functioning in home, school, peer relationships, or community contexts.

**Externalizing Problems Composite  97th percentile - clinical range**

**Hyperactivity:**

This scale measures hyperactivity and impulsivity aspects of ADHD. Item behaviours include fiddling with things, interrupting others, being overactive, and having poor self-control. Items relating to impulsivity include acting without thinking and unable to wait for one’s turn in a group activity. Interestingly, although Andrew has not been diagnosed with ADHD, children who have ADHD also have elevated scores with aggression, learning, conduct disorders, depression and social skills (Henker and Whalen, 1989; Nuel, Applegate, & Drabman, 2003); and lower scores on the adaptive scales of adaptability, activities of daily living and functional communication. Reynolds et al., 2004). Andrew’s parents have rated his scales in line with the ADHD children scales. The item scales that the parents scored Andrew highly for this scale were ‘has poor self control’, acts without thinking, and interrupts others when they are talking on the phone. However, the more ‘typical’ markers of ADHD like fiddling and being disruptive to others and unable to wait before taking turn scored low.

**Aggression:**

Aggression is the tendency to do physical or emotional harm to others or their property. The scale measures both verbal and physical aggression and ranges in behaviours from name-calling and arguing, to breaking things and hitting. The scale gives greater weight to verbal aggression because this type of aggression occurs more frequently. This scale correlates with the other measures of measures of Externalising Problems and is often elevated for children with disruptive-behaviour disorders (e.g., ADHD). Andrew’s parents rated Andrew in the at-risk range for aggression and this signifies that the parents perceive that Andrew have some highly disruptive behaviours. The items that
parents scored highly for this scale were teasing, arguing when denied own way, and annoys others on purpose.

**Conduct Problems:**

This scale measures socially deviant and disruptive behaviours that are characteristic of the DSM-IV-TR (USA) category of Conduct Disorder. This includes behaviours such as cheating at school, stealing, truancy, lying, running away from home, alcohol and drug abuse. These factors can also lead to depression and learning problems. Andrew’s parents perceive him to be in the clinical range for Conduct problems. The individual items that the parents scored highly with were with items investigating the use of foul language, sneaking around, stealing, and lies.

**Internalizing Problems Composite**

**Anxiety:**

Andrew was scored in the at-risk range. According to diagnostic criteria, anxiety disorders have a number of behavioural markers like excessive worry (Strauss, 1990). Other symptomatic behaviours include fears, self-depreciation and nervousness (Reynolds et al., 2004). Andrew’s parents scored him highly (often or always) for anxiety on the following items: worries about making mistakes, worries about what teachers think, is nervous, tries too hard to please others, says ‘I am not very good at this’, says they have test anxiety.

**Depression:**

Andrew was scored in the at-risk range for depression. Depressive problems frequently occur with anxiety problems (Semrud-Clikeman et al., 2003) and conduct problems (Patterson et al., 1989) and this is reflected in Andrew’s scales. In addition, Nuel et al.’s (2003) research propose that 15 - 25 % of children who have high levels of hyperactivity (and are ADHD) have a comorbid mood disorder like depression. Items scored at ‘often’ or ‘always’ for this scale included ‘is negative about things’ and changes mood quickly.
**Somatization:**

Somatization was scored in the clinical range. The somatization scale, scored in the clinical range, assesses the tendency to be overly sensitive and complain about relatively minor physical ailments and to over report such complaints. Elevated scores for the somatization scale can indicate the presence of anxiety or mood disorders, as reflected in the elevated anxiety and depression scores for the ‘Internalizing Problems Composite’. Abelkop’s research (2001) indicates that, for elementary school children, academic problems were not associated with somatic complaints when anxiety and mood was controlled. Items scored at ‘often’ or ‘always’ for this scale included complaints of shortness of breath or sickness when nothing is wrong, has stomach problems and regularly has headaches.

**Behavioural Symptoms Index**

This index includes hyperactivity, aggression and depression form the previous composites. It also included Atypicality, withdrawal and attention problems.

**Atypicality:**

An at-risk range for Atypicality was scored. The scale measures the tendency to behave in ways that are considered odd or strange. Many of the items centre on the child's disconnection or unawareness of his normal surroundings. Although Atypicality can be a marker for psychotic disorders, it is also a typical marker for hyperactive and impulsive behaviours (Reynolds et al., 2004) which are reflected in Andrew’s results. No items were scored above ‘sometimes’.

**Withdrawal:**

Withdrawal was in the normative range and suggests that Andrew does not avoid social contact.

**Attention problems:**

Problems were scored in the at-risk range. This scale measures the inability to maintain attention and the tendency to be easily distracted. This scale, when elevated, can be a marker for ADHD. Research shows that attention is more highly correlated with
academic problems than hyperactivity (Hartley, 1999). The item scored in the ‘often’ or ‘always’ range was ‘has a short attention span’.

Adaptive skills composite:

The adaptive skills composite was scored in the at-risk range. The scales measure positive behaviours. All sub scales of adaptability, social skills, leadership, activities in daily life were in the normative ranges.

Functional communication: was scored in the at-risk range and assesses the child’s ability to express ideas and communicate in ways that others can easily understand. The behaviours assessed include both rudimentary skills (giving one’s name when asked), receptive-communication skills (e.g. responding appropriately to a question), and written skills such as accurately taking down messages.

Low scores on the scale indicate levels of difficulty. Low scores on the Likert scale have been included as never or sometimes. The items scored in this range included: communicates clearly, is clear when recounting experiences, has difficulty explaining rules of games to others, is unable to describe feelings accurately, has trouble getting information when needed.

Teacher rating scale - TRS-A ages 12-21

Two teachers perceptions were measured using the TRS-A. As Andrew is in Year 11, he has different teachers for different subjects. The teachers of the most and least favourite subject gave their perceptions of Andrew.

The favourite subject is Geography and his female teacher assessed Andrew to be in the normative range on most of the scales. The least favourite subject is maths and, likewise, the male teacher scored Andrew in the normative range for most of the scales. Andrew is in the upper stream classes for both subjects. Verbally, both teachers stated that Andrew was a hard-working and well-behaved student who was popular with both teachers and students at the school.
Internalizing problems composite was the only composite that was scored by both teachers as in the at-risk range. As a result of two elevated scores for anxiety and depression, the internalizing problems composite scored in the at-risk range.

Anxiety was assessed to be in the clinical range by both teachers which could imply the perception of an anxiety disorder (Reynolds et al., 2004). Questions answered in the high ‘often or always’ by both teachers included things like he completes homework, asks to make up missed assignments, analyses a problem before starting to solve it, declares that he is afraid of making a mistake, worries about what others think, worries, is fearful, has test anxiety. However, this is normally accompanied by a high score on the somatic scale and both teachers scored somatization in the normative range.

**Depression:**

Anxiety can be a common symptom of depression and this was scored in the at-risk range by both teachers. No questions were scored in the high ‘often or always’ range for the depression scale by the teacher of the favourite subject, however the teacher of the least favourite subject assessed Andrew as being in the at-risk range for depression with no questions being scored in the ‘often or always’ range.
## Appendix F  Extract of coding of interview data

<table>
<thead>
<tr>
<th>Theory followed by quotation</th>
<th>Connection to Literature</th>
<th>Paragraph number</th>
</tr>
</thead>
<tbody>
<tr>
<td>Legitimate peripheral participation e.g. how the participant participates within his community of practice with peers and how he perceives himself to be accepted within that community.</td>
<td>What internalising processes (e.g. self-talk or self-reflection) have influenced the development of academic self-concept?</td>
<td></td>
</tr>
</tbody>
</table>
| I feel that I just want to go to America and, even if not being able to make a team, just to train with them and see what their lifestyle is – maybe over a 3 to 4 month period. Then after that, I don’t know what I want to do work wise. | **Internalised frames of reference:**  
Achievement - enjoyment  
Mastery experience - enjoyment  
Enjoyment - motivation  
Externalised frames of reference:  
BFLPE - performance comparison | 1 |
| But then, once I get up there and have spoken for 10 or 15 seconds then I feel pretty comfortable. But it's that time beforehand that I am so nervous and my thinking and everything just goes astray and I get scared thinking like that. I would rather stand in front of the firing squad than do the oral because I am so nervous.  
*researcher note – ‘ANXIETY’* | **Internal frames ref:**  
Academic achievement - enjoyment.  
Mastery experience – none as not enjoyed  
Enjoyment - not so negative emotional reaction  
Self-understanding - low self-efficacy | 2 |
| I feel overall that I am a pretty bright kid but sometimes not over super-intelligent like kids in this school are. Like some of the kids do things I would never have thought of for assignments and that. | **External frames ref:**  
BFLPE - negative peer group comparison so low academic self-concept  
Significant others - intelligent peers  
Environment - inclusion in gifted program enhances academic self-concept  
Internal frames:  
Psychological centrality - perfectionism/ sensitive. | 3 |
Appendix G  Detailed analysis of data supporting emergent literature themes for Andrew

Development of issues and descriptive detail.
The emergent themes will be developed, not for the purpose of generalizing beyond the case study, but for understanding the complexity of it (Stake, 1995). The two Research Issues sought to explore academic self-concept in the framework of legitimate-peripheral-participation, participation-in-practice, and situated learning:

1. Explore some of the social interactions that influence the development of academic self-concept for twice-exceptional students.

2. Explore some of the social practices and contexts that influence the development of academic self-concept for twice-exceptional students.

The emergent themes identified when exploring the development of academic self-concept for Andrew fall into two main categories: those readily identified by and concordant with the literature, and those which are new, emergent themes and thus discordant from the literature. Each category will be further probed with reference to both Research Issues.

Themes concordant with the literature
Each of the emergent themes evident in the data, concordant with the literature, will be discussed in turn with regard to the instrument and interview data. The themes are all presented in a table format for consistency and clarity. The emergent themes identified in the data are: BFLPE, significant others, environment, academic achievement, mastery experience, enjoyment, self-understanding, psychological centrality, self-talk, and basketball.

Big-Fish-Little-Pond-Effect (BFLPE)
BFLPE is based in social comparison theory (Festinger, 1954) that is based in the classroom context and the ability of peers, and influences academic self-concept for individuals (Marsh, 1987). The BFLPE was evident throughout the data as Andrew
referred to external frames of reference based on Festinger’s social comparison theory. Table 6.14 summarises evidence in the data of BFLPE.

Table 6.14 summarises how BFLPE influences Andrew. Both Andrew and his teachers perceive him to be atypical; he is perceived as ‘different’ in the context of school. Although BFLPE refers primarily to school performance, it also pertains to the sense of the norm or the comparison with others. This is further reflected as he has a high sense of inadequacy that is further supported by low scores on the PH2 in most of the scales including the intellectual status and physical appearance scales.

The data in the BASC-2 and PH2 reflect feelings of inadequacy, and low intellectual and physical self-concept. Andrew reports in the BASC-2 that he works hard at social interactions and, as such, the data imply that he has a sense of being on the periphery in school, despite having high grades and being part of the gifted program. This aspect relates directly to legitimate-peripheral-participation in that he is becoming accepted but still feels on the periphery. Figure 6.2 indicates that peers and teachers are the largest influences of legitimate-peripheral-participation, and that BFLPE is primarily influenced by peers for Andrew.

<table>
<thead>
<tr>
<th>Research Number</th>
<th>issue</th>
<th>Data Examples</th>
<th>Interview data</th>
<th>Legitimate-peripheral-participation/ Participation-in-practice/ Situated learning</th>
</tr>
</thead>
<tbody>
<tr>
<td>One – social interactions:</td>
<td></td>
<td>All instruments indicate Andrew’s self-insight. For social interactions, the BASC-2 data indicate that Andrew perceives he is atypical or ‘different’ and has a sense of difference with his peers in the classroom context. High scores for sense of inadequacy and low self-concepts in most of the PH2 scales reinforce the data.</td>
<td>“…I was coming to classes like G&amp;T and there were so many bright and intelligent kids in there and I felt like I was on the lowest spectrum of intelligence”.</td>
<td>Figure 6.3 shows that BFLPE is the largest influence with peers, secondly at about half again with teachers and a very small amount for parents and siblings, thus indicating that BFLPE is school context generated.</td>
</tr>
<tr>
<td>One – social interactions:</td>
<td></td>
<td>Andrew indicated on the PH2 that he has a low intellectual self-concept which relates primarily to his perception about both his academic performance in the past and his academic performance compared to that of his peers.</td>
<td>(When disability identified and received first high grade) “I felt I had a reason for not having done well but I knew that now, if I worked hard, my grades would get better and I would get more highs”. “[My brother] he’s way better than me…better at finding time to do things”</td>
<td>BFLPE is primarily evident for participation-in-practice with primarily the teachers as a result of their interactions with him (see Figure 6.3). His BFLPE is also high for the siblings’ category and concerns his comparison with his brother.</td>
</tr>
<tr>
<td>One – social interactions:</td>
<td></td>
<td>Andrew indicated on the BASC-2 that he had a high sense of inadequacy which can be seen to reinforce the BFLPE.</td>
<td>“…I find that I can find out there…ways of solving an equation or question…..I feel I am not a normal person that uses normal thinking to</td>
<td>Andrew attributes social interactions in the school context to his sense of inadequacy which also</td>
</tr>
</tbody>
</table>
Two - social practices and contexts:

**Situated Learning**

As above, the BASC-2 results indicated that Andrew has a high sense of inadequacy in social contexts and responds positively to positive experiences with social practices.

