Toward an Inclusive Gifted Spectrum:

Attachment, Maternal Depression, and Identification of Gifted Children

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Summary

This thesis by publication is presented in three parts. Part I provides the theoretical background to the thesis. The main research questions—whether there are associations between giftedness and attachment, and giftedness and maternal depression, and if so, what implications there are for the identification of gifted children—are explored through analysis of associated interdisciplinary literature. A part empirical, part conceptual, picture is sketched of possible associations between attachment, maternal depression, and giftedness. A proposal is made for *a gifted spectrum,* inclusive of children unable to fully display their ability because of learning disorders or emotional and behavioural difficulties, perhaps associated with attachment and maternal depression. Part II contains two exploratory studies. Associations between attachment, maternal depression, and giftedness were explored in a quantitative study with 80 children aged 7 to 10 years and their parents. Although the findings were not significant, there was a trend indicating an increased likelihood for gifted children to be securely attached. A follow-up qualitative study consisted of interviews with 11 mothers of gifted children. The interviews indicated that these children tended to be misunderstood by mothers due to their differentness, especially if mothers had reported maternal depression. Misunderstandings were then more likely with peers, were also experienced through inappropriate educational provisions, and these misunderstood children were more likely to have internalising problems. In Part III, Gagné's gifted model, referenced and implemented by Australian education departments, is analysed and critiqued in relation to its limited application to

gifted underachieving children. A proposed new model, *the inclusive gifted identification and progression model*, is then introduced. The model sets out pathways for all gifted children, including those with learning and other disorders. Parts I and II are drawn on in the last chapter to inform the discussion on educational implications, limitations, including those in the studies, and recommendations for future research.

Statement of Candidate

The work within these pages has not been submitted for a higher degree to any other university or institution. The references and quotations used within this work have been listed in the reference sections of each publication, as well as within these pages. I have formulated the original ideas and undertaken the majority of the writing for the publications. However, several other persons have contributed significantly to the work. Information about them, and about their contributions, is provided on the following two pages under the heading *Contributions by Co-Authors*.

Mimi Wellisch

Date: 24/2/2015

Contributions by Co-Authors

I am grateful to the following persons who made a significant contribution to the published work within this thesis:

Dr Jac Brown, Associate Professor in Psychology, Macquarie University, Australia, was my principal supervisor. Dr Brown discussed concepts, read and edited the publications co-authored by him on an ongoing basis, made suggestions about the structuring of articles, provided guidance and suggestions, restrained me from going off into other interesting and "essential" topics, and coached me in relation to the organisation and formulation of the qualitative data and models. He is therefore listed as co-author of the publications included in Chapters 4, 6, 7, 8, and 9.

Dr Alan Taylor, Senior Lecturer in Psychology, Macquarie University, Australia, was my associate supervisor. He contributed at least 50% of the statistical analysis to the quantitative work and helped with phrasing statistical concepts in the two publications describing the superseded quantitative findings, and is listed as co-author of those publications. Ros Knight, Director, Rod Power Psychology Clinic, Macquarie University, Australia, met with me, distributed invitations to potential participants, and kindly made the IQ and Child Behavior Checklist data available for the research. Data were collected for 5/80 of the final participants. Ms Knight was therefore listed as co-author of publications involving these participants in Chapter 6 and the two publications involving the superseded quantitative findings.

Lynn Berresford, Indigo Assessment & Counselling, New Zealand met with me, distributed invitations to potential participants, and collected the ASCQ data for New

Zealand participants. She also kindly made IQ data available for the research, with her team providing the majority of the IQ data. In total, her clinic collected data for 58/80 of the final participants. Ms Berresford was therefore listed as co-author of articles involving participants from her clinic. As these publications have been superseded by Chapter 5, they are not part of the thesis.

Lizette Campbell, of Lizette Campbell and Associates, kindly made IQ data available for the research. Data were collected for 3/80 of the final participants. Ms Campbell was therefore listed as co-author of the publication that included participants from her clinic. As this publication has been superseded by Chapter 5, it is not part of the thesis.

Anna Cohen, Kids & Co Clinical Psychology kindly made IQ and Child Behavior Checklist data available for the research. Data were collected for 3/80 of the final participants. Ms Cohen was therefore listed as co-author of the publication that included participants from her clinic. As this publication has been superseded by Chapter 5, it is not part of the thesis.

Dedication

To my father Wellisch Pál

who was denied the chance to fulfil his great potential

Acknowledgements

Although a thesis is attributed to one person only, many others contribute by their support. In my case, my supervisors, Associate Professor Jac Brown, Dr Alan Taylor, Associate Professor Joanne Mulligan, and Professor Peter Merrotsy have been instrumental in the thesis coming to fruition.

I am grateful to my principal supervisor Associate Professor Jac Brown, Psychology, Macquarie University, for taking me on as his student, believing in my ability and ideas, for his support and good humour, for encouraging me, and for providing valuable feedback. I also want to thank Associate Supervisor Dr Alan Taylor, Senior Lecturer, Psychology, Macquarie University, for his patient support and the many hours spent with me making helpful suggestions about data analysis, for his generosity in affording me the time to help re-analyse the data, and for supporting me through times when the data did not yield what I had hoped for.

More lately, the support of Associate Professor Joanne Mulligan has been invaluable, and I thank her for stepping into the associate supervisor role in Associate Professor Brown's absence. I want to thank Associate Professor Peter Merrotsy, then Senior Lecturer in Gifted and Talented Education, Faculty of The Professions, School of Education, University of New England, for being my adjunct supervisor for a period of two years and for generously sharing with me his knowledge on gifted children, for his feedback about journal articles, for the at-times fiery debates that helped me clarify my position in relation to Gagné's model and concepts, and for suggesting readings for the literature review.

I want to thank Lynn Berresford who stood by me, believing in my research, obliging my many requests, and taking an interest in the research. I also owe a big thanks to her conscientious and helpful secretary, Jeanette Dumper, whose help was invaluable in carrying out the research.

The co-editing of a special volume of the e-journal *Talent Development & Excellence* proved to be a very instructive experience, for which I am grateful. It would not have taken place without the backing of my co-editor Marion Porath, Professor Emerita, Department of Educational & Counselling Psychology, and Special Education, Faculty of Education, University of British Columbia, or without the offer made to me by Editor-In-Chief Albert Ziegler, who is also Chair Professor of Educational Psychology, Giftedness, and Research on Excellence at the University of Erlangen-Nuremberg.

I am very grateful for Robert Trevethan's highly professional, responsive, and conscientious work in the paid editing of the thesis during the final weeks prior to printing. A special thank you also goes to my daughter Michelle Reiner for her earlier editing work, and to Professor Emerita Marion Porath for an initial check through the references.

Finally, I want to thank my long-suffering husband, Viggo Knackstredt, who was my captive audience, and who over time developed a distinct dislike for the "a"-word (attachment). Viggo also made suggestions, helped formulate models, worked out page layouts, and most of all, gave me space and support to pursue my unquenchable thirst to know still more.

Researcher Background

The road to my PhD studies has been long and winding, a journey that clearly explains the connections I have made between giftedness and attachment. Midway through a 25-year early childhood career as a preschool teacher I decided to upgrade my teaching diploma to an early childhood teaching degree. It was during this time that I became aware of the existence of gifted children through an elective course offering. Once introduced to the concept of giftedness, there was no going back. At the time, I was working on the North Coast of NSW, Australia, and implemented gifted programs for two small groups of advanced and gifted children at Nambucca Heads Preschool in 1994–1995. A total of 15 children were included in the groups. These children were selected upon observations and checklists demonstrating advanced development. The groups were formed around two identified gifted children, and the pilot groups ran for a 5-week period. The curriculum content was based on the children's identified interests, which were extended, and included introduction to word recognition. I wrote an article about the introduction of gifted groups, and the article was published in an early childhood journal (see Appendix A). Some years later I also introduced early reading to preschoolers in the country town of Dorrigo with the blessing of the preschool management committee. This innovation was also written up and published in an early childhood journal (see Appendix A).

My interest in giftedness led to a master's degree with a research component in which I examined early childhood teacher awareness and educational offerings to young gifted children. Peer reviewed articles were published about the pilot and

the final research outcomes (see Appendix A). While studying giftedness in Australia, I had noted the lack of funding and information, and identified a need for a gifted consultancy. I needed a postgraduate psychology degree in order to administer IQ tests to better identify intellectually gifted children, and commenced studying once again to become a registered psychologist.

By this time I had left face-to-face teaching and worked as a children's services adviser for the Department of Community Services (DoCS) in NSW, Australia. My work often involved providing assistance to child protection case workers who needed to find a place for children at risk of abuse and neglect in a children's service. A departmental psychologist who occasionally mentored me in my psychology studies recommended a book on attachment, a topic I was already familiar with from my early childhood studies. It was at this point that the topics of giftedness and attachment intersected and the research area broadened in my mind. Later, while I was working on a book about gifted children I attempted to provide a simple explanation of giftedness and its variety of manifestations through the use of Gagné's 2003 version of his differentiated model of giftedness and talent (DMGT), a model currently used by all education departments in Australian states and territories. A friend, Bruce Champion, suggested that I enrol in PhD studies and pursue investigation into an idea that had occurred to me, namely that there was a need for a model that could also accommodate gifted children who had learning and psychological disorders in a spectrum of giftedness. Around this time I took up my previous membership of the NSW Association for Gifted and Talented Children, and have held the positions of treasurer, vice-president, and president. My PhD studies followed, and a number

of articles and two book chapters have since been published, although the book for parents is still waiting to be completed.

The purpose of this thesis was to add to the knowledgebase. Having raised the possible important barriers experienced by some gifted children who have learning and other disorders has, I believe, added a new little cog to the wheels of research and knowledge that may enable all gifted children to achieve commensurate with their abilities. I may not have arrived at a model of a broader gifted spectrum of giftedness—yet. More research with this in mind may well be my next endeavour.

Mimi Wellisch

January, 2015

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List Of Publications That Form Part of This Thesis

Publication 1: Wellisch, M. (2 010). Communicating love or fear: The ro le of attachment styles in pathways to giftedness. *Roeper Review, 32*, 116–126.

Publication 2: Wellisch, M., & Brown, J. (2009). The adjustment of gifted children: Is asynchrony the only reason for their problems? In D. Wood (Ed.), *The gifted challenge: Challenging the gifted* (pp. 24–31). Merrylands, Australia: Association for Gifted and Talented Children Inc.

Publication 3: Wellisch, M., Brown, J., & Knight, R. (2012). Gifted and misunderstood: Mothers' narratives of their gifted children's socio-emotional adjustment and educational challenges. *Australasian Journal of Gifted Education, 21*(2), 5–18.

Publication 4: Wellisch, M., & Brown, J. (2013). Many faces of a gifted personality: Characteristics along a complex gifted spectrum. *Talent Development & Excellence, 5*(2), 43–58.

Publication 5: Wellisch, M., & Brown, J. (2011). Where are the under-achievers in the DMGT's academic talent development? *Talent Development & Excellence, 3*(1), 115–117.

Publication 6: Wellisch, M., & Brown, J. (2012). An integrated identification and intervention model for intellectually gifted children. *Journal of Advanced Academics, 23*, 144–167.

Publication 7: Wellisch, M., & Porath, M. (2013). The elusive search for the gifted personality: Guest editorial. *Talent Development & Excellence, 5*(2), 1–3.

PART I

THE GIFTED SPECTRUM:

INTRODUCTION,

ORIENTATION TO THE LITERATURE,

AND THEORETICAL APPROACH

Chapter 1

Introduction

What a child can be, the child must be.[1]

There has been much theorising, research, and writing centered on human motivation, human development, human purpose, and the means by which humans can best attain the ultimate treasure, the holy grail of happiness (Csikszentmihalyi, 1990; Maslow 1943, 1954; Seligman, 2002). The main theme running through many of these ideas is that humans have an inborn motivation to be fully self-expressed, that true happiness can be achieved through the full expression of a special life purpose or gift, and that this must then be used in the service of others. Understandably, therefore, the focus of child development has been on factors that facilitate optimum conditions for, and factors that detract from, the development of children's full potential. A similar focus also arises in the development of academic giftedness, specifically the factors that may prevent its full expression and how these may be remedied.

A major influence can be found in Bowlby's attachment theory (1969), which arose from the work of Maslow and other developmental psychologists (Bretherton, 1992). One of these was Harry Harlow (1958), who discovered that young rhesus monkeys would prefer surrogate clothed wire-mothers to those without the cloth. Bowlby went a step further and defined the attachment relationship in relation not only to the babies' comfort and security needs but also to the mothers' responses. Although a few articles have been published on the related topic of high IQ and attachment in attachment literature (e.g., Karrass & Braungart-Rieker, 2004; Van IJsendoorn & Van Vliet-Visser, 1988), and although the socio-emotional connections with giftedness had previously been made, no research was found in the gifted literature on the

[1] Inspired by Maslow's (1954) famous statement, "What a man can be, he must be" (p. 91).

association between attachment and giftedness. An early introduction to the core concepts in this thesis is necessary for the orientation of the reader.

1.1 Rationale

There is little research-based evidence available on ways in which attachment and maternal depression may affect giftedness in children, although research on gifted children and separate research on the implications of maternal depression and attachment on children's development is otherwise plentiful. This relative lack of information about any connection between attachment, maternal depression, and giftedness may be due to at least two issues: the widespread belief that most, if not all, problems of gifted children are explained by giftedness itself, and a general societal discomfort with giftedness. The latter is a concept that appears to be difficult to legitimise in a society based almost entirely on an extreme form of the egalitarian ethos on the one hand (Gross, 2003), and respect for extreme individualism on the other (Renzulli, 2005). A possible third, as yet unarticulated, assumption explaining the lack of research in this area may comprise the notion that these children, because they are gifted, must have had a supportive home environment unmarred by attachment issues or maternal depression. There is therefore a gap in the literature and research that will be explored in this thesis. It is acknowledged, however, that in contrast to infant and adult attachment, such exploration is made difficult because few attachment measures are currently available for 7–10 year olds with the exception of relatively inadequate self-report measures.

1.2 Definitions

1.2.1 Definition of attachment

Psychologist John Bowlby (1969) was the first to observe the attachment relationship between baby and mother, which he likened to a bio-evolutionary instinct. He noted that

babies and young children sought out their mothers as safe havens when they felt threatened or uncomfortable. Depending on the mother's typical response, children would then develop specific styles of attachment, including secure and insecure attachment. These, and other attachment styles and issues, are reviewed in depth in Chapter 3.

1.2.2 Definition of giftedness

Whereas our knowledge about attachment has benefited from scientifically rigorous studies, research about giftedness reflects the fragmentation that characterises the field (Ziegler & Raul, 2000). Despite much effort, the concept of giftedness has been difficult to define, quantify, and harness into scientifically coherent predictability (Mayer, 2005).

Giftedness can be broadly defined as a genetically inherited potential or the ability to reach high levels of achievement in a variety of pursuits, preceded by early characteristic signs (Howe, Davidson, & Sloboda, 1998). An alternative definition of giftedness has therefore been suggested in Chapter 2 (Section 2.10), and quantification of the term, for the purpose of research for this thesis, can be found under *The criterion for a gifted IQ score* in Chapter 5 (Section 5.5.1.1).

1.2.3 Definition of maternal depression

The terms maternal depression and postnatal depression are used interchangeably in the literature, and refer to a woman with symptoms of depression associated with becoming a mother. There are a number of different depressive disorders. The *Diagnostic and Statistical Manual of Mental Disorders* (DSM-5; American Psychiatric Association, 2013) defines a major depressive episode as the onset and presence of at least five symptoms over a two-week

period. These symptoms may include depressed mood; loss of interest or pleasure; significant weight loss or weight gain; decrease or increase in appetite; insomnia or hypersomnia; physical agitation or sudden lack of activity; fatigue or loss of energy; feelings of worthlessness or guilt, difficulty in thinking, concentrating, or making decisions; recurrent thoughts of death and suicidal ideation or attempt; and general impairment. The topic of maternal depression is specifically addressed in Chapter 6 on pages 147-152, and review of the literature is included in the publications.

1.3 Theoretical approach

If giftedness does arise from an interaction of heritability with pre and postnatal environmental influences, as agreed by most experts, then the attachment process during a time of rapid brain growth may represent the "eye of the needle" to giftedness. This process may also help explain at least part of the spectrum of giftedness, initially defined here as a range in levels and types of giftedness, including giftedness with co-occurring disorders and disabilities. This spectrum of giftedness can therefore comprise the joint outcomes of genetic heritage and a number of other factors. These would include the environmental presence or absence of "use-dependent" overdevelopment of the right brain due to neglect or abuse, often as a result of maternal depression (Cicchetti, Rogosch & Toth, 1998; Gunnar & Quevedo, 2006; Johnson & Flake, 2007; Perry & Szalavitz, 2006; Winner, 1998, 2000), as outlined in Chapter 2 and discussed in more depth in Chapter 3. Maternal depression has also been associated with attachment problems in children (Prior & Glaser, 2006). Such environmental influences have been associated with the overall development of a child, for example socio-emotional adjustment, self-regulation, attention (Prior & Glaser, 2006), and other problems that may lead to underachievement. Underachievement has also been identified in gifted children, and associated with learning disorders (Commonwealth Government Publishing

Service; 2001 Munro, 2002) through, for example, problems with learning, knowledge acquisition, retention, and speed of recall. Based on these and other previous findings, I am proposing that there may be an association between problems with learning, knowledge acquisition, retention and speed of recall, and emotional problems in gifted insecurely attached gifted children. I am proposing that these problems may affect IQ and learning style and manifest in underachievement, and that gifted insecurely attached children may be at risk of never reaching their potential. In light of findings that implicate right-brain development that may in turn influence giftedness, it is argued here that a model is called for that differs from models that are based on the current status of a child's ability to achieve (Gagné, 2011, 2013; Renzulli, 1986). This is because some potentially gifted children may not be able to reach their potential without therapeutic support, and because most models are so broad that they limit meaningful interpretation and educational application (Gagné, 2011, 2013; Heller, Perleth, & Lim, 2005; Ziegler, 2005) to assist the most vulnerable gifted children.

1.4 Aims of the thesis

The aims of this thesis are to fill the research gap identified in the literature and raise the issue of possible associations between giftedness, attachment, and maternal depression; to propose attachment and maternal depression as key factors in influencing the development and identification of gifted children; and to introduce the concept of a broader gifted spectrum. The main research question and four contributing questions are presented below.

1.5 Research questions

One main research question and four contributing questions are posed in this thesis. The main research question is whether there are associations between giftedness and attachment, and

between giftedness and maternal depression, and if so, what educational and other strategies may be useful in addressing any resulting socio-emotional and learning problems.

1.5.1 Contributing question 1

Are gifted children more likely to be securely attached, and when securely attached are they less likely to have internalising and externalising problems (and therefore be better adjusted), have fewer learning disorders, and have higher verbal comprehension and working memory scores in comparison with gifted insecurely attached children?[2]

1.5.2 Contributing question 2

Do gifted children with mothers who had depression have lower verbal comprehension and working memory scores, higher internalising and externalising scores, and more learning disorders in comparison with gifted children whose mothers did not have depression?

1.5.3 Contributing question 3

Are gifted children more likely to have learning disorders and internalising and externalising problems, and to have lower working memory scores and lower full scale IQ scores, if their perceptual reasoning IQ scores are at least 10 points higher than their verbal comprehension scores?[3]

1.5.4 Contributing question 4

How can an association between attachment styles, maternal depression, gifted identification, and underachievement best be reflected in a new approach and a novel model of giftedness?

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[2] It should be noted that as stated this assumes a causal effect. However, while this question legitimately gives rise to the research, the research design could not establish causality. Nevertheless this underlying model legitimately gave rise to the research.

[3] This is a relatively arbitrary figure, further explained in Section 5.3.1.2.

1.6 Distinct contribution of the thesis

As mentioned, there has been no previous research on the association between attachment and giftedness. Likewise, no research was found on the association between attachment, maternal depression, and giftedness in the literature. A suggestion is made in this thesis for a new view that attachment and maternal depression may affect giftedness. I propose a gifted spectrum due to the range in levels and types of giftedness, and suggest an alternative to traditional explanations of such variations. This, in turn, gives rise to the recommendation for the inclusion of children with gifted potential in identification procedures and program provision. The recommendation is based on the argument that some gifted children have disorders that may alter their gifted characteristics and thus hinder their identification as being gifted. Having raised new questions and suggested a new approach, the analysis of associated interdisciplinary literature and the two small-scale exploratory research projects that also form part of this dissertation provide the foundation for further research.

1.7 Thesis structure

This thesis is presented in three parts. The first of these is the exploration of the research questions through a theoretical approach. The second part contains descriptions of two separate exploratory studies designed to test the suggested associations between attachment, maternal depression, and giftedness. The focus of the third part is the identification and progression of gifted children with problems. As a *thesis by publication*, this thesis includes a total of five published articles, one book chapter, and one editorial. Six of these publications were co-authored, as already outlined in the *Statement of Candidate* (p. vii) and *Contributions by Co-Authors* (pp. x-xi) , and are distributed across all three parts.

Chapter 1

Because of its nature as a part-theoretical thesis by publication, the review of the literature spans all three parts of the thesis. A description of this literature review is provided immediately below within Section 1.7.1. This is followed by a description of each of the three parts, including their individual chapters and the publications relevant to them.

1.7.1 Review of the literature

The literature review for and within each publication continued as the thesis progressed, and as was deemed appropriate for the purpose of individual publications.

1.7.1.1 Organisation of the literature review

Although some articles on the related topic of high IQ and attachment appear in the literature about attachment (Karrass & Braungart-Rieker, 2004; Van IJzendoorn & Van Vliet-Visser, 1988), within the literature about giftedness, attachment is a new consideration. The reader will therefore note some repetition in both the published work and in the unpublished Chapter 5, particularly in relation to attachment. While this repetition does not add to the content of the thesis, it was important to introduce attachment theory (Bowlby, 1969) for readers of the publications, published in journals, and a book about giftedness, who might have had only limited knowledge about the subject of attachment.

1.7.1.2 Scope and location of the literature review

The literature reviewed for each publication was limited to the focus of each individual article and the word limit imposed by the publications. Nevertheless, a wide range of literature has been reviewed in a number of disciplines. These disciplines include intelligence (Lohman, 2006; Sternberg, 2004; Sternberg & Davidson, 2005), affect (Dabrowski, 1972; Piechowski, 2003; Silverman, 1993), motivation (Carver & Scheier, 1998; Csikszentmihalyi, 1990;

Maslow, 1970; Seligman, 2002), giftedness (Frasier & Passow, 1994; Niehart & Betts, 2010; Porter, 2005; Rogers & Silverman, 1997), attachment (Bowlby, 1969; Perry & Szalavitz, 2006; Prior & Glaser, 2006), parenting (Csikszentmihaly & Csikszentmihaly, 1993; Morawska & Sanders, 2009; Piechowski, 1997; Popper, Mayseless, & Castelnovo, 2000; West, Mathews, & Kerns, 2013), brain research (Cicchetti, Rogosch, & Toth, 2011; Joseph, 1999; Perry, 1995; Schiller, 2000), and education (Adelman & Taylor, 2000; Commonwealth of Australia, 2001; Renzulli & Park, 2002).

New research undertaken after publication was naturally not included in published articles. Therefore, and in order to spare the reader from an additional literature review chapter, I have augmented the publications with relevant literature and definitions not previously included. This was done in preambles and reflective postscripts of relevant chapters. The purpose of this present section, therefore, is to orient the reader to the literature review and where those preambles and postscripts are situated within the thesis.

1.7.1.3 Main topics of the literature review

The main topics of the literature review relate directly to the major themes of giftedness, attachment, and maternal depression and the possible associations between them. Although the themes naturally merge within individual chapters as the argument of their proposed interactions and associations is advanced, each chapter has a distinct focus relating to the key topics and the aims of the thesis.

1.7.1.3.1 Giftedness

The literature review about giftedness commences in Chapter 2, although it is the specific focus of Chapter 4. Chapter 4 presents a synthesis of some fundamental issues, with

additional specific gifted issues addressed in Chapters 7, 8 and 9. The following topics are reviewed in Chapter 4: the nature of giftedness, “gifts” and/or “talents”, essential factors leading to giftedness, whether giftedness is ongoing, whether giftedness needs to be demonstrated, whether natural abilities are necessary for the development of expertise, how giftedness should be measured, and how gifted children should be identified. Chapter 7 reviews gifted characteristics. The preamble to Chapter 8 includes a review of Gagné’s differentiated model of giftedness and talent (DMGT; Gagné, 1985, 2009, 2013), which is the model of choice used in Australian schools. The preamble to Chapter 9 includes reviews about what makes a good gifted model, the role of schools in socio-emotional development, whether there are gifted domains (and, if so, what domains should be included in a model), what important factors would be necessary in an inclusive gifted model, how gifted children should be educated, and differentiation of the curriculum.

1.7.1.3.2 Attachment

The focus in Chapter 3 is attachment theory (Bowlby, 1969), the ways in which it relates to maternal depression, and the possible association with giftedness. The literature review in the preamble is an introductory addition to literature reviewed in the published article that follows. The preamble includes a literature review regarding responsive caregiving, attachment, internalising and externalising problems, attachment and learning disorders, and learning disorders and verbal-performance IQ discrepancies.

1.7.1.3.3 Maternal depression

The literature review of maternal depression occurs in Chapters 3, 4, and 5. Because the literature review of maternal depression is addressed in those chapters, the focus of the preamble to Chapter 6 is to examine additional literature about maternal depression not

reviewed in previous chapters, as well as the review of more recent research. The topics reviewed in Chapter 6 include the association of timing of depression with children's development as well as associations between prenatal and postnatal depression, children's executive functioning, cognitive development, and other factors.

1.7.2 Part I – The gifted spectrum: Introduction, orientation to the literature, and theoretical approach

The focus of Part I of the thesis is the exploration of the research question through a theoretical approach. A dearth of studies on the association between attachment, maternal depression, and giftedness is addressed through a literature review on the socio-emotional development of gifted children, attachment, maternal depression, and their possible links with giftedness. Due to the absence of previous literature regarding such connections, a literature review of relevant associated topics, from less direct research in a number of different disciplines, was undertaken. The analysis of the literature drew evidence from a variety of disciplines to sketch a partly empirical, partly conceptual, picture of the way attachment may play a role in the development of, or in preventing the development of, giftedness.

1.7. 2.1 Chapter 1 – Introduction

Chapter 1 provides the backdrop to the thesis including the rationale, aims, research question, definitions, and the structure of the thesis.

1.7.2.2 Chapter 2 – Theoretical perspective

Chapter 2 is dedicated to a new proposed theoretical approach to understanding giftedness, *the gifted spectrum*. This new approach necessitates new definitions and a more inclusive approach to giftedness. The literature review and support for this new approach is considered

from a number of perspectives in subsequent chapters and is partly investigated in Part II of the thesis.

1.7.2.3 Chapter 3 □ Communicating love or fear: The role of attachment styles in pathways to giftedness

Chapter 3 commences with a preamble, followed by a peer reviewed article. The preamble provides an introductory literature review, expanded upon more broadly in the article, with a focus on the key topics of attachment, maternal depression, and giftedness, as well as relevant associated topics. The article also describes a quasi-experiment involving a hypothetical gifted child with early traumatic experiences, and the possible outcomes of his contrived IQ test. The experimental IQ results factor in previous research outcomes, described in the literature in specific areas of cognitive functions following trauma. The chapter closes with a reflective postscript.

Publication 1: Wellisch, M. (2010). Communicating love or fear: The role of attachment styles in pathways to giftedness. *Roeper Review, 32*, 116–126.

1.7.2.4 Chapter 4 □ Giftedness: An introduction to its many complexities

A continuation of the literature review and theoretical argument is provided in Chapter 4, examining a different perspective on gifted literature. The focus is on long-held beliefs about gifted children's socio-emotional adjustment, and possible alternative explanations for their problems and socio-emotional development are explored. The chapter includes a preamble, followed by a peer reviewed published book chapter, and concludes with a reflective postscript. This concludes Part I of the thesis.

Publication 2: Wellisch, M., & Brown, J. (2009). The adju stment of gi fted children: Is asynchrony the only reason for their problems? In D. Wood (Ed.), *The gifted challenge: Challenging the gifted* (pp. 24–31). Merrylands, Australia: Association for Gifted and Talented Children Inc.

1.7.3 Part II Exploratory studies on giftedness, attachment, and maternal depression

Part II of the thesis is comprised of two chapters describing two separate exploratory studies that were designed to test for consistency with a gifted spectrum approach. These studies address the contributing research questions 1, 2, and 3. A quantitative exploratory study with a focus on children is described in Chapter 5, and a qualitative study involving 11 mothers of the participating gifted children from the initial study is described in Chapter 6.

1.7.3.1 Chapter 5 –The attachment styles of gifted children

This chapter supersedes two previous publications that arose from initial analyses of the data (Wellisch, Brown, Taylor, Knight, & Berresford, 2011; Wellisch, Brown, Taylor, Knight, Berresford, Campbell, & Cohen, 2011). The research data presented in Chapter 5 follows a realignment of the research questions and hypotheses to ensure consistency throughout the thesis. A preamble provides the background to the analysis, followed by a report on the exploratory quantitative study involving 80 children, their attachment styles, IQ scores, and disorders. The chapter concludes with a reflective postscript about implications for a gifted spectrum approach in light of the research findings.