"If you were doing good work [the teacher] would be happy to show people and it makes you feel good"

Social context has a small influence for BFLPE, whereas social practices show a much larger contribution (See Figure 6.5).

Participation-in-practice is reflected in BFLPE for Andrew through his recognition of and acceptance as a twice-exceptional student, particularly with his attendance at the gifted classes. However, Andrew reports a sense of being an imposter in the gifted and high-streamed classes and this is exemplified when he suggests, “but, when I don’t get a good grade I say to myself ‘what am I doing here? Everyone is so much smarter than me, why am I here?’” (Andrew).

When considering BFLPE in social practices and contexts for the research issue two, Andrew reports a sense of inadequacy in both school and basketball when he states, “yes – I find it a fair bit. For me it is when I go to a basketball trial that is at representative or state level and I feel so out of place because, even though I am not the worst player there, there are so many people who are on such a high level” (Andrew). His sense of inadequacy is more persuasive given that he is a state level representative in the sport. In the context of school, the sense of inadequacy in BFLPE is evident in his reflections of the earlier school years. Despite his current success of being in the top streams and included in the gifted class, Andrew still reports relative mediocrity compared to his peers, “I feel overall that I am a pretty bright kid but sometimes not over super-intelligent like kids in this school are. Like some of the kids do things I would never have thought of for assignments and that” (Andrew).

**Significant others**

Significant others, for the purposes of this research, include the people who are a part of Andrew’s community-of-practice in the school context (including areas beyond the physicality of the school such as home, sports venues and places where he interacts with friends): Teachers, peers, parents and siblings. Andrew, his parents and teachers report high social interactions with significant others. However, Andrew reports that he has
interpersonal relations and social stress close to the at-risk range whilst, in contrast, he had an average self-concept score for the popularity scale. The interview data indicates that Andrew is influenced by the opinions and talk of significant others and that this directly influences his sense of worth and academic self-concept, particularly with teachers in school who respond positively to him using positive interactions and academic feedback. However, Andrew does not always believe the praise is justified, something he feels in grounded in his primary school experience of ‘feeling like an idiot at school’ (Andrew, 2011).

Table 6.15  Identified theme concordant with literature – Significant others

<table>
<thead>
<tr>
<th>Research Number</th>
<th>issue</th>
<th>Data Examples</th>
<th>Interview data</th>
<th>legitimate-peripheral-participation/ participation-in-practice/ Situated learning</th>
</tr>
</thead>
<tbody>
<tr>
<td>One – social interactions:</td>
<td>Legitimate-peripheral-participation</td>
<td>BASC-2 data – indicates conformist behaviour at school.</td>
<td>“[Peers] bring extra things to the learning so when you answer the question you all bring things and it is more solid and I learn heaps extra by group work”.</td>
<td>Environment does not occur as an influence in the relatively small sibling and parents categories (see Figure 6.2) but is a larger influence for legitimate-peripheral-participation in the peer’s category and a slightly smaller influence in the teacher’s category.</td>
</tr>
<tr>
<td>One – social interactions:</td>
<td>Participation-in-practice</td>
<td>BASC-2 data – indicates conformist behaviour at school and, at times, aggressive behaviour at home.</td>
<td>“I chose the subjects I did because I enjoy them and also because I get good grades [from teachers]– so I feel more interested in what I am learning”.</td>
<td>Teachers have the highest influence overall with participation-in-practice for environment compared with a much smaller one for peers and siblings.</td>
</tr>
<tr>
<td>One – social interactions:</td>
<td>Situated Learning</td>
<td>BASC-2 results indicate that Andrew has an average attitude to school and a very high attitude to teachers, parents and peers, indicating alignment with them as a result of positive feedback from positive social interactions.</td>
<td>“So for me to be at my best I had to move to the front middle of the class. All of my attention was then focused on the teacher so I can get as much from the lesson as I can”.</td>
<td>Andrew reports experiencing positive social interactions in school with his teachers and peers now, unlike his reported experiences at school during earlier years.</td>
</tr>
<tr>
<td>Two - social practices and contexts:</td>
<td>Situated Learning</td>
<td>BASC-2 and PH2 results do not pertain directly to environment but show average to good levels within the adaptive profile which might indicate that Andrew is conforming with social practices in the school context. He still at times feels on the periphery of the school context as indicated by low self-concept scale scores on the PH2 and a high social stress score on the BASC-2 SRP-A.</td>
<td>Social Practices: “They would tell everyone at the beginning of the day that if you work well you can choose a friend to clean the blackboard. Even my friends who didn’t like school would work hard when that was offered” Social contexts: “Last Friday we were learning about how bad drinking was and drink driving at school. We were learning about things out of school – the real world – it really motivates me to keep coming [to school]”.</td>
<td>Andrew is learning from and conforming with the social practices within the social context of the school.</td>
</tr>
</tbody>
</table>

The data in Table 6.15 indicated that, in the context of the school, teachers have the highest influence for participation-in-practice (the practice of being a student in the
school). For legitimate-peripheral-participation, the perception of being on the periphery of the community for Andrew is dependent upon the feedback and social interactions with significant others; primarily teachers and peers. The parents had little or no influence and this might be due to Andrew’s age as an adolescent who now looks beyond the family home for his social interactions and social comparisons (Chan & Chan, 2013). The data suggests that the sibling influence is primarily as a result of the shared sporting success in basketball and that his brother is now playing internationally. With regards to the second research issue, the data suggests that Andrew is demonstrating a desire to conform (or be regarded as a ‘good’ student in this school context) and, as a result, align within the social practices of the school context. The data imply that, the more positive feedback he receives from significant others, primarily his teachers (see Figure 6.5), the stronger is his sense of belonging and success which positively influences his sense-of-self in the school context and his academic self-concept.

The data give the sense that Andrew knows how to perform socially and he aims to align with significant others, but that due to his feelings of inadequacy, he finds the process demanding and tiring.

Environment

Environment pertains to the ‘community-of-practice’ (Wenger, 2000) as the school community and includes the community beyond the physicality of the school walls. Just as, for example, an accountant or doctor remains such when they are not in their place of work, so, the interactions for Andrew in environments that include, for example, school and beyond the school grounds, remain in the school community-of-practice.

For all aspects of legitimate-peripheral-participation, participation-in-practice and situated learning, environment plays a role, particularly when associated with teachers and peers. Table 6.16 details how the data indicates the influence of environment on academic self-concept within the theoretical framework. The data indicates that Andrew is influenced by the opinions and feedback from significant others in his community-of-practice and that this directly influences his sense-of-self and academic self-concept.
<table>
<thead>
<tr>
<th>Research issue Number</th>
<th>Data Examples</th>
<th>Interview data</th>
<th>Theme concordant with literature – Environment</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Theme concordant with literature – Environment</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>One – social interactions:</strong></td>
<td>BASC-2 data – indicates conformist behaviour at school.</td>
<td>“[Peers] bring extra things to the learning so when you answer the question you all bring things and it is more solid and I learn heaps extra by group work”.</td>
<td>Environment does not occur as an influence in the relatively small sibling and parents categories (see Figure 6.3) but is a larger influence for legitimate-peripheral-participation in the peer’s category and a slightly smaller influence in the teacher’s category.</td>
</tr>
<tr>
<td>Legitimate-peripheral-participation</td>
<td>BASC-2 data – indicates conformist behaviour at school and, at times, aggressive behaviour at home.</td>
<td>“I chose the subjects I did because I enjoy them and also because I get good grades [from teachers] – so I feel more interested in what I am learning”.</td>
<td>Teachers have the highest influence overall with participation-in-practice for environment compared with a much smaller one for peers and siblings.</td>
</tr>
<tr>
<td>Participation-in-practice</td>
<td>BASC-2 results indicate that Andrew has an average attitude to school and a very high attitude to teachers, parents and peers, indicating alignment with them as a result of positive feedback from positive social interactions.</td>
<td>“So for me to be at my best I had to move to the front middle of the class. All of my attention was then focused on the teacher so I can get as much from the lesson as I can”</td>
<td>Andrew reports experiencing positive social interactions in school with his teachers and peers now, unlike his reported experiences at school during earlier years.</td>
</tr>
<tr>
<td>Situated Learning</td>
<td>BASC-2 and PH2 results do not pertain directly to environment but show average to good levels within the adaptive profile which might indicate that Andrew is conforming with social practices in the school context. He still at times feels on the periphery of the school context as indicated by low self-concept scale scores on the PH2 and a high social stress score on the BASC-2 SRP-A.</td>
<td>Social Practices: “They would tell everyone at the beginning of the day that if you work well you can choose a friend to clean the blackboard. Even my friends who didn’t like school would work hard when that was offered” Social contexts: “Last Friday we were learning about how bad drinking was and drink driving at school. We were learning about things out of school – the real world – it really motivates me to keep coming [to school]”.</td>
<td>Andrew is learning from and conforming with the social practices within the social context of the school.</td>
</tr>
</tbody>
</table>
Environment is the strongest influence for peers for LLP. This indicates that no matter which environment Andrew finds himself a part of, whether at school or on, for example, the sports field, he is most aware of his ‘belonging’ to the group, with his peers. The low self-concept scores, and high social stress scores indicate that, although he is conformist and considered popular, he works very hard at social situations and feels on the periphery of his peer group. For participation-in-practice, teacher influence becomes much stronger and indicates that Andrew perceives the practices in his community-of-practice to be critical for his sense-of-self in the classroom. Andrew suggests in the data that he wants to be recognised as a ‘good student’ but at home his parents report that he has aggressive outbursts that are not seen by his teachers. The teachers’ influence in the environment has a very strong effect on Andrew; the positive experiences reinforced by positive feedback give Andrew the positive edification that he now experiences in his situated learning. Sibling and parental influences for environment are unobserved in the data and, again, this is possibly due to Andrew’s age and his focus as a teenager has moved to beyond the home (Kinglsey, 2012).

**Academic achievement**

Academic achievement relates to Andrew’s perceived feedback for his academic work within his communities-of-practice. This includes, for example, teacher-talk, parent-talk, grades, achievement tests and peer feedback, and has a direct influence on academic self-concept (Liem et al., 2013.) For all aspects of legitimate-peripheral-participation, participation-in-practice and situated learning, academic achievement theme is evident in both the instrument and the interview data.

<table>
<thead>
<tr>
<th>Research issue Number</th>
<th>Data Examples</th>
<th>Interview data</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>BASC-2/PH2 data</strong></td>
<td>“A B+ is the best I’ve got – I don’t want to take big steps but baby steps to get to an A grade”</td>
<td>Academic achievement does not occur as an influence in the parents and siblings categories (see Figure 6.3) but is evident in the data for legitimate-peripheral-participation in the teacher category and is slightly less evident in the peers category.</td>
</tr>
<tr>
<td><strong>PH2 data</strong> – indicated a low intellectual self-concept.</td>
<td>“If [the teachers] don’t like what they are teaching, it passes to the students and they will go down and not get good grades”.</td>
<td>Teachers have the highest influence overall with participation-in-practice and the highest influence for academic achievement compared with a less than a quarter for peers and siblings. There is no influence recorded from the data for parents.</td>
</tr>
<tr>
<td><strong>BASC-2 results indicate that Andrew, when compared to the normed population, has an average attitude to school and a very good</strong></td>
<td>“I am now at my best for my grades, which is B+ on average. These are my overall best grades ever”.</td>
<td>Andrew reports experiencing positive social interactions as a result of positive feedback in school with his teachers and peers currently, unlike his reported experiences of the primary school years.</td>
</tr>
</tbody>
</table>

Table 6.17  Theme concordant with literature – Academic achievement
attitude to teachers, parents and peers, indicating alignment with them as a result of positive feedback from positive social interactions.

| Two – social practices and contexts: | BASC-2 classroom observations indicate that Andrew is learning from and conforming within the school context. The BASC-2 self-report shows that, although he has an average attitude to school, he has a high sense of atypicality and inadequacy indicating that he feels on the periphery of the school context. The PH2 indicates a low average intellectual self-concept. | Social Practices: | Social practices by teachers and social contexts primarily influence Andrew’s sense of academic achievement and the importance of it. |
| Situated Learning | "[When I was diagnosed with a disability] I felt I had a reason for not having done so well but knew that now, if I worked hard, my grades would be better and I would get more highs". | Social contexts: | "I know a high grade OP is not the be-all-and-end-all but it helps get a good job and good pay. Even though money doesn’t buy happiness, it makes things easier,” |

Although the BASC-2 instrument indicates that Andrew has a low (and therefore positive) school problem composite, (see Table 6.4), the PH2 indicates that he has a low-average self-concept in the intellectual subscale. When exploring the theme of ‘school’ shown in Table 6.5, Andrew appears to associate school primarily with work and teacher feedback.