1.7.3.2 Chapter 6 – Potential for being misunderstood: A gifted disadvantage

This chapter commences with a preamble followed by a review of maternal depression and children's development. An account of a qualitative study follows in a peer reviewed journal article about interview data regarding the remembered experiences of 11 mothers in relation

to parenting their gifted children. The chapter concludes with a reflective postscript on implications for a gifted spectrum approach in light of the results of the qualitative study. This study completes the suite of exploratory studies designed to test particular aspects of the proposed new gifted spectrum approach, and the chapter concludes Part II of the thesis.

Publication 3: Wellisch, M., Brown, J., & Knight, R. (2012). Gifted and misunderstood: Mothers' narratives of their gifted children's socio-emotional adjustment and educational challenges. *Australasian Journal of Gifted Education, 21*(2), 5–18.

1.7.4 Part III – The assessment, identification, and education of the gifted

Part III of the thesis consists of four chapters and addresses the fourth contributing research question. The aims of Part III are to situate the proposed gifted spectrum approach within models of giftedness, draw on Parts I and II, and explore responsive strategies to the needs of all gifted children, including those with disorders.

1.7.4.1 Chapter 7 – The characteristics of gifted children.

A preamble to Chapter 7 precedes a peer reviewed journal article. Literature on gifted types and characteristics is reviewed in the article, and whether and how gifted children can be classified and readily identified is also examined. Previously unpublished findings of the earlier qualitative study are also discussed. A spectrum of gifted characteristics is suggested, with "basic" characteristics of gifted children and their possible changes when associated with DSM-5 disorders. A reflective postscript concludes the chapter. A second publication related to the article, a guest editorial for the volume in which the article appears, is included in Chapter 10.

Publication 4: Wellisch, M., & Brown, J. (2013). Many faces of a gifted personality: Characteristics along a complex gifted spectrum. *Talent Development & Excellence, 5*(2), 43–58.

1.7.4.2 Chapter 8 – The need for an alternative gifted model

The preamble in this chapter provides an analysis and review of Gagné's (2009) updated differentiated model of giftedness and talent (DMGT), and its usefulness for gifted underachievers is considered and discussed. The review of this particular model of giftedness is significant to the aim of the thesis because the DMGT is the currently accepted model of giftedness used throughout Australian education systems. This analysis and review is followed by a published commentary about a target article written by Gagné. Problems for underachievers are raised in the commentary and recommendations are made for an alternative pathway for these children.

Publication 5: Wellisch, M., & Brown, J. (2011). Where are the under-achievers in the DMGT's academic talent development? *Talent Development & Excellence, 3*(1), 115–117.

1.7.4.3 Chapter 9 – An integrated identification and intervention model for intellectually gifted children

Chapter 9 commences with a preamble that is followed by a discussion about the role of schools in the identification of socio-emotional problems presenting barriers to achievement for gifted children. Discussion and analysis in this chapter includes important factors that should be considered in the development and application of an inclusive model of giftedness. An exploration of the need for a new model follows in a peer reviewed journal article. A

model is then proposed involving the assessment and identification of children who are gifted, and appropriate pathways to educational and therapeutic programs. The model includes suggestions of the importance of characteristics as part of the identification process, addressed earlier in Chapter 7. A reflective postscript concludes the chapter.

Publication 6: Wellisch, M., & Brown, J. (2012). An integrated identification and intervention model for intellectually gifted children. *Journal of Advanced Academics, 23*, 144–167.

1.7.4.4 Chapter 10 – Conclusions and implications

This final chapter draws together the three parts of the thesis. The chapter outlines limitations of the thesis (including the limitations of the studies), looks at future implications for educational and therapeutic provisions, and proposes recommendations for further research.

Publication 7: Wellisch, M., & Porath, M. (2013). The elusive search for the gifted personality: Guest editorial. *Talent Development & Excellence, 5*(2), 1–3.

Chapter 2

Theoretical Approach

In this chapter I propose a new theoretical approach to understanding giftedness. An introduction to the proposal is followed by six related aspects supporting the approach. These are:

- Attachment, giftedness, and environmental factors
- Intelligence and adversity
- Cognitive characteristics, non-cognitive performance, and learning characteristics
- Specific learning disorders
- A proposed new definition of giftedness
- The gifted spectrum.

The literature review included in the following chapters, particularly in Chapters 3 and 4, provides further discussion of these related aspects to support the proposed new approach, the gifted spectrum. A new definition of giftedness and explication of what may constitute a gifted spectrum completes this chapter.

2.1 An alternative theoretical approach to giftedness: The gifted spectrum

Current theories and models of giftedness, introduced in Section 1.2.2, define giftedness as a genetically inherited potential or the ability to reach high levels of achievement in a variety of pursuits, preceded by early characteristic signs. These theories and models are generally aimed at the development of giftedness through educational learning opportunities. Such opportunities, where available, are intended for children with high achievement, often excluding potentially gifted children whose problems prevent high achievement. Failure to

identify and develop the potential of these children is a loss to society (Robinson, 2004). A new theoretical approach is therefore proposed that includes all gifted children, including those who are potentially gifted and who may have been affected by heritable problems or environmental trauma.

As will be discussed in more depth in Chapter 3, the developing brain of a newborn child takes place within a complex interaction of simultaneous genetic and environmental influences and events that include the cellular and molecular levels (Stiles & Jernigan, 2010). During this time, the brain needs specific repeated experiences to strengthen synaptic connections—specialised junctions between two cells—in various parts of the brain, especially during particular sensitive times of development (Perry, 2002; Perry & Szalavitz, 2006). One of these repeated experiences may be the availability and responsiveness of the primary caregiver, a subject associated with attachment (Prior & Glaser, 2006).

Attachment, already defined in Section 1.2, involves secure and insecure attachment styles as well as disorganised attachment. Insecure attachment has been classified into two distinct groupings, ambivalent/resistant (anxious) attachment, and avoidant attachment. Maternal depression, which has been associated with children's insecure attachment styles, can occur in expectant mothers and following the birth of a child. Maternal depression was first defined in Section 1.2, and involves the onset and presence of several debilitating symptoms consistently experienced over a specific period of time. The associated effects of maternal depression are discussed in Chapter 3 as an important influence in insecure attachment, and Chapter 6 explores its influence in children's

socio-emotional adjustment. Maternal depression is also explored in publications 1, 2, 3, 4, and 6, and is further discussed in chapters 5, 7, 8, and 10.

2.2 Attachment and giftedness: Environmental factors

A broad range of studies support the view that many children in the general population, which would include gifted children, fail to become securely attached (Prior & Glaser, 2006). The establishment of secure attachment may be adversely affected by difficulties in parenting or disrupted by maternal depression or other trauma, as described in Chapter 3 (Wellisch, 2010).The effects on children vary according to a number of factors including age of child and length, severity, and frequency of exposure to adverse events (Perry, 2002). Some educators and experts in giftedness would consider maternal depression and attachment to come under Gagné's DMGT model's environmental catalysts.

2.3 Intelligence and adversity

We know that individual children's resilience can vary in adverse circumstances. For example, not all children who are exposed to early adversity have attachment problems (Prior & Glaser, 2006). This raises the question whether gifted children would be affected in similar ways to children who are not gifted. The literature across a number of disciplines suggests that intelligence may be a protective factor against early adversity (Fergusson & Lunskey, 1996; Gunnar, 1998; Johnson & Flake, 2007; Perry & Szalavitz, 2006). If this is the case we could expect that some gifted children who are exposed to early adverse experiences may not be securely attached, yet may also be less visibly affected by related problems than are children who are not gifted.

Chapter 2

It is proposed here and in more detail in Section 2.7 and in Chapter 3 that some learning disorders associated with working memory deficits (Swanson & Siegel, 2001), may develop through missed "experience dependent" opportunities during critical periods of development (Perry & Szalavitz, 2006). Attachment security may also be such a key "experience expectant" opportunity (Greenough, Black, & Wallace, 1987). If attachment is insecure or is disrupted, perhaps through maternal depression, the outcome of such early traumatic events can be emotional maladjustment and unevenness of development, a topic developed further in Section 2.6. The right hemisphere of the brain is involved in frequent and automatic activation of the flight-or-flight mechanism (Cicchetti et al., 1998; Gunnar & Quevedo, 2006; Johnson & Flake, 2007; Perry & Szalavitz, 2006) as a result of trauma. Enhanced right hemisphere brain activation and development may become the default brain 'setting' as a result of frequent traumatic events. Similar enhanced right hemisphere activation and development has also been proposed in the case of children who are gifted in mathematics, music, and art, but who often have language-related learning disorders (Winner, 1998, 2000).

Problems with attachment due to adverse experiences may contribute to negative feeling states and prevent healthy emotional adjustment, inhibiting the working memory and executive functions of the brain (Siegel, 2001; Swanson & Siegel, 2001), a subject developed further in Section 2.5. While there is evidence of the association between trauma and IQ and trauma and adverse socio-emotional and other developmental issues (Joseph, 1999; Perry, 2002), there have been no such specific studies involving samples of children identified as gifted, who may have made up part of the populations of previous research (Prior & Glaser, 2006). As there has been no research undertaken on the effects of such trauma on gifted children, I suggest in the following bullet points (which relate directly to each contributing

research question set out in Section 1.5) that early attachment problems involving potentially gifted children may:

- Negatively influence the development of their intellectual capacity as measured by IQ scores
- Divert or channel potential intellectual and all-around giftedness into other gifted forms such as artistic giftedness
- Decrease full scale, verbal and working memory IQ subtest index scores, and result in larger verbal and performance index score discrepancies scores (contributing research questions 1, 2 and 3)
- Have reduced connectivity between the limbic system (the 'emotional brain') and the frontal cortex, which may affect ability to plan, affect attention, enhance negative emotions, and reduce ability to self-regulate (contributing research questions 1, 2 and 3)
- Influence internalising and externalising problems
- Possibly contribute to learning disabilities that prevent the full expression of intellectual giftedness by slowing down or prevent effective learning and knowledge acquisition and retrieval (contributing research questions 1, 2, and 3)
- Affect children's ability and motivation to achieve and influence access to appropriate educational programs and opportunities (contributing research question 4).

In summary, I propose that insecurely attached gifted children, particularly with the avoidant attachment style described in Chapter 3, may be less likely to find their gifts within intellectual pursuits, more likely to be maladjusted with a number of possible disorders,

would find it more difficult to learn and acquire knowledge, be disorganized, have deficits in attention, and be more likely to become underachievers, to remain unidentified, and without a pathway in existing gifted models. These suggestions would indicate that not only does intellectual giftedness consist of levels of giftedness, but that giftedness would be displayed across a gifted spectrum.

2.4 Secure attachment and the authentically gifted

The spectrum would include the authentically gifted child. The term *authentic giftedness* is proposed for a securely attached gifted child—a child who may have been identified through assessment, observation of gifted characteristics, advanced development, or outstanding achievement, and who has no apparent problems or disorders. As with a previous term for autism, namely classical autism (Wallace, 2008), that denoted autism without other comorbid disorders, the term *authentic* is used here to indicate that the child's intellectual potential and achievements are free of hindrances, the only limitations being level of heritable intellectual potential and environmental opportunities. Accordingly, authentically gifted children can be described as having recognizable characteristics, observable from the early childhood years onwards, that indicate they are developmentally advanced within what Feldhusen (1993) has categorised as mild, moderate, high, exceptional, and profound levels of giftedness. These children are likely to be socially and emotionally well adjusted, already highly achieving compared with similarly aged others, and to have potential for substantial further achievements in verbal, intellectual, and leadership areas of endeavour. [1]

[1] Note that creativity is not included here. The omission is based on the research of others, for example Csikszentmihalyi and Csikszentmihalyi (1993)'s two types of gifted individuals, one type identified as highly intelligent, effective, and successful, while the other was identified as highly creative. This is more fully discussed in Chapter 7.

Chapter 2

The literature in Chapters 3 and 4 describes similarities in characteristics seen in children with secure attachment (Prior & Glaser, 2006) and in children who are gifted (Rogers & Silverman, 1997), pointing to a possible interrelatedness. For example, securely attached children are more likely to be emotionally intelligent (Schore, 2001; Weinfield, Sroufe, England, & Carlson, 1999), have advanced language development (Van IJzendoorn, Dijkstra, & Bus, 1995), and demonstrate advanced abilities (Prior & Glaser, 2006). Such advanced abilities and learning efficiencies of authentically gifted children have frequently been observed (Winner, 2000). Given the above, authentically gifted children may well be more likely to be securely attached than children who are not identified as gifted.

2.5 Attachment problems and giftedness: Cognitive characteristics

The language-related learning disorders, such as dyslexia, of some children who are gifted in mathematics, music and art were already outlined in Section 2.3. These children may be similar to those observed by Silverman, with verbal IQs lower than otherwise expected for gifted children, while their performance IQs may be much higher in comparison (Silverman, 2002). School performance may be unremarkable or inconsistent due emotional and social problems, lack of motivation, or the presence of learning disorders (Brody & Mills, 1997). The gifted child may have developed strategies to mask the underlying problems.

There is some evidence that adverse early experiences such as neglect and abuse may negatively relate to IQ scores (Perry, 2002; Prior & Glaser, 2006; see also Chapter 8, section 8.5.2). Children who are not securely attached (refer to Chapter 3) may be intellectually advanced, and some may even achieve at high levels in a limited number of school subjects, but may also be assessed with lower levels of giftedness (see publication in chapter 3 for

numeric definition of levels). It is proposed that children who would have become authentically gifted had they not had adverse experiences may not develop to their full heritable potential (Simonton, 2005). In contrast to authentically gifted children, therefore, potentially gifted children are defined as those who may exhibit some observable gifted characteristics and behaviours but achieve lower subtest index scores among their IQ results than the much higher scores that would be expected based on their heritability. Their behaviours may include complexity and inventiveness in children's play, artwork, and language (Frasier & Passow, 1994; Harrison, 2005; Rogers & Silverman, 1997).

It appears that these are the children described by Cigman (2006) who wrote that they have "flashes of extraordinary insight … though … concentration and output are poor . . . [and that] this sort of profile—occasional brilliance, unsteady concentration or performance—points to a worrying discrepancy between potential and actual ability which could have a social or emotional source" (p. 207). Potentially gifted children may also be "education-junkies, preferring to spend their free time at museums or with their heads in books than playing with their friends …[yet] without the ability to achieve highly" (Cigman, 2006, p. 207). Their erratic achievement levels may also be due to low motivation, or to boredom at school, depending on their interest or inappropriate level of educational provision.

2.6 Attachment problems and giftedness: Non-cognitive characteristics

Children who are not securely attached may initially be identified by some recognizable gifted characteristics from their early childhood years onwards. As will be explained in Chapter 3, some research supports ideas that children who are not securely attached are less likely to be emotionally intelligent, for example, less empathetic (Prior & Glaser, 2006). They are also less likely to be well adjusted (Prior & Glaser, 2006). Some indicators of adjustment and other

problems—for example, anxiety or attention deficit hyperactivity disorder (ADHD)—can make it difficult to identify these children either as gifted or as children who have problems, such as learning disorders, that need to be addressed (Ruban & Reis, 2005). Thus, without major reasons to investigate further, there would be little motivation to request an assessment of giftedness for them.