The influence of academic achievement is evident in the data for legitimate-peripheral-participation, participation-in-practice and situated learning aspects of the theory. Figure 6.2 shows that, for legitimate-peripheral-participation, academic achievement is the second largest influence for teachers, and the fourth largest for peers (but it does not occur for parents and siblings). Teachers are the most influential with regards to academic achievement for participation-in-practice and, as Figure 6.5 indicates, the focus is on the social practices rather than the contexts with teachers; their enthusiasm, feedback and teacher-talk. Academic achievement is primarily influenced by social practices at six times the amount of the contribution for social contexts (see Figure 6.5) and Andrew believes that academic achievement is important for success in life.

Mastery experience

As noted in section 2.4.5.6, Bandura (1994) suggests that mastery experience is an effective means of developing self-efficacy. Bandura (1994) suggests that self-efficacy

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4 An OP is a student’s position in a statewide rank order based on their overall achievement in Queensland Core Skills (QSA)-approved subjects. It indicates how well a student has done in their final year at senior school in comparison to all other OP-eligible students in Queensland. OP results are used for tertiary entrance purposes only. Students are placed in one of 25 OP bands from OP1 (highest) to OP25 (lowest).
is the belief in one’s capabilities to succeed in a particular situation. According to Bandura (1994), one of the major sources of self-efficacy is mastery experience and performing a task successfully strengthens our sense-of-self-efficacy. The ability to perform a task successfully, or otherwise, is in part dependent upon the perception of how well one can perform it, or the mastery experience.

The influence of mastery experience is evident in the interview data but not in the instrument data. Inferences might be made, however, from instrument data: for example that a relatively low intellectual self-concept might be due to low performance level in academic practice, hence no mastery experience, but such inferences are not included in this Chapter and are not reflected in the analysis in Table 6.18.

Table 6.18 Theme concordant with literature – Mastery experience

<table>
<thead>
<tr>
<th>Research Question Number</th>
<th>Data Examples</th>
<th>legitimate-peripheral-participation/ participation-in-practice/ Situated learning</th>
</tr>
</thead>
<tbody>
<tr>
<td>One – social interactions: legitimate-peripheral-participation</td>
<td>“[My teacher] showed us what to do and how to do it. It took probably a whole week to get everyone on the same page”</td>
<td>Figure 6.3 shows mastery experience is a relatively small influence and contained to just the peers and teachers.</td>
</tr>
<tr>
<td>One – social interactions: participation-in-practice</td>
<td>“We then know what to do, and then we were able to practice essays which helped everyone’s overall performance”.</td>
<td>Mastery experience is evident for participation-in-practice with just the teachers.</td>
</tr>
<tr>
<td>One – social interactions: Situated Learning</td>
<td>“My brother was so good and disciplined. He would shoot 300 shots each morning and get his assignments done to a high standard – unlike me – Oh I do practice but it’s more like when I have time”.</td>
<td>Andrew reports experiencing positive and negative social interactions as a result of mastery experiences in school and in basketball.</td>
</tr>
<tr>
<td>Two – social practices and contexts: Situated Learning</td>
<td>Social Practices: “In my last English test I did a lot better – like my writing was more structured and better words and vocab and I got a better grade. If I had done more practice I would have done better – but I got a B.” Social contexts: “When I was identified with my learning disorder I thought about what it would be like to get As and Bs in class – just that was a big step. I started working in class and started getting good grades.”</td>
<td>Social contexts have a small influence for mastery experience; whereas social practices indicate a much larger contribution.</td>
</tr>
</tbody>
</table>

Table 6.18 above indicates that Andrew does find that mastery experience influences his experiences in the context of the theoretical framework. Although the data are confined to the interview data, the influence of mastery experience for teachers in social contexts
is the most evident in the data, implying that teachers provide the conditions to attain mastery experience and thus are highly influential in this area.

**Enjoyment**

Enjoyment, for the purposes of this research, is the level of satisfaction from, interest in, and happiness (or enjoyment) gained from engaging with a task that results in positive feelings (Ely et al., 2013). The influence of enjoyment is evident in both the interview and the PH2 instrument data. Table 6.19 summarises how enjoyment is evident in the data for legitimate-peripheral-participation, participation-in-practice and situated learning aspects of the theory.

**Table 6.19** Theme concordant with literature – Enjoyment

<table>
<thead>
<tr>
<th>Research Number</th>
<th>issue</th>
<th>Data Examples</th>
<th>Interview data</th>
<th>legitimate-peripheral-participation/ participation-in-practice/ Situated learning</th>
</tr>
</thead>
<tbody>
<tr>
<td>One – social interactions:</td>
<td>Legitimate-peripheral-participation</td>
<td>The PH2 indicates a low self-concept relating to the happiness domain. The happiness domain reflects how an individual evaluates themselves and their life circumstances in a positive way. Such positivity (or lack of it) is linked to enjoyment and satisfaction with themselves (Piers &amp; Herzberg, 2009). The PH2 contrasts with aspects of interview data as Andrew enjoys attending the gifted classes.</td>
<td>“I barely ever feel inadequate since I started gifted classes because, for me, it was such an easy place to come to and just connect with heaps of people”.</td>
<td>Figure 6.3 shows that enjoyment is an influence of about 4% and pertains to only the peers and teachers.</td>
</tr>
<tr>
<td>One – social interactions:</td>
<td>Participation-in-practice</td>
<td>See above.</td>
<td>“If I get a good grade I feel I enjoy the subject more and the subject matter”.</td>
<td>Enjoyment is evident for participation-in-practice with primarily the teachers at around 7% and less than 1% for peers and siblings.</td>
</tr>
<tr>
<td>One – social interactions:</td>
<td>Situated Learning</td>
<td>See above.</td>
<td>“It’s just like learning the content, you’ve got to get into it and try to enjoy it to get better grades in school”.</td>
<td>Andrew reports experiencing different levels of enjoyment as a result of his engagement and enjoyment of a subject, his grades (or feedback) and his perception of the teacher’s enjoyment of that subject.</td>
</tr>
<tr>
<td>Two – social practices and contexts:</td>
<td>Situated Learning</td>
<td>The BASC-2 data indicates that Andrew has an average attitude to school, learning and his teachers which are related, to some extent, to his satisfaction, enjoyment and positive perceptions of his experiences (Reynolds &amp; Kamphaus, 2004.)</td>
<td>Social Practices: “This is the same with my maths teacher, he would put something on the board and say ‘if you don’t get it don’t worry, just put your hand up and I will go through it with you’. Those sorts of things make you want to achieve and do better”. Social contexts: “In class sometimes it is pretty tough, like there may be just three chapters of maths to do, but the chapters are longer”.</td>
<td>Social context has a small, 2% influence for enjoyment, whereas social practices show a larger contribution.</td>
</tr>
</tbody>
</table>
Table 6.19 indicates that Andrew does find that *enjoyment* influences his experiences in the school context. The primary influence is from teachers, followed by influence from peers; mainly in social practices. For legitimate-peripheral-participation, *enjoyment* for Andrew is associated with a sense of participation with and becoming part of the group. For participation-in-practice, the impact of teacher feedback is far more influential for *enjoyment*. All of these aspects become evident in the situated learning for Andrew as *enjoyment* depends on the feedback from the teachers and the peer group and appears to pivot around social practices. Again teachers have the largest influence for Andrew in the theme of *enjoyment*.

**Self-Understanding**

For the purposes of this research, self-understanding is the level of insight and ability to articulate how Andrew feels and understands himself; how he integrates his perceptions of his traits and characteristics (Assouline & Colengalo, 2006), and makes sense of who he is (Dillon, 2009). The influence of self-understanding is evident in both the interview and the instrument data. Table 6.20 summarises how self-understanding is evident in the data for legitimate-peripheral-participation, participation-in-practice and situated learning aspects of the theory.

Table 6.20 indicates that Andrew does have self-understanding that has positively influenced his school experience, such as getting support for his giftedness and disability. The identification of his disability occurred in Year 4 at school, whilst his giftedness was recognised by the school in Year 8. Andrew believes that the identification and recognition of his learning needs by the school enhance his self-understanding and self-acceptance as demonstrated in ‘social contexts’ in Table 6.20 when his disability was identified. However, his perceptions, as seen in the instrument data, can significantly differ from those people around him. For example, he perceives he is in the clinical range for hyperactivity whereas his parents and teachers do not. In general, reflected in the instrument data are his low opinion of his abilities and attributes. However, in interview, his self-insights were elucidated and did not appear to be as self-deprecating. The primary influences for self-understanding are from teachers and peers (Figures 6.2 and 6.3) based on social contexts (Figure 6.4) and appear to be underpinned by the identification of Andrew’s learning needs.
<table>
<thead>
<tr>
<th>Research Number</th>
<th>Data Examples</th>
<th>Interview data</th>
<th>legitimate-peripheral-participation/ participation-in-practice/ Situated learning</th>
</tr>
</thead>
<tbody>
<tr>
<td>One – social interactions:</td>
<td><strong>Legitimate-peripheral-participation</strong></td>
<td>The PH2 indicates very low self-concept relating to the intellectual scale and physical attributes scale of the PH2; an indication that low self-concept leads to inaccurate self-understanding as Andrew is a top stream student, attends the gifted classes, and is a state representative basketball player. The data indicates that he still feels on the periphery.</td>
<td>Figure 6.3 shows that self-understanding is a small influence and pertains only to teachers and peers.</td>
</tr>
<tr>
<td>One – social interactions:</td>
<td><strong>Participation-in-practice</strong></td>
<td>The PH2 indicates an average self-concept for popularity although Andrew's parents and two teachers report that he is highly popular with peers and teachers.</td>
<td>Self-understanding is evident for participation-in-practice only with teachers at a small amount. It might be inferred from this that participation-in-practice does not enhance or affect Andrew's self-understanding.</td>
</tr>
<tr>
<td>One – social interactions:</td>
<td><strong>Situated Learning</strong></td>
<td>The BASC-2 results indicate that Andrew and his teachers perceive an at-risk level of atypicality whereas his parents do not. This may be as a result of the differences between the school and home contexts and his interactions therein.</td>
<td>Andrew reports enhanced self-understanding as a result of recognition of giftedness and disability, teacher feedback, and comparison with others.</td>
</tr>
<tr>
<td>Two – social practices and contexts:</td>
<td><strong>Situated Learning</strong></td>
<td>Andrew considers that he is hyperactive yet his parents and least favourite subject teacher do not. However, his favourite subject teacher agrees with him. If Andrew has a high level of self-understanding for this subscale, it is possible that he feels that he needs to conform less, or rather he can be more naturally himself with his favourite subject teacher. It may also be the case that he is more naturally himself with his parents; either they do not see his hyperactivity, or he feels the need to conform more, or possibly their insight is more accurate than his self-understanding.</td>
<td>Social context is highly evident in the data for self-understanding. Social practices show a larger, almost double contribution. Both Andrew and his teachers report that, in the school context, he is ‘atypical’ which reinforces the view that Andrew might good insight and high levels of self-understanding.</td>
</tr>
</tbody>
</table>

**Psychological centrality**

The concept of psychological centrality is based on the premise from identity theory that self-concept is organised into complex hierarchies; the more central that a component is to the person’s identity, the greater impact it will have on the self-concept (Breytspraak, 1984; Rosenberg, 1979; Stryker & Serpe, 1982). Stryker and Serpe
(1982) state that, “the greater the commitment (to do or be something), the more salient will be the identity, and the greater will be the impact of performance on role-specific self-concept” (p.208). Psychological centrality was explored looking for data where Andrew expressed commitment to something and/or associated himself with a role-specific sense-of-self. Psychological centrality is apparent only in the interview data. Table 6.21 summarises how psychological centrality is evident in the interview data for legitimate-peripheral-participation, participation-in-practice and situated learning aspects of the theory.

Table 6.21 Theme concordant with literature – Psychological centrality

<table>
<thead>
<tr>
<th>Research Number</th>
<th>issue</th>
<th>Data Examples</th>
<th>legitimate-peripheral-participation/ participation-in-practice/ Situated learning</th>
</tr>
</thead>
<tbody>
<tr>
<td>One – social interactions:</td>
<td>legitimate-peripheral-participation</td>
<td>“[O]n being awarded ‘player of the year’: afterwards everyone was saying congratulations but I felt pretty bad because I didn’t feel as though I deserved it. I didn’t feel that I was the best player”.</td>
<td></td>
</tr>
<tr>
<td>One – social interactions:</td>
<td>participation-in-practice</td>
<td>“I remember thinking of trying to find excuses of why I hadn’t been doing well. But even though I was young, I got a high getting a good grade and so that is why I wanted to go further and get better grades”.</td>
<td>Psychological centrality is evident for participation-in-practice only with teachers at a noteworthy 5%. The quotation indicates Andrew’s self-regulation and attributional choices. The quotation also indicates Andrew’s commitment to identifying himself as a person with potential that had not been recognised due to his past performance and his desired association as an academically successful identity.</td>
</tr>
<tr>
<td>One – social interactions:</td>
<td>Situated Learning</td>
<td>“I am not sure what would help my pre-oral nerves. I’m not sure. I think it is because I have a pretty good relationship with teachers and if I stuff up I don’t want to disappoint them”.</td>
<td>Andrew’s quotation from the interview data illustrates how perfectionism and his desired identity as a ‘conforming’ student is reinforced by his ‘desire to please’ – and thus how that desire to please influences his psychological centrality.</td>
</tr>
<tr>
<td>Two – social practices and contexts:</td>
<td>Situated Learning</td>
<td>Social Practices: “Yeah! I play a lot of basketball inside and outside of school and it basically runs my life through the whole year”.</td>
<td>Social practices indicate that, for psychological centrality, Andrew feels a pressure associated with his basketball which is reflected in Figure 6.2 showing how basketball interplays with the concept of ‘work’ and reinforces Andrew’s attempts to be ‘non-isolated’ and be perfectionist. Social contexts, as indicated in Figure 6.5, indicate that psychological centrality has a moderate influence. The quotation indicates that Andrew perceives difficulties with persistence and completion unless he is motivated. His psychological centrality is aligned with a successful student.</td>
</tr>
</tbody>
</table>

Table 6.21 above indicates Andrew’s psychological centrality is to be successful in school and sport, despite his feeling like an outsider, and this has influences on self-concept, particularly academic self-concept, which manifest as perfectionism, the need to self-explicate, and the urge to feel non-isolated or part of the crowd. Maybe the

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5 ‘Successful student’ in the context of Andrew’s school community-of-practice is a student who is highly regarded by staff and peers, a sportsman, leader and ‘all-rounder’ who lives within the Christian Faith (school newsletter, 2011).
‘atypicality’ that Andrew observes in the instruments motivates him to blend into the ‘norm’ and reinforces his psychological centrality. It is noteworthy that, when Andrew reports, “Yeah! I play a lot of basketball inside and outside of school and it basically runs my life through the whole year”, he does not identify himself as a ‘player’ but almost as a ‘servant’ to the sport: it runs his life and his psychological centrality to be a successful person in school and sport despite the effort involved and feeling on the periphery. Psychological centrality is most influenced by peers for social interactions regarding legitimate-peripheral-participation (research issue one), by teachers for social interactions for participation-in-practice (research issue one), and, in situated learning, the primary influenced by social practices (research issue two).

Self-talk

<table>
<thead>
<tr>
<th>Research Issue</th>
<th>Data Examples</th>
<th>legitimate-peripheral-participation/ participation-in-practice/ Situated Learning</th>
</tr>
</thead>
<tbody>
<tr>
<td>One – social interactions: Legitimate-peripheral-participation</td>
<td>All instruments indicate Andrew’s reflection on himself. For social interactions, the BASC-2 data indicate that Andrew perceives he is atypical or ‘different’.</td>
<td>“I don’t see that – I don’t think I was anywhere near the best player at all. So that is where lower self-concept may be for that”.</td>
</tr>
</tbody>
</table>

Figure 6.3 shows that self-talk is an influence that pertains to only the peers and teachers, thus indicating that self-talk for legitimate-peripheral-participation is evident in the data only when it pertains to the school context.

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<table>
<thead>
<tr>
<th>Research Issue</th>
<th>Data Examples</th>
<th>legitimate-peripheral-participation/ participation-in-practice/ Situated Learning</th>
</tr>
</thead>
<tbody>
<tr>
<td>One – social interactions: Participation-in-practice</td>
<td>Andrew indicates on the PH2 that he has a low intellectual self-concept which relates primarily to his reflection about his academic performance and, therefore, to his academic self-concept.</td>
<td>“I may not get the best grades but I try so hard. If I don’t get a grade I think I should have, I don’t get angry at the teacher but I get angry at myself – and frustrated”.</td>
</tr>
</tbody>
</table>

Self-talk is evident in the data for participation-in-practice with primarily the teachers, peers and siblings.

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<table>
<thead>
<tr>
<th>Research Issue</th>
<th>Data Examples</th>
<th>legitimate-peripheral-participation/ participation-in-practice/ Situated Learning</th>
</tr>
</thead>
<tbody>
<tr>
<td>One – social interactions: Situated Learning</td>
<td>Andrew indicated on the BASC-2 that he had a high sense of inadequacy.</td>
<td>“No I didn’t learn it myself, I got it from people at school and people like my brother.”</td>
</tr>
</tbody>
</table>

Andrew attributes social interactions in the school context to his self-talk as primarily enhancing his sense of inadequacy through self-depreciating reflections.

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<table>
<thead>
<tr>
<th>Research Issue</th>
<th>Data Examples</th>
<th>legitimate-peripheral-participation/ participation-in-practice/ Situated Learning</th>
</tr>
</thead>
</table>
| Two – social practices and contexts: Situated Learning | The BASC-2 results indicated that Andrew has a high sense of inadequacy in social contexts but there were no indicators evident in the data for social practices. | Social Practices and contexts: “This is one of my strengths, being different to everyone else and being able to see things that they cannot see; some of my best learning comes from being in a group – I am an extroverted learner...if some of the group are really smart, you will find out things that you don’t even realise or think about”.

Social context has a small influence for self-talk; whereas social practices show a larger contribution of triple those of social contexts.
The concept of self-talk is based on the premise that self-talk can be an acquired strategy to enable self-regulation of higher mental processes (Reis, 2004). Self-talk is not being applied in this study as it would be for socio-cultural theory of talking out loud in order to acquire competency in a practice (Vygotsky et al., 1994) but as a self-evaluation strategy which has been used in the field of gifted education.

For the purposes of this research, self-talk defines when students evaluate their actions, understand the consequences of their actions, reflect upon their actions, reinforce, and self-motivate (Reis, 2004). Self-talk is an important element for self-regulation, which is a strategy, used by the most successful students and adults (Zimmerman, 1989). Self-talk is a phase of self-reflection that primarily involves a reflection on performance (Reis, 2004). Self-talk is apparent in the instrument and interview data. Table 6.22 summarises how self-talk is evident in the data for legitimate-peripheral-participation, participation-in-practice and situated learning aspects of the theory.

Andrew’s self-talk that is evident in the data indicates that, for legitimate-peripheral-participation, he regards himself as atypical and still on the periphery of his community-of-practice. The primary influence of self-talk for participation-in-practice is teacher-feedback. Andrew attributes his learning to teachers, peers and his brother. Practices by teachers and their feedback are the primary influence on Andrew’s self-talk. Table 6.22 indicates that Andrew does articulate the influences that self-talk has on self-concept, including academic self-concept. Andrew’s self-talk appears to be shaped as a result of his being in a social context that places him alongside peers or teachers and that generates a self-judgement (most commonly self-deprecating in the data). The instruments reinforce this low sense-of-self in a social interaction, context or practice as low self-concepts, including academic self-concept, and low self-perceptions.

**Theme discordant from the literature**

One theme identified in the data were discordant from the literature. The theme is *basketball* and is a prominent occurrence in Andrew’s daily life as a state-level representative player. As discussed previously, the ‘school context’ for this research study includes the whole community-of-practice: all aspects that coincide with Andrew’s school life including the experiences beyond the ‘physicality’ of the school grounds: for example experiences with peers, family and his participation in *basketball*. The theme of *basketball* might have been subsumed by the theme of *BFLPE* as data
indicated that social comparison by Andrew was evident throughout the *basketball* theme. However, as a large theme identified in the data and supported by Leximancer analysis, and providing more insights into the nuances of influences on Andrew’s academic self-concept, it was decided to explore this theme independently for this research.

Table 6.23  Theme discordant from literature – Basketball

<table>
<thead>
<tr>
<th>Research Number</th>
<th>issue</th>
<th>Data Examples</th>
<th>Interview data</th>
<th>legitimate-peripheral-participation/ participation-in-practice/ Situated learning</th>
</tr>
</thead>
<tbody>
<tr>
<td>One – social interactions:</td>
<td>[Legitimate-peripheral-participation]</td>
<td>The PH2 shows that Andrew has a low ‘physical’ self-concept, comparative to his low intellectual self-concept. Andrew is tall and highly athletic and the researcher predicted a higher result. However, the intellectual self-concept was also low despite his gifted identification and inclusion into the top streamed classes.</td>
<td>“[My brother] is a lot quicker than I am and can jump a lot higher. He’s got a better build for the game and, I guess, at points when I wasn’t succeeding at basketball he, at the same point in time, strived harder to get where he wanted to go rather than I did”.</td>
<td>Figure 6.2 shows how the theme of basketball intersects with the theme of school and is inter-related via the concepts of his disability, feel, time and work. Andrew indicates that he feels on the periphery of his sport despite being a state level player, and that it is ‘work’ and that he perceives that he is less motivated than his brother.</td>
</tr>
<tr>
<td>One – social interactions:</td>
<td>Participation-in-practice</td>
<td>The BASC-2 indicates that Andrew perceives that he has some attention problems, which might be attributed to his perception of time management.</td>
<td>“Oh I do [practice] but it’s more like when I have time. My brother was a lot better at finding time with things”.</td>
<td>Figure 6.2 indicates that Andrew connects the theme of basketball to the concepts of his disability, school, work, feel (inadequacy) and time (lack of).</td>
</tr>
<tr>
<td>One – social interactions:</td>
<td>Situated Learning</td>
<td>No data indicated in instruments.</td>
<td>“For me, [sense of inadequacy] is when I go to a basketball trial at representative or state level and I feel so out of place because, even though I am not the worst player there, there are so many people on such a high level”.</td>
<td>Regardless of the context for Andrew playing his game, and despite his highly competitive level, Andrew concedes that he has feelings of inadequacy in many social situations.</td>
</tr>
<tr>
<td>Two – social practices and contexts:</td>
<td>Situated Learning</td>
<td>No data indicated in instruments.</td>
<td>Social practices: “Yes- because my brother played, I picked up my first basketball at three and have played for as long as I can remember. I’ve always done it”.</td>
<td>Social practices indicate that Andrew is playing basketball as his brother always has and it is not questioned. Andrew retains his sense of inadequacy in many social contexts.</td>
</tr>
</tbody>
</table>

Table 6.23 indicates that *basketball* has had an impact on Andrew’s sense-of-self. He reinforces the earlier themes of the sense of inadequacy, despite his high level of performance, in social interactions, basketball contexts and practices. There is a sense that Andrew is in his brother’s shadow and that, as the youngest (and therefore the last
to commence basketball) he always has been. This is reflected in his perception in the BASC-2 of ‘locus of control’ wherein Andrew’s score indicates his belief of being controlled by others or by external events that are beyond his control (Reynolds & Kamphaus, 2004). Perhaps the locus of control has contributed to Andrew’s sense of inadequacy which may have spilled over to the academic environment, where it is clearly evident, and has thus contributed to his low academic self-concept and social comparison theory and BFLPE are highly evident throughout this theme (Festinger, 1954; Marsh, 1990).
Appendix H  Detailed analysis of data supporting emergent literature themes for Ben

Development of issues and descriptive detail

The emergent themes will be developed, not for the purpose of generalizing beyond the case study, but for understanding the complexity of it (Stake, 1995). The two Research Issues sought to explore academic self-concept in the framework of legitimate-peripheral-participation, participation-in-practice, and situated learning:

1. Explore some of the social interactions that influence the development of academic self-concept for twice-exceptional students.

2. Explore some of the social practices and contexts that influence the development of academic self-concept for twice-exceptional students.

The emergent themes identified when exploring the development of academic self-concept for Ben are all concordant with the literature. Each theme will be further probed with reference to both Research Issues.

Themes concordant with the literature

Each of the emergent themes evident in the data, concordant with the literature, will be discussed in turn with regard to the instrument and interview data. The themes are all presented in a table format for consistency and clarity. The emergent themes identified in the data are: Big-Fish-Little-Pond-Effect (BFLPE), significant others, environment, academic achievement, mastery experience, enjoyment, self-understanding, psychological centrality, and self-talk.

BFLPE. BFLPE is based in social comparison theory (Festinger, 1954) within the classroom context and pertains to a student’s perceived ability of peers, and the resultant influences on academic self-concept (Marsh, 1987). The BFLPE was evident in the data
as Ben referred to external frames of reference. Table 7.14 summarisees how BFLPE was evident in the data.

**Table 7.14 Theme concordant with literature – BFLPE**

<table>
<thead>
<tr>
<th>Research Number</th>
<th>Issue</th>
<th>Data Examples</th>
<th>Interview data</th>
</tr>
</thead>
<tbody>
<tr>
<td>One – social interactions - Legitimate peripheral participation</td>
<td>All instruments indicate Ben’s self-perceptions. For social interactions, the BASC-2 data indicate that Ben perceives he is atypical or ‘different’ and has a sense of difference with his peers in the classroom context. High scores for sense of inadequacy and social stress plus a low self-concept for the popularity PH2 scale reinforce the data.</td>
<td>“...I don’t go to parties and that, it’s all about girls and drugs and stuff, I know I am not great with the girls and I prefer to hang out with mates who can relax and have fun”</td>
<td></td>
</tr>
<tr>
<td>One – social interactions - Participation-in-practice</td>
<td>Ben indicated on the PH2 that he has an average intellectual self-concept, which relates primarily to his perception about both his academic performance in the past and his academic performance compared to that of his peers.</td>
<td>“I know if I do good work and get, say, a ‘D’, I get real angry at the teacher but won’t show it.” “Most of the kids are pretty normal like me, most in my classes are smarter but they are pretty ok to get along with”</td>
<td></td>
</tr>
<tr>
<td>One – social interactions - Situated Learning</td>
<td>Ben indicated on the BASC-2 that he had a high sense of inadequacy which might be considered to reinforce the BFLPE.</td>
<td>“...At home I have the confidence to say what I think but not in class” “My mates laugh at me but it is ok really”</td>
<td></td>
</tr>
<tr>
<td>Two – social practices and contexts Situated learning</td>
<td>As above, the BASC-2 results indicated that Ben has a high sense of inadequacy in social contexts and experiences social stress. He responds positively to positive experiences with social practices.</td>
<td>Social Practices and contexts: “school is definitely getting better workwise and teacher wise - it all changed for me this year when I came to senior school”</td>
<td></td>
</tr>
</tbody>
</table>

Figure 7.7 shows that BFLPE is the most influential with peers, followed by teachers (and zero for parents and siblings), thus indicating that BFLPE is school context generated.