2.7 Specific learning disorders and gifted children

The interchangeable terms *learning disorder* and *learning disability* have been re-named in DSM-5 as *specific learning disorder* (American Psychiatric Association, 2013). A specific learning disorder is defined here as cognitive or physical difficulty that prevents academic achievement in a child who otherwise has a normal level in intellectual functioning (e.g., normal full scale IQ). Approximately 4-7% of all children are classified as having specific learning disorders (Hasselhorn & Schuchardt, as cited in Büttner & Hasselhorn, 2011), that affect reading, handwriting, and mathematics (American Psychiatric Association, 2013).

The causes of learning disorders are not fully understood but include possible associations between cognitive deficits in a variety of areas (Büttner & Hasselhorn, 2011), although it is unclear what may have caused the cognitive deficit. Some earlier findings indicated that neglect during early childhood can result in permanent cognitive impairment or learning problems (Buchanan & Oliver, 1977; Spitz, 1945). More recent research suggests that 30% of abused children have severe learning problems (Streeck-Fischer & van der Kolk 2000).

Identification of specific learning disorders was previously partly based on a sizable gap between a child's ability and level of achievement, for example, an IQ score above 130 and a

standard score below 85 in his or her achievement test (Lovett & Lewandowski, 2006). Specific learning disorders may be addressed through a number of measures, for example through the *response to intervention* (RtI) approach, an approach based on changing educational responses according to a child's resistance to high-quality intervention. The former approach, according to a recently published article, however, can be more helpful to gifted children (Gilman et al., 2013). Gilman et al. (2013) argue that this approach would be more helpful in the identification of struggling twice exceptional gifted children. These children often find themselves at grade level, having compensated through advanced conceptual abilities and hard work, especially if the emphasis is on only identifying children below grade level, as is the case in America.

Reading disorders have been associated with failure to take a phonological approach to reading (Johnston & Morrison, 2007) and with working memory deficits (Swanson & Siegel, 2001). Working memory deficits have also been associated with learning disorders related to mathematics (Raghubar, Barnes, & Hecht, 2010).

Although gifted children may have learning disorders similar to those of children in the general population, some research has been undertaken to find differences. For example, there is evidence that gifted children's reading problems are likely to be due to a preference for the use of global rather than analytic information processing strategies (Munro, 2002). Stoeger, Ziegler, and Martzog (2008) found an association between fine motor skills and concentration in gifted underachievers, defined as pupils who "contrary to expectations, produce poor scholastic performances" (p. 135), with giftedness determined as the top 15% of children assessed by a German version of the Culture Fair Intelligence Test (CFT; Catell,

1960). These children may have a learning disorder in writing skills and may also have other disorders such as ADHD.

2.8 Attachment problems and giftedness: Learning characteristics

According to some literature on giftedness, gifted children who do not have access to appropriate programs are often bored at school (Alsop, 2003; Wellisch & Brown, 2012; Winner, 1998), although in some gifted children this may be associated with learning disorders (Ruban & Reis, 2005). Learning disorders (LDs) in gifted children have been thought to occur due to right brain hemisphere dominance and a predominantly visual-spatial learning style (Silverman, 2002; Winner, 2000). This learning style is not usually catered to due to the auditory-sequential style of teaching through transmitting knowledge in a sequential manner, primarily through verbal instruction. A particular IQ profile has been noted both in such visual-spatial gifted learners and in children who have been abused and neglected (Perry, 2002; Perry & Szalavitz, 2006; Silverman, 2002). One possible explanation may be that the working memory of visual-spatial learners may have easier access to a visual-spatial sketchpad (Baddeley & Logie, 1999) that specialises in the processing and storage of visual stimuli—in preference to a phonological store that processes and retains verbal information.

Silverman (2009) suggests that these visual-spatial gifted children are likely to compensate for their learning disorders. They may employ multiple senses and creative and inventive strategies, and thereby acquire knowledge and skills in multiple ways. However, these very strategies may prevent identification of their learning disorders, while the disorders prevent both demonstration of their giftedness and them being identified as gifted (Nicpon, Allmon,

Sieck, & Stinson, 2010). To sum up, the advanced abilities of these potentially gifted children may mask their learning disorders, and their learning disorders may prevent the recognition of their gifted potential (Brody & Mills, 1997).

2.9 The gifted spectrum

The characteristics, levels, and diversity of giftedness in children are so broad that we may possibly be looking at a gifted spectrum in a similar way to descriptions in DSM-5 about autism spectrum disorder (American Psychiatric Association, 2013). A spectrum of giftedness may solve the problem of attempting to fit multiple forms of giftedness, varying levels of giftedness, and individual variants into one definition and one model of giftedness. Potentially gifted children who are not securely attached may be hampered by biological, physical, learning, social emotional, and/or behavioural difficulties, and should be considered as being situated together with authentically gifted children along a spectrum of giftedness. The gifted spectrum is defined as a spectrum inclusive of multiple forms and levels of giftedness, achieving as well as underachieving gifted children, gifted children without problems, and also gifted children with physical, learning, and psychological disorders who may be potentially gifted.

Underachieving children with disorders may be gifted in the areas of mathematics, music, arts, and the sciences (Csikszentmihalyi & Csikszentmihalyi, 1993; Silverman, 2009; Winner, 2000), and may be identified now or in the future within one or a co-occurring number of the following classifications:

- gifted and disabled—for example, being blind, deaf, or mute (see Silverman, 2009)
- gifted with learning disorder—for example, having dyslexia (see Munro, 2002; Nicpon et al., 2010; Silverman, 2009)
- gifted with other disorder—for example, being a gifted child with ADHD (Silverman, 2002). This includes autistic savants (Winner, 1998), for example children with calendar calculation, memory, music, art, or arithmetic skills (Heaton & Wallace, 2004)
- late onset giftedness—for example, an individual who starts a successful career as a writer after the age of 40
- acquired giftedness—for example, individuals who may not have been gifted as young children but have become experts through rigorous practice, application, and mastery (Ericsson, Prietula, & Cokely, 2007).

Therefore, a core state of giftedness could theoretically span between savants with an IQ as low as 40 (Winner, 1998) and the highest scoring children with an IQ up to 210 (Zhu, Cayton, Weiss, & Gable, 2008). Further elaboration on a gifted spectrum approach will be found throughout the thesis, and it will be argued that attachment style, influenced by maternal depression, may be an important "gatekeeper" to the development and identification of the gifted child, described in the article contained in Chapter 3.

2.10 Proposed new definition of giftedness

Gagné has argued that there should be a differentiation between the terms *gift* and *talent* (Gagné, 1995, 2004, 2008, 2009). He rightly pointed out that there are many descriptions of gifted children, that the terms gift and talent have been carelessly used interchangeably by many experts, and that this is not helpful for achieving consensus on a definition of

giftedness. However, he has yet to convince the field (Baer & Kaufman, 2004; Feldhusen 2004). This has been demonstrated in Feldhusen's response to an article by Gagné: "One major problem … is his efforts to define 'giftedness', a term used very little outside of the professional field of gifted education: high ability, natural ability, precocity, talent, aptitude—which should it be?" (p. 151).

When referring to gifted children, therefore, for the sake of simplicity the words *gift*, *gifted,* and *giftedness* will be used in this thesis generally to describe all children who are considered to have a potential for high achievement. Further, as there is no consensus within the field in the area of terminology, *development of giftedness* and *development of talent* will be used interchangeably to describe developing the gift in a child, as already used in everyday language and throughout the literature.

A synthesis-like definition of giftedness was given in Section 1.2.2. The following new definition of giftedness is proposed here to accompany the gifted spectrum approach and a new model for the purpose of gifted identification described in Chapter 9:

> Giftedness is an accelerated state defined by significant achievements and/or characteristics, behaviour, and/or biology of the gifted individual, nurtured within an environmental context that s/he actively seeks to co-create to satisfy the need for knowledge or the perfecting of production or performance—a state (regardless of whether assessed or seen) to be adequately demonstrated by superior performances or creations at a particular point in time.

Additionally, for the purpose of the research undertaken as part of this thesis, the working definition of giftedness was an IQ score obtained by a child equal to or greater than 120 on

any WISC-IV subtest index or full scale IQ score (Wechsler, 2003). This definition was adopted to ensure that children with disorders and problems who may also be gifted would be included in the study's gifted group. The decision was based on two main considerations. First, children with disabilities and emotional adjustment problems may not achieve a full scale score in the gifted range due to large discrepancies between their subtest scores (Luna, 2010). Thus, the Idaho Department of Education's booklet on twice exceptional children recommends looking for "at least one subtest score in the gifted range" for identification purposes (Luna, 2010). Second, a full scale score of 120 is considered to be within the gifted range (Falk, Silverman, & Moran, n.d; Gagné, 2007; Lohman, Gambrell, & Lakin, 2008; Winner, 2000). Nielson (2002), who assessed more than 300 children with gifts and disabilities, recommended that identification would be aided by checking for "a difference of 7 scaled-score points between the highest and lowest subtests" (p. 100). She also recommended profile analysis and broad definitions of giftedness. Additional information on this adopted definition of giftedness for research purposes can be found in Section 5.5.1.1 of Chapter 5.

Chapter 3

Communicating Love or Fear:

The Role of Attachment Styles in Pathways to Giftedness

3.1 Preamble

The focus of the peer reviewed article in this chapter is to introduce attachment theory (Bowlby, 1969) and explore its possible association with giftedness. The article was published in *Roeper Review*, a journal whose readers have an interest in gifted children.

The aim of this preamble is to enhance the discussion of attachment addressed in the article. A review of related and more recent studies is presented first. This review addresses the following topics:

- Responsive caregiving
- Internalising and externalising
- Learning disorders.

The preamble concludes with an introduction to the article.

3.2 Responsive caregiving

The article, titled "Communicating love or fear: The role of attachment styles in pathways to giftedness" begins with a review of literature concerning differences in caregiving, including sensitive responsiveness. Responsive caregiving, or parental attunement to a child, has been described as one aspect of parenting associated with securely attached children. Moss and St-Laurent (2001) found that responsive caregiving may provide opportunities for children to learn helpful strategies for successful functioning in an academic setting. Responsive mothers

may, for example, notice when children are struggling academically and provide opportunities such as tutoring or working directly with the child, inadvertently demonstrating that persistence aids success. Persistence, as will be discussed later, is an important characteristic for enabling achievement. A recent study (Dubois-Comtois, Cyr, & Moss, 2011) found that mothers of securely attached children provided higher-quality assistance through encouragement and conversations compared with mothers of insecurely attached children during teaching tasks. High quality assistance may be a result of these mothers having a better understanding of their children.

Understanding gifted children is a topic related to the outcome of the qualitative research outlined in Chapter 6. As will be outlined in this chapter, caregiving that is not considered "responsive" has been associated with socio-emotional and behavioural problems in children. These problems can be observed through internalising and externalising problems and behaviours.

3.3 Attachment and internalising and externalising problems

Maladaptive functioning in childhood shows itself in one of two distinct ways: internalising, such as loneliness, anxiety, and social withdrawal; and externalising, including hyperactivity, aggression, and antisocial behaviours (Achenbach, 1991). Problems with attachment have also been linked to maladjustment and child functioning. The published article later in this chapter describes behavioural responses, linked to stress and trauma that have also been associated in children with attachment and internalising and externalising disorders. Internalising and externalising problems have also been associated with gifted children and learning disorders, as cited in Nicpon et al.'s (2011) recent review of studies on twice exceptional children.

Securely attached children, in contrast, were less likely to be rated with internalising or externalising behaviours by their mothers on the Child Behavior Checklist (CBCL; Achenbach, 2001) in a study on the association between attachment and problems in middle childhood (Moss et al., 2006).

3.4 Attachment, giftedness, and specific learning disorders

The results of a study about children's attachment and their socio-emotional adjustment and academic functioning revealed a significant association between learning disorders and attachment-based factors (Al-Yagon & Mikulincer, 2004). The study involved 205 Israeli children from 4th and 5th grades. A subgroup of 98 children with learning disorders reported lower attachment security and more attachment avoidance and anxiety in their close relationships, using the attachment measure *Attachment Style Classification Questionnaire for Latency Age Children* (ASCQ; Finzi, Cohen, Sapir, & Weizman, 2000), than did their typically developing peers (M = 17.61 vs. N = 19.80 for security; M = 14.75 vs. M = 12.45 for avoidance; M = 14.80 vs. M = 12.65 for anxiety).

Another recent study (Al-Yagon, 2012) involving children with learning disorders revealed a lower incidence of attachment security towards fathers (58% for children with learning disorders vs. 75.5% for typically developing children), but not towards their mothers. Parents of these children also reported higher levels of children's externalising problems on socio-emotional measures (28% of children with learning disorder vs. 12% of typically developing children).

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Learning disorders may be present in children who have large discrepancies between IQ subtests, according to Silverman (2009). Both Silverman (2002) and Winner (1998) have noted large discrepancies (usually between lower verbal compared with higher performance scores) in gifted children with disorders. Similar discrepancies were noted by Perry (2001), although studies cited by Nicpon et al. (2010) indicate that a single distinctive IQ profile for learning disorders is not feasible.

Developmental delays, reduced language development, and problems with executive functioning have been linked in the literature with attachment problems, maternal depression, and learning disorders; and learning disorders have been identified in children who are gifted and who often underachieve—children who, as has been proposed, form part of a gifted spectrum (see Munro, 2002; Silverman, 2002, 2009). There is a paucity of research on the association between attachment, giftedness, and learning disorders (Al-Yagon, 2012), although some children with learning disorders may have been gifted, unbeknown to researchers.

I have already proposed how responsive caregiving may contribute to academic success, that mothers of securely attached children may understand their children better, and that attachment problems have been linked with internalising and externalizing behaviours. These aspects of attachment that may influence giftedness are further explored in the article that is reproduced on the following pages of this chapter.

Chapter 3

3.5 Publication Communicating love or fear: The role of attachment styles in pathways to giftedness

My analysis of the pertinent literature about the consequences of attachment styles on children in the general population is provided in the article that follows this section. Comparisons are made between some known gifted characteristics and the characteristics of children who have experienced adverse early childhood environments.

In this article it is argued that gifted children, like children generally, can become either securely or insecurely attached. Analysis of the literature about the characteristics of gifted children suggests that they are more likely to be securely attached than are children who are not gifted, although gifted children may still be affected by attachment-related problems. Such problems may be seen in certain IQ profiles of gifted children who are likely to have had problems, for example IQ profiles showing higher performance index scores in comparison with verbal index scores (Silverman, 2002). Literature is also reviewed that indicates how intelligence may protect children against adverse early experiences (see for example, Johnson & Flake, 2007; Perry & Szalavitz, 2006). These assumptions often have been made in the literature without empirical evidence. However, my analysis of the literature identifies socio-emotional and other problems assumed to be related to giftedness that may yet find direct connections. This article does not intend to suggest causality between attachment and giftedness or between giftedness and maternal depression, but awareness of possible associations between these. More importantly, evidence-based strategies to address difficulties arising from attachment problems are discussed. The need for an alternative gifted model inclusive of children with a range of problems is raised, and the article concludes by suggesting that attachment style may contribute to a gifted spectrum.