Ben attributes social interactions in the school context to his sense of inadequacy. He reports feeling safer in the home environment where there is less influence of BFLPE plus less pressure to perform as his mother indicates on the BASC-2 that the home environment is very relaxed.

Like social practices above, social context and practices have a small influence for BFLPE (See Figure 7.9).

Table 7.14 summarises how BFLPE influences Ben. His mother and he perceive he is atypical but his teachers do not see him as ‘different’ in the context of school. Although BFLPE refers primarily to school performance, it also pertains to the sense of the norm or the comparison with others. Ben does not show his feelings to his teachers and they do not report perceiving his high sense of inadequacy and low popularity self-concept.
Due to feelings of inadequacy and low popularity self-concept, Ben works hard at social interactions and he has a sense of being on the periphery in his high achieving classes despite being an ‘A’ grade student for the first time in his schooling experience. Figure 7.7 indicates that peers have the largest influence on BFLPE in the framework of legitimate-peripheral-participation, hence his feeling on the periphery of his social peer group, and teachers have the largest influence for BFLPE for participation-in-practice, indicating that Ben uses teacher feedback to formulate his social comparison in the classroom, and hence his academic self-concept.

Participation-in-practice is reflected in BFLPE for Ben through his attendance in the gifted classes. However, he reports a sense of being an imposter, or rather of lesser ability, in the gifted and high-streamed classes, but he prefers the working ethos of the classes despite the higher pressure and his perception that he is not as able as his peers.

When considering BFLPE in social practices and contexts for the research issue two, Ben reports a sense of inadequacy, for example when he said, “I find I stutter a fair bit. Most people say they don’t hear it but I have to really breathe and focus so I don’t look like an idiot” (Ben). In the context of school, the sense of inadequacy in BFLPE is evident in his reflections of his comparative ability to classroom peers, despite being an ‘A’ grade student. This is the first year he has received an ‘A’ grade and Ben’s mother stated, “… we are still pinching ourselves!”

**Significant others**

Significant others, for the purposes of this research, include the people who are a part of Ben’s community-of-practice in the school context (including areas beyond the physicality of the school such as home, art classes and places where he interacts with friends). Ben’s significant others are teachers, peers, parents and siblings. Although Ben’s mother and teachers report average and higher social skills, Ben himself perceives that he is atypical and in the ‘at-risk’ range for interpersonal relations. He is in the ‘at-risk’ range for social stress. This is supported by his low self-concept in the popularity scale. The interview data indicates that Ben’s sense of worth and academic self-concept is influenced by the interactions primarily with his teachers, but to a lesser
extent with his peers and siblings. Table 7.38 provides examples from the data which address the Research Issues.

<table>
<thead>
<tr>
<th>Research Number</th>
<th>Theme concordant with literature – Significant others</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Research</strong></td>
<td><strong>Issue</strong></td>
</tr>
<tr>
<td>Number</td>
<td></td>
</tr>
<tr>
<td>One – social interactions:</td>
<td>Legitimate-peripheral-participation</td>
</tr>
<tr>
<td>One – social interactions:</td>
<td>Participation-in-practice</td>
</tr>
<tr>
<td>One – social interactions:</td>
<td>Situated Learning</td>
</tr>
<tr>
<td>Two – social practices and contexts:</td>
<td></td>
</tr>
</tbody>
</table>
The data in Table 7.15 indicates that, in the context of the school, teachers have the highest influence for participation-in-practice and legitimate-peripheral-participation. Peers have little influence as significant others for Ben, and siblings have even less. The former is surprising as Ben professes to feel unpopular, different, and finds his friendships at school important which was exemplified by the following remark, “[T]here is always competition with my classmates, whether it is sporting or academic. I hate being at the bottom of the pile and looking like an idiot because these are my mates and we like to have fun and hang out” (Ben, 2011). The parents had little or no influence and this might be due to Ben’s age, developmental stage, and the school context in which his parents are not a direct part. With regards to the second research issue, Ben is demonstrating conformity and alignment within social practices within the school context. The more positive feedback he receives from significant others, primarily his teachers (see Figure 7.8), the stronger is his sense of belonging and success. This in turn positively influences his sense-of-self in the school context and his academic self-concept, and was revealed by the data when he stated, “I like being in the smart class, it makes me work harder to be the best I can be” (Ben, 2011).

The data give the sense that Ben knows how to perform socially and he aims to align with significant others, but that due to his feelings of inadequacy, he finds the process
demanding and tiring. He values his friendships in school and the importance of ‘fun’ with his peers, but data indicates that he finds social interactions demanding.

**Environment**

Environment pertains to the ‘community-of-practice’ (Wenger, 2000) as the school community and includes the community beyond the physicality of the school walls. For all aspects of legitimate-peripheral-participation, participation-in-practice and situated learning, environment plays a role, but only when associated with teachers and peers for Ben. Table 7.39 details how the data indicates the influence of environment on academic self-concept within the theoretical framework. The data indicates that Ben is influenced by the opinions and feedback from significant others, primarily teachers, which in turn influence his sense-of-self and academic self-concept.

*Environment* is the strongest influence for peers for legitimate-peripheral-participation. This indicates that Ben is most aware of his ‘belonging’ to the group, with his peers. The low popularity self-concept scale scores, and the high social stress scores, indicate that although he is conformist and considered by his mother and teachers to be popular, he works very hard at social situations and feels on the periphery of his peer group. For participation-in-practice, teacher influence becomes much stronger for *environment* and indicates that Ben perceives the teacher practices in his community-of-practice to be critical for his sense-of-self in the classroom. Ben is a conformist and wants to be recognised as a ‘good student’ by teachers and a ‘good mate’ by peers, but he keeps his inner feelings hidden (unless he is at home) and feels a strong sense of disappointment with himself. Sibling and parental influences for *environment* are unobserved and, again, this is possibly due to Ben’s developmental level and that his focus as a teenager has moved to beyond the home (Chan & Chan, 2013).
<table>
<thead>
<tr>
<th>Research Number</th>
<th>Issue</th>
<th>Data Examples</th>
<th>Interview data</th>
<th>Legitimate-peripheral-participation/participation-in-practice/Situated learning</th>
</tr>
</thead>
<tbody>
<tr>
<td>One – social interactions:</td>
<td>Legitimate-peripheral-participation</td>
<td>BASC-2/PH2 data – indicates conformist behaviour at school and, at times, depressive behaviour at home.</td>
<td>“I try to keep up with the competition in school and with my mates because you get to feel better and do your best”.</td>
<td>Environment does not occur in the relatively small sibling and parents categories (see Figure 7.7) but is a sizeable influence for legitimate-peripheral-participation in the peers and teacher categories.</td>
</tr>
<tr>
<td>One – social interactions:</td>
<td>Participation-in-practice</td>
<td>BASC-2 data – indicates conformist behaviour at school and, at times, aggressive behaviour at home.</td>
<td>“I prefer senior school, there is more choice and the teachers seem better at understanding you and giving you the chance of working hard”.</td>
<td>Teachers have the highest influence overall with participation-in-practice and a sizable section is attributed to environment compared with a very small influence from peers. There is no environmental influence recorded for parents and siblings.</td>
</tr>
<tr>
<td>One – social interactions:</td>
<td>Situated learning</td>
<td>BASC-2 results indicate that Ben has a positive attitude to teachers, parents and peers, indicating alignment with them, either as a result of or seeking positive feedback from positive social interactions.</td>
<td>“I sit on my own in class because I can stay away from those mucking about and it helps me focus and work hard. My teachers are happy with that too which is great”.</td>
<td>Ben reports experiencing positive social interactions in school with his teachers compared with those he recalls from his primary years.</td>
</tr>
<tr>
<td>Two – social practices and contexts:</td>
<td>Situated learning</td>
<td>BASC-2 and PH2 results do not pertain directly to environment but show average to good levels within the adaptive profile which might indicate that Ben is conforming with social practices in the school context. However, he still at times feels on the periphery of the school context as indicated low self-concept scale for popularity in the PH2 and a high social stress score on the BASC-2 SRP-A. Ben hides how he feels inside.</td>
<td>Social Practices: “Bad teachers are just teachers who don’t care and we all know who they are.” Social Contexts: “I am normally in the ‘B’ team for rugby but this term some of my mates are doing rugby because it doesn’t clash with soccer – so I will move down to the ‘D’ team to be with them and we can have fun”.</td>
<td>Ben is learning from and conforming with the social practices within the social context of the school.</td>
</tr>
</tbody>
</table>

**Academic achievement**

*Academic achievement* relates to Ben’s feedback for his academic work in the school context. This includes, for example, teacher-talk, grades, achievement tests and peer feedback, and has a direct influence on academic self-concept.
### Table 7.17  
**Theme concordant with literature – Academic achievement**

<table>
<thead>
<tr>
<th>Research issue Number</th>
<th>Data Examples</th>
<th>Interview data</th>
<th>legitimate-peripheral-participation/ participation-in-practice/ Situated learning</th>
</tr>
</thead>
<tbody>
<tr>
<td>One – social interactions: Legitimate-peripheral-participation</td>
<td>BASC-2/ PH2 data indicates a positive attitude towards school and teachers.</td>
<td>“I got all ‘A’s which is good, but my class is smart so they probably got the same”.</td>
<td><strong>Academic achievement</strong> does not occur as an influence in the parents and siblings’ categories (see Figure 7.7) but is a large influence for legitimate-peripheral-participation in the teacher category and a small influence in the peers category.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>“I get high marks in the subjects I enjoy. If I got low grades I probably wouldn’t enjoy them”.</td>
<td></td>
</tr>
<tr>
<td>One – social interactions: Participation-in-practice</td>
<td>No instrument data.</td>
<td>“I prefer senior school, there is more choice and the teachers seem better at understanding you”.</td>
<td>Teachers have the only influence overall with participation-in-practice and a large influence for academic achievement (see Figure 7.8).</td>
</tr>
<tr>
<td></td>
<td></td>
<td>“It is easier to enjoy something when you get good marks – it makes me work harder too”.</td>
<td></td>
</tr>
<tr>
<td>One – social interactions: Situated Learning</td>
<td>BASC-2 results indicate that Ben has a positive attitude to teachers indicating alignment with them possibly as a result of positive feedback from positive social interactions.</td>
<td>“I am now at my best for my grades and, for the first time ever, I was in the running for the Dean’s List. This is my best ever”.</td>
<td>Ben reports experiencing positive social interactions as a result of positive feedback in school with his teachers compared to his primary school years”.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>“In Primary school you only had one teacher and that is what you were stuck with, whether they liked you or not”.</td>
<td></td>
</tr>
<tr>
<td>Two – social practices and contexts: Situated learning</td>
<td>BASC-2 classroom observations indicate that Ben is learning from and conforming within the school context. The BASC-2 report shows that, although Ben has a relatively positive attitude to teachers, he has a high sense of atypicality and inadequacy indicating that he feels on the periphery of the school context. The PH2 indicates a low popularity self-concept.</td>
<td><strong>Social Practices:</strong> “I was real down ‘cos I missed out on the Dean’s list by one ‘A’ in the last term and that sucked because it was ‘Life and faith’ that let me down with a ‘B’ and I did all the work but another kid who didn’t got an ‘A’.” <strong>Social contexts:</strong> “I love music too, I love the room as it is all computers for composing and I can get into my own space”.</td>
<td>The data reveal that social practices by teachers are the primary influence of Ben’s sense of academic achievement and success.</td>
</tr>
</tbody>
</table>

The influence of *academic achievement* is evident for legitimate-peripheral-participation, participation-in-practice and situated learning aspects of the theory. Figure 7.2 shows that, for legitimate-peripheral-participation, *academic achievement* is the

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6 For the purposes of this research, social practices by teachers include the social, verbal and gestural interactions that, although may be subtle, are interpreted by the participants and influence their perceptions of self; their emotional experiences with teachers “which distinguishes one person from another” (Asmolov, 2010. P.44).
largest influence for teachers, and occurs to a much lesser degree with peers and siblings. Teachers are also the most influential with regards to academic achievement for participation-in-practice as Figure 7.3 indicates, and the focus is on the social practices rather than the contexts with teachers; interview data reveal that it is teacher enthusiasm, feedback and teacher-talk. Academic achievement is primarily influenced by social practices, which is double the contribution by social contexts (see Figure 7.4).