Chapter 3

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A small but important typographical print error appeared in the section *Attachment* on page 117, line 10 of the article, and resulted in an erratum statement. The erratum statement follows immediately after the article.

Chapter 3

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Communicating Love or Fear: The Role of Attachment Styles in Pathways to Giftedness

Mimi Wellisch

Although both giftedness and secure attachment are associated with advanced language and good socioemotional adjustment, not all gifted children are well adjusted. This article explores the consequences of attachment style on gifted development and examines whether early trauma can be rectified. The dearth of research on giftedness and attachment has necessitated the review of less direct evidence, including brain research and maternal depression. A partly empirical, partly conceptual picture is drawn to demonstrate that attachment styles can support, reduce, and even prevent giftedness. This is further illustrated by an experiment involving IQ scores that mimics the expected effects of early trauma and insecure attachment on test performance. The article concludes by suggesting that attachment style may contribute to a gifted spectrum.

Keywords: brain research, gifted, gifted spectrum, insecure attachment, IQ tests, maternal depression, neuropsychology, secure attachment, socioemotional adjustment

There is little research on the interaction between attachment style and giftedness (Karrass & Braungart-Rieker, 2004). However, a variety of positive developmental outcomes have been associated with secure attachment, such as advanced language development (Prior & Glaser, 2006; Van IJzendoorn, Dijkstra, & Bus, 1995), indicating that there may be a connection. The term *attachment* normally implies strong liking or love for a person, but in the study of psychology the term refers to the special reciprocal relationship best characterized by the child–mother relationship (Fonagy, Steele, & Steele, 1991; Perry, 2002; Sutton, 2005). Accordingly, the term mother is used when referring to the *attachment figure* through this article in order to best express the concept. Organized attachment involves proximity seeking to the attachment figure and includes secure attachment, and insecure ambivalent/resistant and avoidant attachments. Disorganized attachment occurs when the mother elicits fear in the child. These will be the subject of more detailed examination later in this article.

Whereas attachment has benefited from scientifically rigorous studies, research on giftedness reflects the fragmentation that defines the field (Ziegler & Raul, 2000). The concept of giftedness has therefore been difficult to define, quantify, and harness into scientifically coherent predictability, despite much effort (Mayer, 2005). Indeed, the concept of giftedness has been the subject of endless controversy and it has spawned around 100 definitions (Freeman, 2005) and numerous theories (Gagne, 1985; Gardner, 1983; Renzulli, 1986; Sternberg & Davidson, 2005). In broad terms it is defined as a genetically inherited potential or the ability to reach high levels of achievement in a variety of pursuits, preceded by early characteristic signs (Howe, Davidson, & Sloboda, 1998). These characteristics have been variously identified, depending on the stance of the writer, and factors such as socioeconomic and cultural backgrounds as well as those associated with particular gifts (Clark, 2008; Frasier & Passow, 1994; Marek-Schroer & Schroer, 1993; Rogers & Silverman, 1997; Rotigel & Pello, 2004).

Beliefs about gifted characteristics in relation to social and emotional health have been quite divergent. During the 1920s, it was assumed that gifted children were borderline neurotic or even psychotic (Clark, 2008), a myth dispelled by Terman's study (1925). Terman found that these children were often more popular than their classmates, at least during their primary school years. Since then findings have indicated problems in the socioemotional area for gifted teenagers, creative individuals affected by bipolar disorder (Winner, 2000), and increased levels of giftedness (Lovecky, 1993). Most studies, however, have been relatively supportive of Terman, finding that gifted children have a high social status and are preferred companions are better emotionally adjusted, more independent, often show leadership ability, and tend to be precociously aware of morality and justice issues (Clark; Lovecky; Silverman, 1993). Nevertheless, although it appears that many gifted children are socially and emotionally well adjusted, there is still no consensus on this subject.

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Social–emotional adjustment is linked to attachment. However, the dearth of studies on attachment and giftedness mentioned earlier has necessitated a review in this article of available information from less direct research. Evidence from areas such as gifted education, neuropsychology, and attachment theory has been used to draw a partly empirical, partly conceptual picture of the way attachment can support—or may even reduce or prevent—the development of giftedness.

The process of attachment occurs between birth and approximately 3 years of age. The first 3 years of life are an immensely important time: a baby is born with 25% of its adult brain capacity, which will develop to 85% by the time the child is 3 years old (Perry & Szalavitz, 2006). A lot is at stake during this period of rapid learning and brain growth. Incidents of repeated traumatic events may lead to permanent effects, with repercussions for all areas of development (Perry, Pollard, Blakley, Baker, & Vigilante, 1995; Perry & Szalavitz)—and therefore, unavoidably, for giftedness.

Attachment is the focus of this article, with comparisons made between the various attachment style outcomes and characteristics and problems associated with giftedness. Consequences of insecure attachment on early development are a particular focus, and the subject of brain plasticity is reviewed in order to examine whether early trauma can be rectified. Consideration of how IQ scores may be affected by attachment in some gifted children are explored, and the article concludes are by suggesting how attachment styles can contribute to a gifted spectrum.

ATTACHMENT

Psychologist John Bowlby (1969) was the first to observe the attachment relationship, which he likened to a bio-evolutionary instinct. He noted that babies and young children sought out their mothers when they felt threatened or uncomfortable. Depending on the mother's typical response, children would then either become securely or insecurely attached. Secure attachment has been linked with the mother's state of mind in interpreting her baby's communication and her sensitive responsiveness to her baby (Prior & Glaser, 2006). Insecure, or organized, attachment in children is the frequent outcome of inconsistent, angry, or dismissive care-giving, misinterpretations, and miscommunications—behaviors that are linked to neglect and abuse (Perry & Szalavitz, 2006; Prior & Glaser).

Seeing the World Through Love: Secure Attachment

Children learn to feel safe enough to explore both relationships and the environment when they experience consistent, sensitive, and responsive care-giving. The mother's reliability and repeated ability to ease pain, fear, and discomfort informs the increasing pleasure felt by the child in her company and establishes the foundation for the regulation of emotions. The baby's brain is designed to respond to facial expression, touch, and scent, and the activation of the *mirror neurons* in the baby's brain enables synchrony of responses, such as returning a smile. This positive connection promotes feelings of pleasure, which again are closely linked to systems that oversee emotional relationships (Perry & Szalavitz, 2006). Research findings indicate that secure attachment occurs in approximately two thirds of the population and that it has a statistically significant association with later good functioning: trust, confidence, well-regulated emotions, self-reliance, resilience, self-efficacy, better ability to relate intimately, a buffer to stress, and interpersonal/social competence (Prior & Glaser, 2006).

Coincidentally, the development of attachment and trust occurs during particular sensitive developmental periods (Hall, 2005), when the brain is *experience expectant* (Greenough, Black, & Wallace, 1987), requiring certain types of environmental experiences for continued healthy development. Appropriate interaction between nature and nurture must take place simultaneously during these periods, because timing can mean the difference between naturally evolving development or the lack of development in a particular area (Perry, 2002). In the case of trust, the sensitive period takes place in the first 4 to 8 months of life (Schiller, 2000), corresponding with the establishment of attachment by 9 months of age (Prior & Glaser, 2006).

Secure Attachment, Emotional Intelligence, and Giftedness

Research has shown that securely attached children can be significantly distinguished by their level of concern for others and can be expected to be empathetic at preschool age (Weinfield, Sroufe, England, & Carlson, 1999). Empathy, or compassion for others, was also identified by 93.5% of parents in a large sample of exceptionally and profoundly gifted children (Rogers & Silverman, 1997). Empathy is essential to relating well and is an aspect of emotional intelligence (EQ; Bar-On, 2006). Emotional giftedness, then, would include some typical characteristics associated with secure attachment. According to Schore (2001), "emotional or social intelligence relies heavily upon right brain function, and … this capacity is an outcome of a secure attachment …" (p. 48). It therefore seems that exceptional and profound giftedness, a good EQ, and secure attachment are interrelated. We will return to secure attachment and exceptionally and profoundly gifted children later.

Although there is little research on the role of intelligence in attachment, informed suggestions have been made about its possible impact. For example, it has been listed as a protective factor for babies whose mothers suffer from maternal depression (Johnson & Flake, 2007). It has also been observed that intelligence may enable and accelerate recovery from poor care-taking, once the environment improves (Perry & Szalavitz, 2006). Perry and Szalavitz

posited that intelligent children may learn more quickly to associate pleasure with their mothers' responses, even when pleasurable interaction is in short supply. The baby's positive and less demanding responses in turn reassure the mother and reinforce her self-efficacy, increasing her sensitive responses to her child's needs (Greenberg, 1999). Greenberg speculated that a secure bond may help develop a positive mental model of the child in the mother, increasing her confidence and sensitive responses. Perhaps, then, certain genetically inherited patterns of intelligence may act as an attachment buffer, reducing adverse environmental effects by either ensuring greater probability of secure attachment or reducing the level of insecure attachment. There is presently insufficient data in this area, and more research is needed.

Secure Attachment Outcomes and Some Gifted Characteristics

Attachment is a form of communication (Pearson & Jeffrey, 2007). Interestingly, one of the identifying characteristics of many gifted children is their high level of language development and verbal ability (Clark, 2008; Frasier & Passow, 1994; Liu, Hui, Lien, Kafka, & Stein, 2005; Rogers & Silverman, 1997). A meta-analysis of secure attachment has also been linked to language competence (Van IJzendoorn et al., 1995).

Two other important characteristics of both secure attachment and giftedness are curiosity and persistence. Studies have found less curious and exploratory behavior in humans and animals under adverse and deprived environments (Joseph, 1999). Secure attachment calls forth a positive attitude (Greenberg, 1999), which in turn leads to higher levels of engagement and persistence (Blair, 2002). Attachment security, therefore, not only paves the way for emotional and social well-being but may influence the child's self-confidence through the feedback loop of repeated maternal responsiveness to his or her needs and increase competence (Ainsworth & Bell, 1974) in areas such as exploration or cognition (Prior & Glaser, 2006).

When a baby's needs are rarely met, *learned helplessness* is the result, with the child eventually giving up and withdrawing rather than persisting (Seligman, 1990). A baby who is successful in having his or her needs met, however, learns to persist on occasions when his or her needs are not met. Persistence is an essential characteristic in the manifestation of potential and a factor in enduring practice to ensure achievement (Ericsson, Prietula, & Cokely, 2007). Task commitment requires persistence and is one of three defining identifiers of gifted children, according to Renzulli (2005). Recent findings on persistence have been supportive of Renzulli's assertion (Duckworth, Peterson, Matthews, & Kelly, 2007). A classical longitudinal study on gifted children found just two factors separating the most and least successful gifted individuals. Terman and Oden (1959) found that drive to achieve—requiring persistence—and all-around social and emotional adjustment were the two factors. As we have seen, these are both associated with secure attachment.

Although secure attachment is found in two thirds of the population, it is not possible to simply assign giftedness to the entire securely attached population. Clearly there are fewer gifted individuals even if we estimate that intellectual giftedness commences at IQ115, or 25% of the population (Feldhusen as cited in Gross, 2000; Sheely & Silverman, 2000). If we take the more common starting point at IQ130 (Winner, 2000), it would reduce intellectual giftedness to just 2.2% of the population. Additionally, research has identified insecurely attached gifted children (Karrass & Braungart-Rieker, 2004). The conclusion must therefore be that gifted children can be both securely and insecurely attached. If that is the case, how do children become insecurely attached?

MATERNAL DEPRESSION AND INSECURE ATTACHMENT

Maternal depression has been linked with disorders in attachment leading to less than optimal cognitive development at a key time in the baby's development (Cicchetti, Rogosch, & Toth, 1998). Studies have found that maternal depression is affected by intergenerational family problems, the mother's childhood experiences, and the maternal state of mind (McMahon, Barnett, Kowalenko, & Tennant, 2006); social disadvantage (Heckman, 2006); children's behavioral problems (Gartstein, & Sheeber, 2004); and relationship problems (Nagata et al., 2000).

One in five women are affected by depression, especially during the child-bearing years (Johnson & Flake, 2007), with one study finding that 74% of chronically depressed mothers had insecurely attached babies (McMahon et al., 2006). Children's negative traits (Perry & Szalavitz, 2006), in fact, are likely to stem from maternal depression and insecure attachment (McMahon et al.) and may even have their beginning before birth. Irritability, for instance, previously thought to be a heritable personality trait, appears to be caused or called forth by stress in pregnancy (Prior & Glaser, 2006; Rice, Jones, & Thapar, 2007). The baby's temperament, incidentally, has been ruled out as a determining factor in attachment style, except where mothers are already struggling with sensitive care-giving (Prior & Glaser).

Maternal depression has also been associated with poor school performance and underachievement (Leschied, Chiodo, Whitehead, & Hurley, 2005), subjects often linked with gifted children. An underachieving child may present as lazy, lacking in work ethic, lacking in (or masking) skills, rebellious, exhibiting problem behaviors, and having a short attention span. He or she may also suffer psychosomatic and psychological symptoms such as stomach and headaches,

depression, mental confusion, self-harm, poor self-esteem, sleep disorders, nightmares, eczema caused by stress, and attention deficit hyperactivity disorder (ADHD)-type behaviors (Commonwealth Government Publishing Service, 2001). A number of the same symptoms can be found in insecurely attached children.

Effects of Maternal Depression on Brain Development

The baby's brain development is informed by two types of learning, and both may be compromised by angry, intrusive, and other inappropriate responses due to factors such as maternal depression (Cornish et al., 2006). Experience expectant learning (W. T. Greenough, Black, & Wallace, 1987), mentioned earlier, is connected to sensitive periods of development (Hall, 2005), such as the development of language. Other such windows of opportunity include hearing (first 4–8 months), vision and motor development (first 24 months), and cognitive development (first 48 months; Schiller, 2000). Sensitive socioemotional development also takes place during the first 3 years, and the effects of early and ongoing attachment problems have proven difficult to remedy due to the initial malorganization of neural functions in the developing brain (Davidson, 1994; Joseph, 1999; Perry, 2002; Perry & Szalavitz, 2006).