**Mastery experience**

In Chapter Two, mastery experience (Bandura, 1994) is described as a way of increasing belief in one’s ability and self-efficacy. Bandura (1994) advances that self-efficacy is the belief in one’s capabilities to succeed.

The influence of mastery experience is evident primarily in the interview data which is used to address the Research Issues in Table 7.18. Table 7.18 indicates that Ben does find that mastery experience influences his experiences in the context of the theoretical framework. He likes to be ‘doing’ and ‘practising’ rather than ‘listening’ and stated, “…if the teachers just ‘blah’ on I can’t focus and I don’t learn a thing” (Ben). Although the data are confined to the interview data, the influence of mastery experience for teachers in social contexts are the most evident, implying that the teachers provide the conditions to attain mastery experience and thus are influential in this area.
Table 7.18  Theme concordant with literature – Mastery experience

<table>
<thead>
<tr>
<th>Research Question Number</th>
<th>Data Examples</th>
<th>legitimate-peripheral-participation/participation-in-practice/ Situated learning</th>
</tr>
</thead>
<tbody>
<tr>
<td>One – social interactions</td>
<td>“My afterschool art classes are really good even though it is mainly girls and I am not as good as them, but they are great to be with and Mrs B gives us lots of time to explore our ideas and get things right. We learn heaps of good stuff with her.”</td>
<td><strong>Legitimate-peripheral-participation:</strong> Figure 7.7 show mastery experience is an influence only with teachers.</td>
</tr>
<tr>
<td>One – social interactions</td>
<td>“I like doing things with my hands, like sculpting, I get good grades and I like doing it best when we have a choice”.</td>
<td><strong>Participation-in-practice:</strong> Mastery experience is evident for participation-in-practice only with teachers with a moderate influence. See Figure 7.8.</td>
</tr>
<tr>
<td>One – social interactions</td>
<td>“I am normally in the ‘B’ team for rugby but this term some of my mates are doing rugby because it doesn’t clash with soccer – so I will move down to the ‘D’ team to be with them and we can have fun”.</td>
<td><strong>Situated Learning:</strong> Ben, although considered a competent rugby player, would rather be with his friends and ‘have fun’ despite his ability, mastery and love of the game.</td>
</tr>
</tbody>
</table>
| Two – social contexts    | **Social Practices:** “I like to be doing things, getting on with it, that’s how I get good”.  
**Social contexts:** “I like the art classes with the girls, they are funner, even though I’m not as good as them”. | **Situated learning:** Social contexts have only one recordable influence on mastery experience for Ben; whereas social practices show a much larger influence ten times the amount of social contexts. See Figure 7.9. Indications are that the practices or the ‘doing’ is influential for Ben but not the contexts. |

Enjoyment

*Enjoyment*, for the purposes of this research, is the level of satisfaction, interest in, and happiness (or enjoyment) gained from engaging with a task that results in positive feelings (Ely et al., 2013). The influence of *enjoyment* is evident in both the interview and the PH2 instrument data. Table 7.19 summarises how *enjoyment* is evident in the data for legitimate-peripheral-participation, participation-in-practice and situated learning aspects of the theory.

Table 7.19 indicates that Ben does find that *enjoyment* influences his experiences in the school context. The PH2 indicated that Ben scored in the average range for the happiness self-concept, despite *enjoyment* being a strong theme in the interview data. Perhaps it is that he finds *enjoyment* important but does not experience it at more than above average levels. The primary influences for *enjoyment* are from teachers in social practices. For legitimate-peripheral-participation, *enjoyment* for Ben is associated with a sense of participation with and becoming part of the group and was recorded for only teachers and peers; perhaps an indication that the interview was focused on school and
in the school context. For participation-in-practice, the influence of teacher feedback is far more influential for enjoyment. For legitimate-peripheral-participation and participation-in-practice enjoyment becomes evident in the situated learning for Ben as enjoyment depends on the feedback from the teachers, and to a lesser extent his peers, and pivots around social practices in his community-of-practice.

Table 7.19 Theme concordant with literature – Enjoyment

<table>
<thead>
<tr>
<th>research Number</th>
<th>issue</th>
<th>Data Examples</th>
</tr>
</thead>
<tbody>
<tr>
<td>BASC-2/ PH2 data</td>
<td>Interview data</td>
<td>legitimate-peripheral-participation/ participation-in-practice/ Situated learning</td>
</tr>
<tr>
<td>One – social interactions</td>
<td>The PH2 indicates an average self-concept relating to the happiness domain. The happiness domain reflects how an individual evaluates themselves and their life circumstances in a positive way. Such positivity is linked to enjoyment and satisfaction with themselves (Piers &amp; Herzberg, 2009).</td>
<td>“[a good teacher] is enthusiastic and always wants you to do stuff…they make you feel you belong”.</td>
</tr>
<tr>
<td>One – social interactions</td>
<td>“I have lots of friends, I enjoy being with them, in my house room at school we have fun, it is like a little community”</td>
<td>legitimate-peripheral-participation: Figure 7.7 shows that for legitimate-peripheral-participation enjoyment is an influence with teachers and around half again with peers. Nothing was recorded for siblings or parents in this category for legitimate-peripheral-participation.</td>
</tr>
<tr>
<td>One – social interactions</td>
<td>“I am good at the subjects I enjoy, if I had a bad grade for Art I would still enjoy it but not as much”</td>
<td>participation-in-practice: Enjoyment is evident for participation-in-practice with a large contribution from peers and around half that from the teachers. A tiny amount was recorded for siblings.</td>
</tr>
<tr>
<td>One – social interactions</td>
<td>“I think it is better in senior school, definitely better than primary school. I wasn’t confident there but now, with academics and sport and stuff, I am now…. I think that is because we have more choice and better teachers”.</td>
<td>Situated Learning: Ben reports experiencing different levels of enjoyment as a result of his enjoyment of a subject, his grades, the teacher quality, choices and variety’.</td>
</tr>
<tr>
<td>Two – social practices and contexts</td>
<td>Social Practices: “I don’t really mind what I do when I leave school, as long as it’s something I enjoy”.</td>
<td>Situated learning: Enjoyment is a sizable contributor to both social contexts and social, triple the amount, to social practices. Ben reveals in interview data that his enjoyment is primarily influenced by the practices of the teachers, the variety of subjects and a sense of independence.</td>
</tr>
</tbody>
</table>
Self-understanding

For the purposes of this research, *self-understanding* is the level of insight and ability to articulate how Ben feels and understands himself; how he integrates his perceptions of his traits and characteristics (Assouline & Colengalo, 2006), and makes sense of who he is (Dillon, 2009). The influence of *self-understanding* is evident in both the interview and the instrument data. Table 7.20 summarises how *self-understanding* is evident in the data for legitimate-peripheral-participation, participation-in-practice and situated learning aspects of the theory.

Table 7.20  Theme concordant with literature – Self understanding

<table>
<thead>
<tr>
<th>Research Number</th>
<th>Data Examples</th>
<th>Interview data</th>
<th>legitimate-peripheral-participation/practice</th>
<th>Situated Learning</th>
</tr>
</thead>
<tbody>
<tr>
<td>One – social interactions:</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Legitimate-</td>
<td>The PH2 indicates very low self-concept relating to the popularity scale; an indication that low self-concept leads to inaccurate self-understanding as Ben’s parents and teachers report that he is a popular student and his school reports held on school records indicate likewise; a possibility that he feels on the periphery.</td>
<td>“My stutter is always with me, but silently. No one ever really hears it. I can say look look, look but if I was standing looking at a snake I would say ‘loo-oo-oook’. That’s when it kicks in”</td>
<td></td>
<td></td>
</tr>
<tr>
<td>peripheral-</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Participation-</td>
<td>(as above)</td>
<td>“…if the teachers just ‘blah’ on I can’t focus and I don’t learn a thing”</td>
<td>Self-understanding is evident for participation-in-practice only a small influence from teachers. It might be inferred from this that the data did not reveal that participation-in-practice enhances or affects Ben’s self-understanding.</td>
<td></td>
</tr>
<tr>
<td>Situated Learning</td>
<td>The BASC-2 results indicate that Ben and his mother perceive an at-risk and clinical level of atypicality whereas his teachers do not. He also indicates high levels of anxiety and depression, also supported by his mother and not reports by the teachers. This may be as a result of the differences between the school and home contexts and his interactions therein.</td>
<td>“Yeah, not all teachers are good…unless you have a kind of good relationship with them, then they get to know you more. But other teachers they just know you for who you are, they don't really know you for what's inside of you and they just tell you what to do, I guess, and then you just have to do it.”</td>
<td>Ben reveals a clinical range for atypicality thus indicating a sense of difference. His mother supports this notion to a slightly lesser degree. His anxiety and depression are also unobserved by the teachers in the school context. Ben does not appear to express his true feelings or sense of difference in the school context and is cognisant of not doing so.</td>
<td></td>
</tr>
<tr>
<td>Two – social practices and contexts:</td>
<td>Ben has sense of inadequacy and atypicality in the clinical range, and an at-risk level for anxiety, depression, social stress, locus-of-control, hyperactivity and interpersonal relations as reported in the BASC-2. Where scales co-exist, his Mother supports his self-understanding but to a lesser degree. Ben is alone in his observation that he is hyperactive.</td>
<td>Social Practices: “I like to be doing things, getting on with it, that’s how I get good”. Social contexts: “I have more friends in school now as I don’t play so many sports outside of school. It’s not me, it is having the chance to catch-up with people”</td>
<td>Ben reveals an insightful self-understanding and is more open with his feeling and expression in the home context as his mother reports similar insights (although to a slightly lesser degree). His mother’s independent support of his insights indicates good levels of insight and self-understanding.</td>
<td></td>
</tr>
</tbody>
</table>
Table 7.20 indicates that Ben does have *self-understanding* that has influenced his school experience, such as making friends and having awareness of his learning disabilities. His mother supports many of his self-perceptions on the BASC-2. In interview, his self-insights were elucidated and did not appear to be as self-deprecating despite the high sense of inadequacy recorded in the BASC-2 and the low popularity self-concept recorded in the PH2. The primary influences that give insights into *self-understanding* from the interview data are from teachers based in both social contexts and social practices (see Figure 7.1).

**Psychological centrality**

The concept of *psychological centrality* used for this research is based on the premise from identity theory that self-concept is organised into complex hierarchies; the more central that a component is to the person’s identity, the greater impact it will have on the self-concept (Breytspraak, 1984; Rosenberg, 1979; Stryker & Serpe, 1982). Stryker & Serpe (1982) state that, “the greater the commitment (to do or be something), the more salient will be the identity, and the greater will be the impact of performance on role-specific self-concept” (p. 208). *Psychological centrality* was explored looking for data where Ben expressed commitment to something and/or associated himself with a role-specific sense-of-self. *Psychological centrality* is evident only in the interview data. Table 7.21 summarises how *psychological centrality* is evident in the interview data for legitimate-peripheral-participation, participation-in-practice and situated learning aspects of the theory.

Table 7.21 indicates Ben’s *psychological centrality* to be associated with success in school. He wants to be recognised as a successful student but also emphasizes his focus on enjoyment and ‘having fun’. If Ben is not successful at an academic subject he is less likely to enjoy it. However, as illustrated in Table 7.21, Ben is a successful rugby player but chooses to play in the ‘D’ team to be with, and enjoy time with, his friends.
Table 7.21  Theme concordant with literature – Psychological centrality

<table>
<thead>
<tr>
<th>research issue</th>
<th>Data Examples</th>
<th>legitimate-peripheral-participation/ Situated learning</th>
<th>participation-in-practice/</th>
</tr>
</thead>
<tbody>
<tr>
<td>One – social interactions: Legitimate-peripheral-participation</td>
<td>“I needed ‘A’ in English but got a ‘B+’ which sucks ‘cos all the others in my class would have got ‘A’s’.”</td>
<td></td>
<td></td>
</tr>
<tr>
<td>One – social interactions: Participation-in-practice</td>
<td>“I know I am in the smart classes and getting A’s but because I got a ‘B+’ in English I am a bit down because I missed the Dean’s list by one ‘A’”.</td>
<td>Psychological centrality is evident for participation-in-practice only with teachers. The quotation indicates how Ben is aware of his recent success but is still disappointed by his improvements as he missed out on the ‘Dean’s list’. For the purposes of this research, the ‘Dean’s list’ is considered a form of feedback and, in Ben’s experience, his focus is on the perceived ‘fail’ of not being on the ‘Dean’s list’ rather that his outstanding performance (when compared to being a C and D grade student until this year.) See Figure 7.8.</td>
<td></td>
</tr>
<tr>
<td>One – social interactions: Situated Learning</td>
<td>“I like the teachers who are constant, like Mr K, constant discipline who let me work hard ‘cos I want to work”.</td>
<td>Ben’s self-regulation and attributional choices are evident with this quotation; it illustrates his commitment to identifying himself as a person with potential, a good student and a hard worker who had not been recognised due to his past performance. Ben illustrates his desired association as an academically successful identity with teachers who ‘care’.</td>
<td></td>
</tr>
<tr>
<td>Two – social practices and contexts: Situated Learning</td>
<td>Social Practices: “If I got a bad mark in art it would not be so much fun but I would still try to enjoy it”. “I’m doing this Australian topic stuff at the moment and it’s kind of daunting but it should all work out in the end.” Social contexts: “I like my after school art, it’s more my style and what I want to do. It’s more relaxed”.</td>
<td>Social practices and social contexts indicate that, for psychological centrality, Ben considers ‘fun’ to be important and emphasizes enjoyment. In addition, he sees himself as a hard worker, a good student and on the edge of ‘success’ (although his first year in the senior school has arguably been an enormous success with all but one ‘A’ outcome). His concept of ‘work’ interplays with enjoyment but the data indicates that he is perfectionistic and also that he attempts to be non-isolated. His psychological centrality is aligned with a successful student in the school context.</td>
<td></td>
</tr>
</tbody>
</table>

Despite Ben’s success this year with high academic performance grades, he still believes he is not successful yet as he has not achieved status in the Dean’s list; something achieved by his class peers who are with him in the ‘smart classes’. Although this point also illustrates the BFLPE (illustrated in Table 7.14) it also indicates how Ben identifies himself as not attaining full academic success, and this would likely be indicative of his academic self-concept. Ben is successful in art and this is the one subject in which he has shown relative success throughout his schooling when compared with the other school subjects. However, Ben sees himself as an outsider in his much loved after-school art class as he considers himself less able than the girls in
the class. Ben claims to enjoy his time in the art class, another salient point for him, and he reports that he enjoys the company of the girls. The school folder indicates that historically Ben’s art work has always been considered at a high standard by his teachers. When Ben indicates that he feels on the periphery of art classes it is a likely indication that there is a negative influence on his academic self-concept, manifesting in perfectionism as he considers his work of lower quality when compared to his class peers. Maybe the ‘atypicality’ that is seen in the instrument data are a trait that motivates him to blend into the ‘norm’, to be a ‘fun’ person, and thus reinforces his psychological centrality.