In addition to essential experiences needed for healthy development, the brain requires frequent repetition, known as the *use-dependent* development of the brain (Perry, 2002; Perry & Szalavitz, 2006). When there is insufficient repetition, synaptic connections between neurons "will literally dissolve" (Perry, p. 85). As an example, profoundly deaf children cease their vocalizing in later infancy, presumably due to lack of auditory experiences required for the development of language (Scarr, 1993). In terms of socioemotional development, babies can become socially and emotionally "deaf" or "blind" when there is a lack of opportunity for repeated healthy experiences. This is particularly the case during the first 12 months of life, when babies cannot yet regulate their own emotions, and the deficit can continue even after "normal" experiences are available (Joseph, 1999); for instance, after the recovery of the mother. The same holds for intellectual patterns and pathways that are genetically inherited—they will only develop if children receive appropriate environmental experiences at the time they are required (Perry & Szalavitz).

The second type of learning has been named "experience dependent" (Greenough & Black, 1992, p. 539). These learning opportunities are culture bound (e.g., learning to play the piano). Although there are no identified sensitive periods for experience dependent learning (Hall, 2005), there may be a need for prior skills, acquired through experience expectant learning opportunities.

The most important experience expectant opportunity connected with survival is the child's first close relationship, resulting in the formation of attachment (Perry, 2007). Its importance relates to the way early socioemotional influences can significantly affect the organization of the brain, as well as shape and mold perception and intellectual functioning (Joseph, 1999). It may also impact on some gifted characteristics: A recent article by Wellisch (2008) reviewed studies on attachment and perfectionism, including a study on gifted characteristics, where perfectionism was selected by 9 out of 10 parents of exceptionally and profoundly gifted children (Rogers & Silverman, 1997).

Perfectionism is often mentioned in relation to gifted children, and the article outlined the difference between adaptive and maladaptive perfectionism and how these in turn were related to secure and insecure attachment. Speirs Neumeister and Finch (2006) also concluded in their study that some forms of perfectionism were associated with insecure attachment. Frequently repeated states of fear through traumatic events, then, may not only become bad memories but will result in actual traits or characteristics (Perry & Szalavitz, 2006). Healthy development, therefore, depends on sensitive responses to babies' needs, particularly during the first year of life.

Insecure and disorganized attachment develops when the mother is frightened or frightening. These are linked to a variety of psychological disorders seen in children (Joseph, 1999; Perry, 2007; Piechowski, 1997; Prior & Glaser, 2006; Steele, 2002). We will now look at insecure ambivalent/resistant attachment, insecure avoidant attachment, and disorganized attachment.

Ambivalent/Resistant Attachment

Babies with this attachment style tend to cry more and are immediately and intensely distressed when mothers leave but are not particularly comforted upon their return (Prior & Glaser, 2006). When older, these children are more anxious, less forceful, less confident, more withdrawn, more passive, and more hesitant in relation to new experience than both the securely attached and the avoidantly attached children. It is believed that these children turn their attention inwards toward their distress at the unavailability of their attachment figure and are more likely to be diagnosed with internalizing disorders such as anxiety and depression.

Although ambivalently/resistantly attached children may have been born with intellectual potential, their learned reluctance to attempt new experiences and the anxiety and tendency to depression brought about by their insecure attachment style are likely to hamper both intellectual and all other potential. Cognitive performance (Hall, 2005) and IQ scores—used to predict performance at school, in the workplace (Giles, 2006), and one of the tools used in gifted identification—are affected by fear and anxiety (Blair, 2002). A recent study has provided some insight into the

biological events flowing from fear states in the daily lives of extremely inhibited children (Gunnar & Quevedo, 2007). It was found that they were highly vigilant with higher heart rates and greater right frontal electroencephalograph activity than other children. Clearly not all gifted children are extremely inhibited. However, such studies can help explain how frequent fear states early in life can become the "default option" in new experiences through biological repetition of fear states and thereby prevent optimum academic performance.

As mentioned, there is a dearth of studies on giftedness and attachment style. In fact, only one longitudinal study was found of 63 infants who were recruited from White middle-class homes in the Midwestern United States (Karrass & Braungart-Rieker, 2004). The study involved both mothers and babies and included several test situations and an IQ test. The authors found that insecure babies, who had reacted with higher distress to novelty than others, had higher IQs at 3 years of age than other child participants. The authors, whose research population was a "low risk group" (p. 223), were unable to explain these results. They may not have considered that children with high IQ can also be characterized by behavioral inhibition (Blair, 2002), found in ambivalent/resistant insecurely attached children. The children's high IQ would have afforded them a more efficient brain neural system (Passingham, 2006), resulting in quicker learning, including learning to avoid painful experiences such as inconsistent care-giving. Painful experiences and novel events are both stressors (Schore, 2001), especially once trauma has generalized (e.g., "defaulted") to any unexpected event. Such high or persistent levels of fear appear to activate an automatic fear response, preventing any prior cognitive assessment (LeDoux as cited in Blair, 2006). For intelligent and highly sensitized children, therefore, even minor stressors, such as the introduction of a new toy, are likely to result in heightened vigilance and distress.

Avoidant Attachment

Avoidantly attached babies explore equally well in the mother's absence or presence, seek little contact with mothers, and are rarely distressed when they leave (Prior & Glaser, 2006). When older, these children are more hostile, angry, and aggressive, have more antisocial behaviors and more negative feelings, and are more likely to scapegoat and victimize other children as early as the preschool years. They are usually more demanding and commanding and are more likely to have poor peer relationships and suffer from depression (Lyons-Ruth, Easterbrooks, & Cibelli, 1997) and are more likely to display angry, aggressive behavior than those who are securely attached and who therefore approach and readily use parents and other adults to ease their distress (Prior & Glaser).

An explanation for this behavior is that avoidant and insecure children use a strategy of turning their attention away from themselves, because they have experienced minimal opportunity for expression of their needs. Because they are not in touch with their real feeling state they are prone to act out and are more likely to be diagnosed with externalizing disorders such as oppositional defiant disorder. Although they are more open to experiences than ambivalent/resistant children, this very characteristic combined with angry energy is likely to lead them down less helpful risk-taking pathways.

Additionally, their antisocial behaviors will not win them many friends, and they are less likely to elicit positive adult attention. Their attachment style has not taught them to expect a strong association between social interaction and pleasure. For these children, then, the adults' important influence on successful socialization and the imparting of knowledge is therefore diminished.

Perfectionism in this attachment style is thought to be informed by a negative view of others while at the same time striving to seem perfect in their eyes, possibly to mask emotional wounds incurred through unresponsive caretaking (Wei, Mallinckrodt, Russell, & Abraham, 2004). Although this may be an adaptive response when it is first established, it later becomes a liability, often leading to depression and feelings of hopelessness (Wei et al.), interfering with cognitive functioning. Additionally, gifted individuals with this attachment style may be less inclined to try out new skills and experiences in case they fail and are likely to procrastinate due to fear of failure, possibly passing up chances to achieve their potential.

Disorganised Attachment

These children display confusion in connection with their mother, sometimes approaching and sometimes distancing themselves. Abuse, hostility, and domestic violence are causative factors in disorganized attachment. Researchers have observed clumsy, stumbling movements in the presence of parents, as well as fearful (e.g., hunched) body language. The children appear disoriented and have rapid mood changes. They also show more hostility and insecurity and are more likely to have a depressed mother and to continue their aggressive behaviors if their parents have perceived them to have a difficult temperament at age 2 (Greenberg, 1999). One study found that among 7-year-old children identified by teachers as aggressive, 83% were disorganized in their attachment behavior in infancy and were below the American national mean in mental development scores at 18 months (Lyons-Ruth et al., 1997).

An interesting observation by one researcher has uncovered the possibility of a split between the verbal and the physical communication from the mother to the disorganized child: although the words used were appropriate, the tone and body language were at the same time threatening (Newton, 2006). Research on language development in maltreated toddlers has also revealed a pattern of shorter sentences and

less descriptive and less relevant speech, especially in reference to children's own activities and feelings (Coster, Gersten, Beeghly, & Cicchetti, 1989). The researchers outlined several findings that indicated how advances and lags in one domain (e.g., socioemotional) have consequences for the emergence and development of functions in another domain (e.g., language). In terms of behavior, children with disorganized attachment are more likely to be controlling, angry, hostile, and oppositional, with low self-confidence and poor social competence, struggling in academic performance, perceiving themselves and others as both frightened and frightening. Very young children and girls tend to dissociate when faced with painful experiences, because they cannot flee or fight (Perry & Szalavitz, 2006). These children, too, are likely to be diagnosed with oppositional defiance disorder, and from late adolescence with dissociative disorders.

Neither insecure-avoidant nor disorganized children are likely to experience remorse at displeasing others through disobedience, aggression, and violence, behaviors that arise from abuse and neglect. As an example, a Canadian study of Romanian orphans found that the longer the children had spent in the orphanages, the higher they scored on the externalizing behaviors such as aggression and to a lesser degree on withdrawn, somatic problems, and anxious/depressed behavior (Ames, 1990). Without the important social motivator mentioned above, parents and teachers are left with few tools to direct the child toward either learning experiences or positive behaviors. These children are more likely to enter a feedback loop of using aggression and power over others when they are unmotivated by social acceptance in exchange for positive behavior. Their inevitable rejection by disaffected peers and adults reinforces their association with others who have similar histories and behaviors as their own. As they grow older they may seek violent media entertainment to further anchor and legitimize their worldviews (American Psychological Association, n.d.). Although the characteristics of most highly and profoundly gifted children include being concerned with justice and fairness (Rogers & Silverman, 1997), history has demonstrated that giftedness does not prevent criminal behavior (Oleson, 2004), including nonviolent white collar crimes (Wong, 2005).

To sum up, giftedness is likely to be adversely affected by insecure and disorganized attachment. Whereas ambivalent/resistant attachment would affect gifted children's confidence, children with avoidant and disorganized attachment styles and associated behavior problems are likely to confront, test, and defy social boundaries. Although they appear more confident, they are more likely than others to suffer from depression, attended by an inhibiting effect on areas such as planning and learning. Children with disorganized attachment are likely to have been abused and/or neglected, and these stressors, if they occur early and frequently, can have a devastating effect on all aspects of development, including damaged and reduced brain size and poor functioning of the frontal area of the brain associated with attention, working memory, and intelligence (Perry, 2002; Perry & Szalavitz, 2006; see Figure 1).

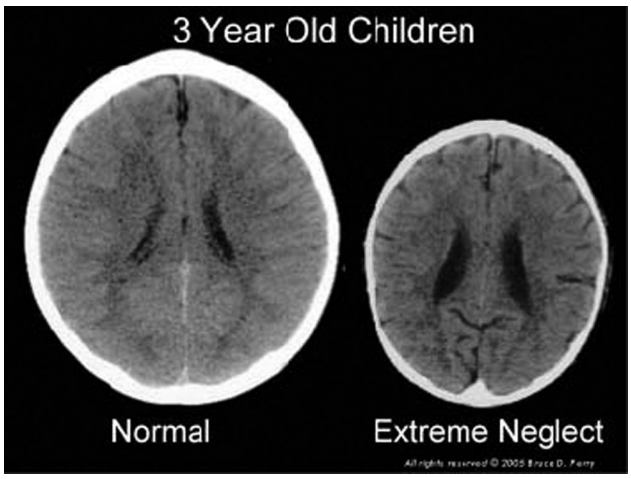

FIGURE 1 Effect of total global neglect during early childhood. These images illustrate the impact of neglect on the developing brain. The CT scan on the left is from a healthy 3-year-old child with an average head size (50th percentile). The image on the right is from a 3-year-old child following total global neglect during early childhood. The brain is significantly smaller than average and has abnormal development of cortical, limbic and midbrain structures. *Note*. From studies by Bruce D. Perry, M.D., Ph.D. at The Child Trauma Academy (www.ChildTrauma.org). Perry, B.D. (2002). Childhood experience and the expression of genetic potential: What childhood neglect tells us about nature and nurture. *Brain and Mind, 3,* 79-100. Reprinted with permission.

BRAIN PLASTICITY AND SENSITIVE PERIODS FOR SOCIOEMOTIONAL DEVELOPMENT

Figure 1 is not a stand-alone example: One study found that 85% of abused and neglected children had developmental delay (Perry, 2002), presumably including those who had been born with genetically inherited intellectual potential among their number. The question has to be asked: How plastic is the brain? Can damage be healed, at least in cases where conditions improve? It is now known that new neurons do form in the adult hippocampus, an area associated with memory (Sutton, 2005). According to Fernandez-Ballesteros, Zamarron, Tarraga, Moya, and Iniguez (2003), cognitive plasticity and learning and rehabilitation potential are new constructs. Their study found that mild cognitive impairment and Alzheimer's disease can improve in the areas of visual memory, verbal learning, and executive function. Hall (2005) also cited research demonstrating greater brain plasticity beyond childhood than previously thought. As examples, Hall referred to repair after injury and to taxi drivers with adult-acquired enlargement of posterior hippocampi, an area associated with spatial representation.

These findings are hardly new, however. Howe et al. (1998) cited findings of violinists and other string players with enlarged brain areas where the digits of the left hand are represented, presumably from frequent use. Ericsson et al. (2007) used these findings to support the claim that gifted eminence or mastery is the result of long-term tenacity and commitment, rather than the result of innate ability. They argued that at least 10,000 hours of dedicated and "deliberate practice"—involving continual improvement through ever more refinement and perfection—is required for mastery in any field. However, Winner (2000) argued for the unusual tenacity typically displayed by many gifted children and cited other findings indicating that deliberate practice does not in itself rule out innate ability.

We have seen how plasticity can affect adult brains. Can this also apply to early damage? In particular, can the problems of gifted and learning disabled children, or gifted children's behavior problems, be successfully addressed to ensure their improved development? Blackman (2002) reviewed the benefits of early intervention and conceded that we do not yet know how to fully capitalize on brain plasticity.

We know from studies of Romanian orphans found after the overthrow of Romania's leader Ceausescu, that brain organization caused by early emotional deprivation may be more difficult to change, especially if intervention takes place after 6 months of age (Croft et al., 2007). This is because the brain matures from the bottom up, and the amygdala, a brain area associated with socializing, begins to mature around 6 months of age (Joseph, 1999). Maternal depression during early development, an issue also pertinent to mothers of gifted children, has resulted in later and ongoing problematic effects in children's behaviors (Essex, Klein, Cho, & Kraemer, 2003). The above evidence points to a sensitive period in connection with attachment that appears to be resistant to change. It can therefore be concluded that in terms of neglect and abuse, "the earlier it starts, the more difficult it is to treat and the greater the damage is likely to be" (Perry & Szalavitz, 2006, p. 152).

There have, however, been some successes that can give heart to parents of gifted children who have learning or behavior problems. Findings indicate that positive changes are possible until about 5 years of age if maternal sensitivity improves as a result of changed family circumstances (Sroufe, Egeland, Carlson, & Collins, 2005). Additionally, early intervention has held some promise (Heckman, 2006); for instance, through parenting programs (Hoffman, Marvin, Cooper, & Powell, 2006; Scott, 2003). However, these will only succeed if parents are willing and prepared to invest ongoing time and effort. For children whose circumstances have improved, perhaps as a result of their mothers receiving treatment for maternal depression (Weissman et al., 2006), there is a promising approach now emerging. This approach is aimed at addressing the original unanswered needs of the brain areas affected at the time of the child's trauma (Perry, 2006). However, such processes are long, require patience, and are currently unable to guarantee that treatment programs can address all problems equally precisely (Pollak, 2005).