**Self-talk**

For this research the concept of self-talk is based on the premise that self-talk can be an acquired strategy to enable self-regulation of higher mental processes (Reis 2004). Self-talk is not being applied in this study as it might be for socio-cultural theory of talking out loud in order to acquire competency in a practice (Vygotsky et al., 1994) but as a self-evaluation strategy which has been used in the field of gifted education. For the purposes of this research, self-talk defines when students evaluate their actions, understand the consequences of their actions, reflect upon their actions, reinforce, and self-motivate (Reis, 2004). Self-talk is an important element for self-regulation, which is a strategy used by the most successful students and adults (Zimmerman, 1989). Self-talk is a phase of self-reflection that primarily involves a reflection on performance (Reis, 2004). Self-talk is apparent in the instrument and interview data. Table 7.22 summarises how examples of self-talk are evident in the data for legitimate-peripheral-participation, participation-in-practice and situated learning aspects of the theory.
Table 7.22

<table>
<thead>
<tr>
<th>Research Number</th>
<th>Issue</th>
<th>Data Examples</th>
<th>Interview data</th>
<th>legitimate-peripheral-participation/ participation-in-practice/ learning</th>
<th>Situated Learning</th>
</tr>
</thead>
<tbody>
<tr>
<td>One – social interactions:</td>
<td>Legitimate-peripheral-participation</td>
<td>All instruments completed by Ben indicate how he reflects on himself. For social interactions, the BASC-2 data indicate that Ben perceives he is atypical or ‘different’, inadequate, and anxious.</td>
<td>“I have quite a lot of friends but I don’t usually hang out with them, I really just hang out with Johnny – I prefer that and it is easier”.</td>
<td>Figure 7.7 shows that, for legitimate-peripheral-participation, self-talk is an influence that pertains to Ben’s peers, parents and teachers.</td>
<td></td>
</tr>
</tbody>
</table>

One – social interactions: Participation-in-practice

Ben indicates on the PH2 that he has a low ‘popularity’ self-concept, which relates primarily to his reflection about his social interactions. This is reinforced by his BASC-2 feedback indicating difficulties with social interactions (in the at-risk range).

“I don’t do parties and drugs and that. It would be a different set of kids and they have made different choices. They could be smart and that but they have chosen to go the wrong way. Me and my mates are different, not interested in that, and not so popular. I may not be the best in class but I have made the right choices”.

Self-talk is evident almost equally for participation-in-practice with teachers, peers, parents and siblings (Figure 7.8). Ben’s sense of inadequacy in the classroom and among peers is reflected in his BASC-2 results, the low popularity self-concept and his high sense of inadequacy related to his perceived unpopularity. The quotation indicates that this sense of inadequacy has some negative influence on his academic self-concept.

One – social interactions: Situated Learning

Ben indicated on the BASC-2 that he had a high sense of inadequacy.

“I am not much good at the start but, if I gain confidence by the middle of a task, I get better”.

Ben attributes social interactions in the school context to his sense of inadequacy and other self-depreciating reflections relating to self-talk.

Two – social practices and contexts: Situated Learning

As above, the BASC-2 results indicated that Ben has a high sense of inadequacy in social contexts but there were no indicators for social practices.

Social Practices and contexts:

“…you could see that it was the better class because the smart kids are in it and the teachers are better.”

(interviewer note: when reminded that he was in this ‘bright’ class Ben shrugged and said ‘for now’).

Although Figure 7.9 indicates that there is no recordable data for social contexts, the quotation (left) indicates Ben’s perception of situated learning in social contexts of the classroom.

For legitimate-peripheral-participation, Ben regards himself as atypical, inadequate, and on the periphery of his community-of-practice despite his ‘A’ Grades and his inclusion into the ‘smart’ class. The primary influence of self-talk for participation-in-practice is teacher-feedback. Practices by teachers and their feedback are the primary influence on Ben’s self-talk. The primary influence for legitimate-peripheral-participation for self-talk is peer feedback. Table 7.22 indicates that Ben does articulate the influences that self-talk has on self-concept, including academic self-concept as he states and implies in interview data that he is inadequate in the classroom. Ben’s self-talk appears to be shaped as a result of his being in a social context that generates a self-judgement (often self-deprecating in interview data). The instruments reinforce this low sense-of-self in
social interaction, social context or social practice as low ‘popularity self-concept’ amongst other recorded low self-perceptions.
Appendix I  Detailed analysis of data supporting emergent literature themes for Chris

Development of issues and descriptive detail

The emergent themes will be developed, not for the purpose of generalizing beyond the case study, but for understanding the complexity of it (Stake, 1995). The two Research Issues sought to explore academic self-concept in the framework of legitimate-peripheral-participation, participation-in-practice, and situated learning:

3. Explore some of the social interactions that influence the development of academic self-concept for twice-exceptional students.

4. Explore some of the social practices and contexts that influence the development of academic self-concept for twice-exceptional students.

The emergent themes identified when exploring the development of academic self-concept for Chris are concordant with the literature. Each theme will be further probed with reference to both Research Issues.

Themes concordant with the literature

Each of the emergent themes evident in the data, concordant with the literature, will be discussed in turn with regard to the instrument and interview data. The themes are all presented in a table format for consistency and clarity. The tables differ from the previous two case studies as legitimate-peripheral-participation is not included as it was not evident in the data and Chris did not indicate that he felt ‘part-of’ or ‘on the periphery of’ his community-of-practice. The emergent themes identified in the data are: Significant others, environment, academic achievement, mastery experience, enjoyment, self-understanding, and psychological centrality.
**Significant others**

Significant others, for the purposes of this research, include the people who are a part of Chris’s community-of-practice in the school context (including areas beyond the physicality of the school): Teachers, peers, parents and siblings. Chris, his parents and teachers report few social interactions with significant others, social stress and atypicality. Chris reports that he has social stress close to the at-risk range whilst, in contrast, he has an average self-concept score for the popularity scale. The interview data indicates that Chris is not highly influenced by the verbal opinions of significant others, and this directly influences his sense-of-self and academic self-concept.

The data in Table 8.13 indicates that, in the context of the school, parents have the highest influence for participation-in-practice (the practice of engaging with activities). With regards to the second research issue, Chris is demonstrating conformity and alignment within social practices when he enjoys the activity and when he feels safe with significant others (primarily his parents). The parents influence is focused in the home context that Chris claims is his favourite location. Chris indicates that he feels more understood and experiences more positive feedback at home from significant others, primarily his parents. If his sense of belonging could be nurtured in the school context, from significant others (primarily his teachers and peers), it is likely that he will experience more success which should positively influence his sense-of-self in the school context and his academic self-concept.
The data give the sense that Chris knows how to perform socially and he aims to align with significant others, but that due to his withdrawal, feelings of isolation and disconnection from others, he finds the process demanding and tiring unless he is experiencing enjoyment and engagement with an activity.
Environment

Environment pertains to the ‘community-of-practice’ (Wenger, 2000) as the school community and includes the community beyond the physicality of the school walls, and for Chris includes his home environment. For participation-in-practice and situated learning, environment plays a role, particularly as Chris consistently states that home is his favourite environment but gives inconsistent feedback about school. Table 8.14 details how the data indicates the influence of environment on academic self-concept within the theoretical framework. The data indicates that Chris is primarily influenced by the enjoyment of a subject, but also his perceived acceptance by, and understanding from significant others. Although he appears unaware of the performance of his peers in school, he is sensitive to the teacher and peer understanding or subtle feedback of him. An example might be that he does not know how he compares with others in his academic performance, but he reveals that ‘other kids hate to be with me’, and ‘no one understands me’. When probed in interview, he states, “… the kids are sometimes mean to me, they don’t say things or hit me, I just feel it and I know they don’t like me” indicating subtle understanding of behaviours of others. When discussing his teacher and his participation in class, Chris replies that he does not interact because, “…I don’t like looking stupid”; an indicator of his sense-of-self and academic self-concept in the school environment. At home he states that his opinions are listened to and valued.

Table 8.15 Theme concordant with literature – Environment

<table>
<thead>
<tr>
<th>Research Number</th>
<th>Data Examples</th>
<th>Interview data</th>
<th>participation-in-practice/ Situated learning</th>
</tr>
</thead>
<tbody>
<tr>
<td>One – social interactions</td>
<td>BASC-2 data – indicates conformist behaviour at times, and non-conformist at others in school. At home he feels more valued and has more autonomy and is primarily conformist with outbursts of aggression that are not evident in school.</td>
<td>“I like gardening with my dad, we have nice quiet fun”.</td>
<td>Participation-in-practice: Parents, siblings and peers have the highest influence overall with participation-in-practice for environment (see Figure 8.2).</td>
</tr>
<tr>
<td>One – social interactions</td>
<td>BASC-2 results indicate that Chris has a negative attitude to school and a good attitude to parents, indicating alignment with them, possibly as a result of positive feedback from positive social interactions.</td>
<td>“…but mum does [understand me], she lets me do the fun stuff and keeps it all calm”.</td>
<td>Situated Learning: Chris reports experiencing positive and negative social interactions in school with his teachers and peers, and primarily positive experiences at home.</td>
</tr>
</tbody>
</table>
Environment for participation-in-practice is equally influenced by parents, siblings and peers for Chris (see Figure 8.2). Chris is cognisant of conforming behaviours and is aware that he has challenges when trying to concentrate, particularly in subjects he does not enjoy. However, he wants to be recognised as a ‘good student’ and a ‘good peer’ and perceives subtle indications from teachers and peers that he is not accepted or understood. Although withdrawn in school, Chris has aggressive outbursts at home. The teachers’ influence in the environment is important to Chris as he is aiming to please the teacher in order to receive positive feedback and is reluctant to participate verbally so he does not ‘look stupid’ (Chris, 2011). The positive feedback he receives at home, particularly from his mother who, he believes, has a calming effect, creates the positive experiences that edify his preference of the home environment. Teacher influences on environment were not directly observed in the interview data as Chris only associates the teacher with school and the classroom; generally a negative experience for him.

For Students with Asperger’s syndrome, Norris & Dixon (2011) suggest that the student is viewed as gifted first, and having a disability second. In essence, this means that the child is taught to their cognitive strength rather than their skills level. Such an approach has a direct implication for environment in that a learning environment is provided that focuses on the giftedness whilst scaffolding the area of disability. A focus on remediating weaknesses whilst ignoring strengths can result in poor academic outcomes, depression and stress (Carrington & Graham, 2001; Humphrey & Lewis; 2008).
Academic achievement

Academic achievement relates to Chris’s perceived feedback for his academic work in the school context. This includes, for example, teacher-talk, grades, achievement tests and peer feedback, and has a direct influence on academic self-concept (Liem et al., 2013.) For participation-in-practice and situated learning, the academic achievement theme is evident in both the instruments and the interview data. Although the BASC-2 instrument indicates that Chris has a negative attitude to school, in Table 8.4, the PH2 indicates that he has a high-average self-concept in the intellectual subscale domain; suggesting that he is fairly confident in his intellectual and academic abilities, but acknowledges a few difficulties with school-related tasks (Piers & Herzberg, 2002). Exploration of the individual item responses for the PH2 INT sub-scale reveal that his responses are positive in all areas except for the response ‘I get nervous when the teacher calls on me’. When exploring the theme of ‘school’ shown in Table 8.15, Chris appears to associate school primarily with work and teacher feedback.