The future holds more promise: Targeted treatments are expected to be much more successful once fine-grained brain research uncovers the exact connections between development, behavior, and the brain (Blackman, 2002). Drug therapy, too, is becoming increasingly sophisticated and better able to target deficits (Farah et al., 2004). LeDoux, a neuroscientist, is currently trialing drugs that may "eliminate" the memory of particular fear memories associated with earlier traumas (as cited in Behar, 2008).

AN EXPERIMENT WITH IQ SCORES

Recall the earlier mention of IQ tests, and that IQ tests are one of a number of ways to identify intellectually gifted children (Van Tassel-Baska, 2005). They are also often used in research, traditionally measuring verbal and performance factors. More recently they have been used in connection with brain research, with findings linking IQ to the frontal and prefrontal cortex (Duncan et al., 2000; Shaw et al., 2006).

One study of traumatized children found that higher verbal IQ was significantly associated with fewer traumatic experiences and symptoms in children (Saltzman, Weems, & Carrion, 2006). Similarly, Perry (2001) has found that chronically traumatic environments result in a prominent verbal–performance split on IQ testing ($n = 108$ WISC Verbal = 8.2; WISC Performance = 10.4). Observations have also been made that verbal IQ of abused and neglected children are often in the low to normal range, whereas the performance IQ may be quite high:

> This split between verbal and performance scores is often seen in abused or traumatized children and can indicate that the developmental needs of certain brain regions, particularly those cortical areas involved in modulation the lower, more reactive regions have been not been met [*sic*]. In the general population about 5 percent of people show this pattern, but in prisons and juvenile treatment centers that proportion rises to over 35 percent. It reflects the use-dependent development of the brain: with more developmental chaos and threat the brain's stress response system and those areas of the brain responsible for reading threat-related social cues will grow, while less affection and nurturing will result in underdevelopment of the systems that code for compassion and self-control. (Perry & Szalavitz, 2006, pp. 104–105)

Similar observations of a split between verbal and performance scores have been made in the case of some gifted children. The IQ scores of gifted children are thought to range

from IQ115, mildly gifted, to IQ175+, profoundly gifted (Feldhusen as cited in Gross, 2000; Sheely & Silverman, 2000). Studies cited by Silverman (2002) have found that approximately one third of students in a number of schools had a *visual–spatial* learning style, which appears to be associated with overdevelopment of the right brain. The children Silverman called *visual–spatial learners* also often had large discrepancies between verbal and performance scores in IQ tests. The verbal and performance scores are no longer available in the latest Wechsler Intelligence Scale for Children–Fourth Edition (WISC-IV; Wechsler, 2003), although a large discrepancy can still be found between the new Verbal Comprehension and the other three indices.

I hypothesized that advanced language skills—linked with secure attachment—are essential for obtaining the highest possible IQ scores, and carried out the following experiment: A WISC-IV (Australian) test was contrived for a mythical 7-year-old insecurely attached gifted child. An average Verbal Comprehension IQ was "scored" (= IQ100), along with maximum scores in Perceptual Reasoning, Working Memory, and Processing Speed (Table 1). Although the Full Scale IQ (FSIQ) is not normally calculated when there is a large discrepancy between indices, because it makes overall intellectual functioning difficult to summarize by a single score, it was calculated in this case for the sake of the experiment (= FSIQ148). The score clearly shows that this mythical child would not be able to obtain a Full Scale IQ score in the Exceptionally Gifted (= IQ160–179) or Profoundly Gifted ranges (IQ180+; Feldhusen as cited in Gross, 2000).

Because the highest possible scores were utilized for nonverbal indices, the scenario did not calculate for typical scores expected from a child with severe early difficulties (Table 2). In reality, such high scores would be unlikely, especially in Working Memory. This is because ongoing stress shuts down the prefrontal cortex, favoring the lower brain systems where the fight-or-flight states originate (Perry & Szalavitz, 2006).

Were we to reduce the Working Memory score to the more likely average score, then the Full Scale IQ (= IQ135) would only be just within the Moderately Gifted category (= IQ130–144). As can be seen, children who are gifted and insecurely attached may well obtain a low to normal verbal IQ, a high IQ in Perceptual Reasoning, and quite low scores in Working Memory, as well as in Processing Speed (a weakness seen in many gifted children), significantly reducing their Full Scale IQ. Our mythical intellectually gifted, insecurely attached, neglected or abused child could therefore only be expected to score in either the Mildly Gifted (= IQ115–129) or Moderately Gifted range (= IQ130–144).

TABLE 1
Score Summary of Mythical 7-Year-Old's IQ Score

WISC-IV Australian composite	*Score*
Verbal Comprehension Index (VCI)	100
Perceptual Reasoning Index (PRI)	155
Working Memory Index (WMI)	150
Processing Speed Index (PSI)	150
Full Scale IQ (FSIQ)	148

TABLE 2
Subtest Results of Mythical 7-Year-Old's IQ Score

	Test age equivalence	*Percentile rank*
Verbal comprehension subtests		
Similarities	6:10	50
Vocabulary	7:10	63
Comprehension	7:2	50
Perceptual reasoning subtests		
Block Design	>16:10	99.9
Picture Concepts	>16:10	99.9
Matrix Reasoning	>16:10	99.9
Working memory subtests		
Digit Span	>16:10	99.9
Letter-Number Sequencing	>16:10	99.9
Processing speed subtests		
Coding		99.9
Symbol Search		99.9

THE CONNECTION BETWEEN ATTACHMENT STYLES AND GIFTEDNESS

Silverman (2002) noted that the gifted visual–spatial learners with large discrepancies between their verbal and performance IQ often had attention and learning problems. Others have also noted that large discrepancies in IQ scores are signs of learning difficulties (Blair, 2006; Munro, 2002). We saw earlier that approximately one third of students have a visual–spatial learning style in some schools that were surveyed and that this learning style is apparently associated with overdevelopment of the right brain (Silverman). Interestingly, recent figures indicate that over 20% of mothers with young children are depressed (Johnson & Flake, 2007) and that others are affected by an unresolved insecure attachment style. We have already learned that approximately one third of children are insecurely attached, and together with the one third of some school populations with a visual–spatial orientation, the figures and problems appear to be so similar that there is a temptation to speculate whether they could represent overlapping populations. It could be argued that maternal depression, insecure attachment, overdevelopment of the right brain, learning difficulties, and gifted visual–spatial children are all connected, and only future research will be able to test this notion.

The inconsistent research findings on the social adjustment of gifted children mentioned earlier can be partially understood in the light of attachment styles: We could expect securely attached gifted children to be socially well

adjusted and insecurely gifted children less so, with attachment style accounting for level of adjustment and affecting level of intellectual giftedness. The influence of attachment style on giftedness creates a very different view from the traditional gifted models, research, and scholarly articles where the emphasis has been squarely on the differentness of gifted children. It is the notion of differentness that has thus far blinded us to the fact that both gifted and nongifted children share many similarities, including some insecure and depressed mothers as well as some characteristics arising from various attachment styles.

Although there is a need for research on the percentage of securely and insecurely attached children within the gifted population, it is argued here that some problems currently associated with giftedness may arise from insecure attachment and parenting issues. Literature dealing with a variety of gifted issues can give a false impression that gifted children come complete with problems associated with their giftedness, yet we have no up-to-date data on problems within the gifted population. Nor have any consistent and specific pathways been available to address these "gifted" problems. It seems, therefore, that there is a need for a gifted model that clearly sets out the developmental realities of gifted development that involves attachment and fleshes out a gifted spectrum. This model would be helpful for parents, educators, and psychologists alike and would provide an inclusive road map for educational, psychological, and research purposes.

In summary, although the impact of attachment is hardly new, and although the link between IQ and parenting has long been established, the mutual influence between giftedness and attachment style and the impact of insecure attachment on giftedness has not been previously examined. Having made that link here, it can now be argued that, because a number of insecurely attached children will have learning difficulties, gifted children could be among their number—an argument that provides the rationale for a gifted spectrum. Such a spectrum would include the securely attached gifted child, a gifted spectrum of children with a variety of learning and other difficulties and disabilities arising from insecure attachment, as well as children with problems caused by other environmental and biological factors.

CONCLUSION

The pathways to giftedness are many and arduous but never as arduous as during the period when attachment takes place. Secure attachment may be the gatekeeper to unlimited possibilities for those children who have a genetically inherited intellectual potential. It can pave the way to giftedness in a variety of areas, including emotional and intellectual giftedness. Gifted children who are insecurely attached, however, will possibly struggle with a variety of learning and psychological difficulties and may find that their attachment style can be a limiting factor in reaching their full potential.

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Chapter 3

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ERRATUM

In Volume 32, Issue 2, *Roeper Review* published an article titled "Communicating Love or Fear: The Role of Attachment Styles in Pathways to Giftedness" by Mimi Wellisch, pages 116–126.

An error appeared in the Section "Attachment" on page 117, line 10. The sentence should read as follows:

> "Insecure, or disorganized, attachment in children is the frequent outcome of inconsistent, angry, or dismissive care-giving, misinterpretations, and miscommunications—behaviors that are linked to neglect and abuse (Perry & Szalavitz, 2006; Prior & Glaser)."

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3.7 Reflective postscript

The reader is reminded that any connections made in the article among giftedness, under-achievement, parenting, abuse/neglect, and attachment are subject to extensive documentation and further research to ascertain, first of all, that the connections are there, and second, that one factor does not necessarily affect another.

It was noted that an error occurred in the section entitled *Secure attachment outcomes and some gifted characteristics,* where people with an IQ of 115 were described as making up 25% of the population. This should have read as 15% of the population.

One assumption raised in this article is that intelligence may be a protective factor against certain adverse early experiences, including maternal depression (Johnson & Flake, 2007). That is, that gifted children who have been sensitised through early trauma may behave differently in comparison to children who are not gifted. However, there is a dearth of studies to support any such expectations (Gale, Hatch, Batty, & Dreary, 2009). Instead, it is suggested that repeated adverse experiences for children, regardless of their intellect, may override rational thinking associated with the frontal lobe, to be replaced instead by automatic instinctual behaviour and emotional reactions. These reactions may originate from the older limbic system (the "emotional brain") which is tasked to ensure survival through the fight and flight mechanism. Perry, Pollard, Blakely, Baker, and Vigilante (1995) explain this as follows:

> Traumatized children exhibit profound sensitization of the neural response patterns associated with their traumatic experiences. The result is … full-blown

> response patterns (e.g., hyperarousal or dissociation) … elicited by apparently minor stressors (p. 275).

Given the above, gifted insecurely attached children may be proficient at intellectual problem solving, an activity linked to the frontal lobe and associated brain areas that involve executive functions, while they may simultaneously be unable to regulate their emotional reactions.

Further questions may be raised in relation to the research about avoidantly attached children, for example that they explore equally well in or without their mother's presence, and that they are less inclined to try new experiences. These studies, cited by Prior and Glaser (2006), imply that avoidant children are less attached and therefore less affected by the mother's presence and absence. In other words, they appear not to be affected either way, demonstrating that the attachment is not secure. Similarly, Prior and Glaser (2006) cite findings demonstrating that children who are anxiously attached are less adventurous and more reluctant to try new experiences—findings that may also apply to gifted children who are anxiously attached.

However, no study has examined gifted children's attachment styles or how they react compared with findings for the general child population. Nor is there any information available on the attachment styles of gifted children who have a strong sense of justice compared with gifted individuals who engage in criminal behaviour (Neihart, 2010). We may, however, speculate that those who have a strong sense of justice would perhaps be securely attached, whereas those engaged in criminal behaviours may be insecurely attached.

On further reflection, readers may have found the mythical child experiment unconvincing, perhaps because of the predicted lower IQ result. After all, research cited in Landau and Wissler (1993) indicates that children who are gifted are likely to have parents who verbalise more and interact more appropriately with them, and these behaviours are similar to those of parents whose children are securely attached. However, such parental behaviour may not apply equally to all gifted children. For example, it may not apply to gifted children who are insecurely attached (Prior & Glaser, 2006), or whose mothers have experienced depression (Quevedo, Silva, Godoy, Jansen, Matos, Pinheiro, & Pinheiro, 2011). These children may therefore have a somewhat reduced verbal IQ and possibly also behavioural and emotional problems.

The quasi-experiment was based on what is known about children from the general population. For example, there is evidence that children of depressed mothers are more likely to obtain lower scores on verbal skills (e.g., Stein, Malmberg, Sylva, Barnes, & Leach, 2008), and verbal IQ scores have been found to be lower in comparison to performance IQ scores in children who have been neglected and abused (Perry, 2002), as well as in gifted children (Silverman, 2002). Additionally, as mentioned in the article, the processing speed of gifted children is also often low. For example, Silverman (2009) cited research involving 334 gifted children whose average WISC-IV Processing Speed score was 112.02, explaining that a complex mind "may bring more to even a simple task" (p. 126). Processing speed may be further reduced in children with learning or other problems. These children have been found to have lower working memory and processing speed scores than do children without such problems (see Calhoun & Dickerson Mayes, 2005; Munro, 2005; Center on the Developing Child at Harvard University, 2011).

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The mythical gifted child experiment aimed to demonstrate how a gifted child's FSIQ would look with a normal verbal IQ score and otherwise high scores on all other subtests. Further aims were to demonstrate that a gifted and insecurely attached child may not be able to obtain scores in the highly or profoundly gifted range. The original scores were therefore further changed by reducing working memory and processing speed scores, as these have been shown to be lower in children who have experienced trauma. The experiment aimed to demonstrate how a gifted and insecurely attached child might score on a WISC-IV (Wechsler, 2003) IQ test and the range of scores expected from such a child, which did not exceed the moderately gifted level.

3.7.1 New studies

The findings of a recent study with a large sample of children support the association between secure attachment and higher IQ (West et al., 2013). The longitudinal study involved families initially recruited for the NICHD SECC project in 1991. A total of 1,253 children who had participated in at least one attachment assessment in early childhood were included in the follow-up study in which their cognitive performance in middle childhood was assessed. It was found that children who were classified as securely attached at 24-months and 36-months had better school performance and IQs in Grade 2. The researchers reported that when all mediating variables (maternal quality of assistance, likability by peers, school cooperation, and delay of gratification) were included, the path from 24-month and 36-month attachment to IQ remained significant at $p = .001$ and $p = .002$ respectively. Although this demonstrates a reliable relationship, it is very small, and shows only slight commonality between the variables.