Table 8.16 Theme concordant with literature – Academic achievement

<table>
<thead>
<tr>
<th>research issue Number</th>
<th>Data Examples</th>
<th>Interview data</th>
<th>legitimate-peripheral-participation/ participation-in-practice/ Situated learning</th>
</tr>
</thead>
<tbody>
<tr>
<td>One – social interactions</td>
<td>PH2 data – indicates a high average intellectual self-concept. BASC-2 results indicate a poor attitude to school and perceived attention problems.</td>
<td>“and I get A’s in most things, lowest C’s, but that doesn’t mean I like any subjects. I like science and get A’s but that but I don’t mind, I just like science”.</td>
<td>participation-in-practice: Teachers have the only influence overall with participation-in-practice and a small influence for academic achievement.</td>
</tr>
<tr>
<td>One – social interactions</td>
<td>BASC-2 results indicate that Chris has an average attitude to teachers, indicating a desired alignment with them but interview data indicates a variable and lack of understanding by teachers. PH2 data indicates nervousness when the teacher calls on Chris”.</td>
<td>“having Asperger’s or being gifted can make things harder I think, but the teachers don’t really get it”.</td>
<td>Situated Learning: Chris reports experiencing a sense of difference when he is in school alongside lack of understanding and isolation in class.</td>
</tr>
<tr>
<td>Two – social practices and contexts</td>
<td>BASC-2 classroom observations indicate that Chris is cognizant of his inattention and lack of consistent conformity in the classroom. He has a high sense of atypicality and PH2 data also indicates perceived inadequacy and lack of understanding by teachers and peers.</td>
<td>Social Practices: “I don’t like school, I hate being alone, the teachers don’t get me” Social contexts: “I don’t know what the other kids get as scores, never thought about it before”</td>
<td>Situated learning: Social practices by teachers and social contexts are an influence of Chris’s sense of academic achievement.</td>
</tr>
</tbody>
</table>

The influence of academic achievement is evident for participation-in-practice and situated learning aspects of the theory. Teachers are the only influence evident in the
interview data with regards to academic achievement for participation-in-practice and, as Figure 8.3 indicates, the focus is on both the social practices and the contexts with teachers; their enthusiasm, feedback and teacher-talk.

**Mastery experience**

Mastery experience (Bandura, 1994) is the belief in one’s capabilities to succeed in a particular situation. Bandura described these beliefs as determinants of how people think, behave, and feel (1994). Self-efficacy develops in early childhood as children deal with a wide variety of experiences, tasks, and situations. Performing a task successfully strengthens our sense-of-self-efficacy. The ability to perform a task successfully, or otherwise, is in part dependent upon the perception of how well one can perform it, or the mastery experience.

The influence of mastery experience is evident in the interview data but not directly in the instrument data and has been only identified with the parents. Table 8.16 explores the small amount of data relating to mastery experience.

**Table 8.17 Theme concordant with literature – Mastery experience**

<table>
<thead>
<tr>
<th>research Question Number</th>
<th>Data Examples</th>
<th>legitimate-peripheral-participation/participation-in-practice/ Situated learning</th>
</tr>
</thead>
<tbody>
<tr>
<td>One – social interactions</td>
<td>“…I like science because you learn a lot. It’s fun learning about chemicals and stuff. Yeah, I’m not sure why, it’s just fun. I am good at it but I like it cos it’s fun”</td>
<td>participation-in-practice: Mastery experience is evident for participation-in-practice with just the parents and contributes to a small influence.</td>
</tr>
<tr>
<td>One – social interactions</td>
<td>“and gardening, I love gardening and I can do that at home. I love watching the seeds grow”</td>
<td>Situated Learning: Chris reports experiencing positive social interactions as a result of ‘mastery’ experiences in school and at home.</td>
</tr>
<tr>
<td>Two – social practices and contexts</td>
<td>Social Practices: “In class I’m shy and I don’t like looking stupid.” Social contexts: “….and I get A’s in most things, lowest C’s, but that doesn’t mean I like any subjects. I like science and get A’s but that but I don’t mind, I just like science”</td>
<td>Situated learning: Both social contexts and social practices have an equally small but more apparent influence for mastery experience.</td>
</tr>
</tbody>
</table>

Table 8.16 above indicates that Chris does find that mastery experience influences his experiences in the context of the theoretical framework. Although the data are confined to the interview data, the influence of mastery experience for parents in social contexts
are the most evident: implying that the parents provide the conditions to attain mastery experience for Chris, perhaps due to his young age, and thus are highly influential in this area.

**Enjoyment**

Enjoyment, for the purposes of this research, is the level of satisfaction, interest in, and happiness (or enjoyment) gained from engaging with a task that results in positive feelings (Ely et al., 2013). The influence of enjoyment is dominant in both the interview and the PH2 instrument data. Table 8.17 summarises how enjoyment is evident in the data for participation-in-practice and situated learning aspects of the theory.

**Table 8.18 Theme concordant with literature – Enjoyment**

<table>
<thead>
<tr>
<th>research Number</th>
<th>Data Examples</th>
<th>Interview data</th>
<th>legitimate-peripheral-participation/ participation-in-practice/ Situated learning</th>
</tr>
</thead>
<tbody>
<tr>
<td>One – social interactions</td>
<td>BASC-2 data showing high levels of anxiety and social stress may be indicators that Chris may not be experiencing a great deal of enjoyment except in his favourite lesson at school, or at home where he has more enjoyment with his parents.</td>
<td>“I love science, all the kids do, it’s fun learning about chemicals and stuff. I don’t know why, it’s just fun”.</td>
<td>participation-in-practice: Enjoyment is evident for participation-in-practice with primarily the parents , followed by teachers and peers. There is a small contribution by siblings.</td>
</tr>
<tr>
<td>One – social interactions</td>
<td>BASC-2 data indicates that, in school, Chris can perceive isolation for example ‘no one understands me’.</td>
<td>“I like gardening with my dad, we have nice quiet fun”.</td>
<td>Situated Learning: Chris reports experiencing different levels of enjoyment but that the enjoyment does not influence his grades, it does influence his engagement with an activity. He prefers home as there is more enjoyment at home. He feels isolated at school by teachers and peers.</td>
</tr>
<tr>
<td>Two – social practices and contexts</td>
<td>The BASC-2 data shows that Chris has a negative attitude to school, which is related, to some extent, to his high levels of social stress, anxiety and attention problems. In addition, the parents and teachers observe high levels of withdrawal indicating less than positive perceptions of his experiences (Reynolds &amp; Kamphaus, 2004.)</td>
<td>Social Practices: “I feel pretty good when I am talking at home because my mum and dad listen to me”.</td>
<td>Social contexts: “…having Asperger’s or being gifted can make things harder I think, but the teachers don’t really get it”.</td>
</tr>
</tbody>
</table>

Table 8.17 indicates that Chris finds enjoyment a dominant influence in his daily experiences in the school and home context. The primary influences are from parents.
primarily because he prefers being with them and at home as he feels understood by them and has more autonomy to engage in his activities of choice (namely reading, gardening and computer gaming). This may also be an indicator of the developmental stage and that younger children are still focused on the parental influence compared to adolescents (Chan & Chan, 2013). For participation-in-practice, the impact of the parents, followed by the teacher and peers, is influential for enjoyment. All of these aspects become evident in the situated learning for Chris as enjoyment depends on the autonomy he has to pursue his activities of choice. Direct feedback from the teacher does not appear to influence his enjoyment but the subtle feedback from teacher and peers influences Chris’s perceptions of being misunderstood and isolated.

**Self-understanding**

For the purposes of this research, self-understanding is the level of insight and ability to articulate how Chris feels and understands himself; how he integrates his perceptions of his traits and characteristics (Assouline & Colengalo, 2006), and makes sense of who he is (Dillon, 2009). The influence of self-understanding is evident only in the instrument data. Table 8.18 summarises how self-understanding is evident in the data for participation-in-practice and situated learning aspects of the theory.

Table 8.18 above indicates that Chris has revealed conflicting results about *self-understanding* but that it has had no positive influence on his school experience, such as getting support for his giftedness and disability. His perceptions, as seen in the instrument data, can significantly differ from those around him, and with his own perceptions.
Table 8.19  Theme concordant with literature – Self-understanding

<table>
<thead>
<tr>
<th>research Number</th>
<th>issue</th>
<th>Data examples</th>
<th>legitimate-peripheral-participation/ participation-in-practice/ Situated learning</th>
</tr>
</thead>
<tbody>
<tr>
<td>One – social interactions: participation-in-practice</td>
<td>The PH2 indicates an average self-concept for popularity although Chris’s parents and both teachers report that he is withdrawn. However, all parties, including Chris, agree that he experiences high levels of anxiety. The teacher was more in agreement with Chris on the BASC-2 but did not agree with Chris’s perceptions of attention problems and did perceive a much higher level of depression.</td>
<td>Self-understanding is not evident for participation-in-practice in interview data. It might be inferred from this that participation-in-practice does not enhance or affect Chris’s self-understanding.</td>
<td></td>
</tr>
<tr>
<td>One – social interactions: Situated Learning</td>
<td>Chris does not reflect any degree of atypicality in the BASC-2 or PH2, except one item response he states that ‘I am different to other people. Chris’ parents believe he is highly atypical due to his behaviours at home but the teacher thinks he is fairly average in this scale. This may be as a result of the differences between the school and home contexts and his interactions therein.</td>
<td>Chris does not perceive that his giftedness or learning disabilities are of consequence at school, as he feels they are not provided for or supported and he feels isolated. He does reveal self-understanding as a result of recognition of his focus in areas of enjoyment, with certain people, and with calm and peaceful environments.</td>
<td></td>
</tr>
<tr>
<td>Two – social practices and contexts: Situated learning</td>
<td>Chris’s parents consider that he is hyperactive yet Chris believes he is in the average range and his teacher reveals that Chris is relatively passive in class. Chris is sufficiently cognizant of subtle behaviours toward him that make him feel unpopular and isolated. The conflicting data about his atypicality indicates that he may well be cognizant of his maladaptive understandings of about self (including depression, anxiety, social stress) but is attempting to mask the problems.</td>
<td>Due to the conflicting nature of the data generated by Chris it is possible that he has self-understanding but is attempting to mask his problems or as a result of his Asperger’s syndrome.</td>
<td></td>
</tr>
</tbody>
</table>

Psychological centrality

The concept of psychological centrality is based on the premise from identity theory that self-concept is organised into complex hierarchies; the more central that a component is to the person’s identity, the greater impact it will have on the self-concept (Breytspraak, 1984; Rosenberg, 1979; Stryker & Serpe, 1982). Stryker and Serpe (1982) state that, “the greater the commitment (to do or be something), the more salient will be the identity, and the greater will be the impact of performance on role-specific self-concept” (p. 208). Psychological centrality was explored looking for data where Chris expressed commitment to something and/or associated himself with a role-specific sense-of-self. Psychological centrality is apparent only in the interview data. Table 8.19 summarises how psychological centrality is evident in the interview data for participation-in-practice and situated learning aspects of the theory.
### Table 8.20  Theme concordant with literature – Psychological centrality

<table>
<thead>
<tr>
<th>research Number</th>
<th>issue</th>
<th>Data Examples</th>
<th>legitimate-peripheral-participation/ participation-in-practice/ Situated learning</th>
</tr>
</thead>
<tbody>
<tr>
<td>One – social interactions</td>
<td>“I love science, all the kids do, it’s fun learning about chemicals and stuff. I don’t know why, it’s just fun”.</td>
<td>Participation-in-practice: Psychological centrality is evident for participation-in-practice only with peers and is a majority influence. The quotation indicates Chris’s commitment to identifying himself as a person with potential to have friends and be a good science student which will contribute to his social and academic self-concept.</td>
<td></td>
</tr>
<tr>
<td>One – social interactions</td>
<td>“I love being at home because I can do fun stuff like experiments and read and stuff, I don’t have to talk to anyone”.</td>
<td>Situated Learning: Chris’s identifies with his enjoyable pursuits of experiments, reading and being alone.</td>
<td></td>
</tr>
<tr>
<td>Two – social practices and contexts</td>
<td>Social Practices: “I have lots of friends at school but have two main friends.” “… the kids are sometimes mean to me, they don’t say things or hit me, I just feel it and I know they don’t like me.”</td>
<td>Situated learning: Social practices indicate that at 3%, for psychological centrality, Chris feels isolated at school but attempts to mask this. Social contexts, as indicated in Figure 8.3 indicate that psychological centrality has a small influence. The quotation indicates that Chris perceives difficulties with how people may perceive him and his ability which might indicate low academic self-concept. He wants to be successful and his psychological centrality is aligned with a successful student.</td>
<td></td>
</tr>
<tr>
<td>Two – social practices and contexts</td>
<td>Social contexts: “…shy and don’t like looking stupid”.</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Table 8.19 above indicates Chris’s psychological centrality to be successful and accepted in school and his perceptions of feeling misunderstood and isolated at times which indicates his cognisance of social norms, despite his feeling like an outsider, and this has influences on self-concept, particularly academic self-concept, which manifest as withdrawal and anxiety.