Another recent study by Cicchetti et al. (2011) that may have implications for the heritability of intelligence provides new evidence for the impact of adverse early environmental influences. The study was conducted after publication of my article. Genetic evidence was found that environmental conditions, whether positive or negative, may influence the development of attachment. The researchers examined the influence of polymorphisms of the serotonin transporter linked promoter region (5-HTTLPR) and dopamine receptor D4 (DRD4) genes in abused and non-abused 13-month old children. Cicchetti et al. (2011) found an influence on attachment security and disorganisation at age two in children who were not abused, while influence was minimal in abused children. They concluded that the genetic contribution was less important than were the environmental conditions in maltreated children's development of a particular attachment style. Although children who were not maltreated were not affected similarly, this study illustrates how adverse environmental conditions may overwhelm the contribution of genes involved in some children's development, a topic that has already been raised.

3.7.2 The next chapter: A focus on giftedness

The focus of the article in this chapter was predominantly on attachment, attachment style, and related child characteristics. These characteristics were also compared to some gifted characteristics. Chapter 4 will examine how the problems of gifted children are viewed through gifted literature, particularly in relation to the common description of gifted children as having an uneven development. To date the assumption has been that uneven development is part of the gifted condition and the underlying cause of many problems experienced by gifted children. This claim is challenged in Chapter 4 and another explanation is argued for, namely that the problems of gifted children, where such problems exist, may instead emanate from attachment-related difficulties.

Chapter 4

Giftedness: An Introduction to Its Many Complexities

The previous chapter presented an introductory review of literature on responsive caregiving, internalising and externalising, and learning disorders, all associated with attachment. This was followed by an article with a focus on attachment theory (Bowlby, 1969) and related research from a number of disciplines, including aspects of giftedness that may be linked with attachment. A desktop experiment on projected IQ results of a gifted child with attachment problems was included in the article. This chapter focuses primarily on giftedness. A review on some aspects of the literature precedes a published peer reviewed book chapter on giftedness, specific problems associated with some gifted children, and the possible association of giftedness with attachment-related issues.

4.1 Giftedness: A synthesis of the literature

Seven key gifted topics are examined in the following literature review that are either not addressed, or only partially addressed, in the previous and later chapters, and are fundamental for subsequent discussion on the topic of giftedness. Reviews of additional literature on characteristics and educational issues in giftedness are included in later chapters (particularly Chapters 7, 8, and 9).

The following questions are addressed in this review:

- Are there phenomena such as giftedness, natural abilities, gifts and/or talents?
- What are the essential factors leading to giftedness in children?
- Is childhood giftedness a precedent to later eminence?
- Is a gift only a potential that requires demonstration through achievement?

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- Are natural abilities or gifts a prerequisite for development of a particular talent?
- Should prevalence of giftedness be measured and predicted?
- How should gifted children be identified?

Some of these questions have been raised or alluded to in Chapters 2 and 3. Now I address the important backgrounds to these gifted issues. Each question will be discussed briefly in relation to the literature.

4.2 Are there phenomena such as giftedness, natural abilities, gifts and/or talents?

The idea that gifts are innate in children is a Western concept (Freeman, 2005; Sternberg, 2004; Winner, 2000), and descriptive characteristics of the gifted vary according to socio-economic and cultural backgrounds of children, and specific gifts (Frasier & Passow, 1994; Frasier et al., 1995; Howe, et al., 1998; Marek-Schroer & Schroer, 1993; Rotigel & Pello, 2004). Giftedness may therefore be seen as a cultural concept. However, there have always been exceptional individuals who, depending on where they were born, were known as geniuses. Examples include philosophers Plato and Confucius, scientist Copernicus, artist Leonardo Da Vinci, composer Mozart, and political heroes Abraham Lincoln and Martin Luther King Jr. Historically, experts have attached a variety of definitions to the terms *gifted* and *talented*, and have often used them interchangeably (Gagné, 2004). Add to this *child prodigy*, *high ability*, *exceptionality*, and *expert*, and it becomes clear that the ongoing confusion between the terms and definitions of what constitutes giftedness (Feldhusen, 2004) are reason enough to conclude that there is a need for the simplification of descriptive terminology (Mayer, 2005; Robinson, 2005).

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Gagné (2004), whose model is used in Australian schools to inform gifted education, and whose work will therefore be examined more intensely in this thesis than the work of other gifted experts, has used *gift* and *talent* to differentiate between natural and developed abilities. However, Lohman (2006) has argued that natural and developed ability evidenced in achievement cannot be separated as they are actually "aspects of the same thing" (Lohman, 2006, p. 32). There is also difficulty in separating the simultaneous interaction between genetics, environment, and context in the making of a gifted child (Mayer, 2005; Perry & Szalavitz, 2006; Plucker & Barab, 2005; Prior & Glaser, 2006; Subotnik & Jarvin, 2005; Turkheimer, Haley, Waldron, D'Onofrio, & Gottesman, 2003; Ziegler, 2005).

Additionally, there are different forms and paths to giftedness (Bailey & Morley, 2006; Washington & Karen, 2001; Winner, 2000). Although findings on cognitive heritability continue to provide more and more substantial evidence of significant increases in inheritance as children age and thereby keep alive the "nature" debate (Haworth et al., 2010), the inheritance of giftedness may be more complex. Depending on the form of giftedness, such inheritance may require a number of traits that may or may not emerge at different points in time, and these could depend on environmental opportunities and may or may not produce a form of giftedness that is "additive or multiplicative, simple or complex" (Simonton, 2005, p. 324). On the environmental side of the argument, brain research has clarified that the newborn child's brain is incomplete and that its development is contingent upon the quality and content of interaction with the external environment (Joseph, 1999; Perry, 1995). Therefore, although there is strong evidence for gifted heritable tendencies (Robinson, 2005; von Károlyi & Winner, 2005), a supportive environment is required to educe these, as has sadly been demonstrated through the absence of advanced abilities in cases of abuse and neglect (Perry &

Szalavitz, 2006; Prior & Glaser, 2006). It might also be that certain gifts, such as intellectual and emotional giftedness, are affected and kindled by attachment style (Karrass & Braungart-Rieker, 2004; Piechowski, 1997; Prior & Glaser, 2006; Van IJzendoorn & Van Vliet-Visser, 1988), a possibility that was raised in the article presented in Chapter 3. These considerations led to the suggested gifted spectrum approach outlined in Chapter 2 which differentiates between children who are authentically gifted—i.e., gifted children with no additional problems— and other children along a gifted spectrum who are gifted and have disorders and disabilities.

In summary, exceptional individuals have been described historically and in a variety of cultures. It can therefore be concluded that there is a case for the current existence of exceptional individuals who may be described as having natural abilities, talents, and/or gifts.

4.3 What are the essential factors leading to giftedness in children?

The causative factors of giftedness have been thoroughly canvassed, mainly via retrospective studies (e.g., Bloom, 1985; Csikszentmihalyi & Csikszentmihalyi, 1993). Heritable tendencies have already been mentioned. However, the difficulties in isolating how these tendencies are elicited by environmental factors are many. They include the multitudes of contexts and circumstances in each human life and the way these are perceived and responded to by individuals (Dave, 1963); the heterogeneous nature of giftedness (Cukierkorn, Karnes, Manning, Houston, & Besnoy, 2007); the variety of expressions of giftedness, e.g., the arts, sport, and intellectual pursuits; cultural interpretations of what constitutes giftedness (Sternberg, 2007); and the latency of giftedness in children and adults, including where it may be unexpected and therefore more unlikely to be identified, for example among the

disabled (Baum, 1984; Baum, Owen, & Dixon, 1991; Simonton, 2005; Subotnik, Olszewski-Kubilius, & Worrell, 2011).

However, some important environmental factors have been identified that appear to promote giftedness. For example, Csikszentmihalyi and Csikszentmihalyi (1993) found that the parents' high expectation, provision of stimulation, and unfaltering support appeared to help elicit and promote giftedness. This seems to indicate that secure attachment may be a prerequisite to some forms of giftedness. Counter-intuitively, however, it has been the experience of trauma that in some cases became the motivator for the pursuit of a passion (Csikszentmihalyi & Csikszentmihalyi, 1993; Piechowski, 1997; Winner, 2000). One such example is Frankl's unwelcome experiences and observations of his co-inmates in a concentration camp, eventuating in his logotherapy (Frankl, 1984; Maslow, 1970; Piechowski, 1998).

4.4 Is childhood giftedness a precedent to later eminence?

No linear connection between childhood giftedness and adult eminence has been found (Feldman, Csikszenmihalyi, & Gardner, 1994; VanTassel-Baska, 1989). On the contrary, eminent adults often were not identified as gifted children (Subotnik, 2009). The failure to identify giftedness may be due to ignorance about gifted children, a failure to notice certain characteristics that are frequently seen in young gifted children, or, alternatively, it may be on account of some important barriers to achievement, topics discussed in this thesis. In fact, according to Ericsson et al. (2007), "deliberate practice", or the "considerable, specific, and sustained efforts to do something you can't do well" (p. 118), is the most essential factor in the eventual making of an expert. However, specific enabling qualities have been identified that appear to be essential for propelling giftedness towards high achievement, including a

typical dogged or even obsessive pursuit of a passion, such as Winner's "rage to master" (Winner, 2000, p. 163). Subotnik and Rickoff (2010) also argue that the possession of appropriate psycho-social skills for one's respective domain is more likely to be the distinguishing factor between those who will achieve and those who will not. These important more recent findings on achievement were already summed up by Terman and Oden (1959) decades earlier. They found that good socio-emotional skills and a drive to achieve were the two factors separating the most and least successful gifted individuals.

4.5 Is a gift only a potential that requires demonstration through achievement?

Some scholars reject the idea of identifying children as gifted, concerned about the historically low representation of low socio-economic and minority groups among their number (Borland, 2005; Howe et al., 1998). Others appear to believe that giftedness is a state of being (Delisle, 2003; von Károlyi, & Winner, 2005); a potential as yet undemonstrated (Gagné, 2004), for instance waiting for the unfurling of the particular gift at a particular genetically set timing (Rutter, 1998); or an interest or skill yet to be encountered (Rutter, 1998; VanTassel-Baska, 2005). Some consider that there is room for both potential and current gifted performance (Renzulli, 2005; VanTassel-Baska, 2005), while others believe that they are one and the same (Lohman, 2006), that gifted children are already gifted performers (Plucker & Barab, 2005). Yet other experts see giftedness as a developmental progression that could or should result in adult eminence (Feldman, 1992; Gagné, 2013; Mayer, 2005; Subotnik & Jarvin, 2005; Subotnik et al., 2011).

The revised NSW Department of Education and Communities' gifted policy (Department of Education and Training, 2004) in Australia was based on Gagné's (2003) DMGT, replacing Gardner's definition of giftedness as well as his theory of multiple intelligences (MI; Gardner,

1983). Since South Australia's Department for Education and Child Development finally revised their gifted policy in 2010, it can be confirmed that the adoption of the DMGT in either policies or supporting documents is now Australia wide.

The DMGT equates a child with natural abilities as having gifts or potential (Gagné, 2007). Gifts or potentials may be realised into talents, according to Gagné's terminology, through systematic talent development programs. Gagné (2011) argued, however, that children can be identified for inclusion in such programs through their current achievements, and that only those children who are already high achievers should be included in talent development programs.

While many gifted children already perform at a gifted level compared with their age peers (Plucker & Barab, 2005), some gifted children may not achieve due to educational, cultural, or socio-emotional barriers. Lack of high achievement, therefore, seems to be an unreliable criterion for excluding children and may be a direct result of inflexible educational processes, lack of cultural competence, and inappropriate educational support and expectations (Cloud, 2007; Renzulli & Park, 2002). The literature thus supports the proposed gifted spectrum approach described in Chapter 2. The subject of ensuring awareness as well as inclusion and opportunities for both achieving and potentially gifted underachieving children is discussed more fully in Chapter 7, with the suggestion that multi-faceted and ongoing identification needs to be built into a gifted model's functional role in identifying and developing the gifted child, as outlined in Chapter 9. This would include a list of gifted characteristics, the controversial IQ/achievement discrepancy model to identify children with a high IQ compared with their low achievement (Restori, Kats, & Lee, 2009), and children from low socio-

economic backgrounds and minority groups who may require a number of alternate modes of identification, the focus of Part III of this thesis.

4.6 Are natural abilities or gifts a prerequisite for development of a particular talent?

Howe et al. (1998) have argued that it is rigorous practice that is almost certainly entirely behind what makes for excellence in performance or product, an argument echoed in some Eastern cultures and clearly evidenced by Asian children's international educational excellence (Freeman, 2005; Renzulli, 2005; Sternberg, 2004; Subotnik, Olszewski-Kubilius & Worrell, 2011; VanTassel-Baska, 2005). Additionally, although the prerequisite of intellectual ability has been seen as important in the early stages of certain skill acquisition, its importance diminishes and shifts instead to processing speed and motor response with sufficient practice (Chiappe & MacDonald, 2005; Howe et al., 1998). Another angle to the question of whether gifts are a prerequisite to the development of expertise is whether a child needs to be *intellectually* gifted in order to be gifted in other areas of endeavour (Tannenbaum, 1996). There is currently no research support for the necessity of this prerequisite (Drake & Winner, 2012; Subotnik & Jarvin, 2005; VanTassel-Baska, 2005; Winner, 2000).

4.7 Should prevalence of giftedness be measured and predicted?

The prevalence of giftedness within the population is a debate that has now almost ceased. At the height of the debate, most experts generally agreed that 3% to 5% of the child population was gifted and talented. This estimate was probably based on the IQ bell curve (Karnes, 1983; Kitano, 1982; Rosberg, 1981), although Lewis and Louis (1991) commented that the "actual expected percentage is unclear but must lie between 2 and 8%" (p. 378). Such figures differed from Renzulli's (1978) and Gardner's (1983) broader conceptions, changing the focus from

intellectual to multiple forms of giftedness, and the widespread abandonment of IQ tests as the only measure of giftedness. Renzulli, Reis, and Smith's (1981) revolving door identification model allowed for a prevalence of 15 to 20% of the general population, whereas Gagné (2004) argued that 10% of age peers are at any time gifted "in at least one ability domain" and that 10% are talented "in at least one field of human activity" (p. 161). Feldhusen's (2004) response to Gagné's argument for his 10% demonstrates the impossibility of arriving at a conclusive answer to the question of prevalence and its irrelevance to the make-up of factors in a gifted model: "…he goes on and tries to give us frequency or numbers or percentages for 'giftedness and talent' reflecting a continuing and often seemingly arbitrary and fruitless quest for the magic numbers" (Feldhusen, 2009, p. 151). It appears that prevalence is inconsistent, unreliable, not based on research evidence, and plays no practical role, and is therefore clearly not a necessary component in a gifted model. A different aspect to the prevalence question is the broader suggested gifted spectrum approach.

4.8 How should gifted children be identified?

Identification, a focus of Chapters 7 and 9, is closely tied to the definition of giftedness and the prevalence question, and has therefore been an ongoing subject of contention. IQ tests, originally developed by French researchers Binet and Simon in 1905 to identify children with inferior intelligence, were exclusively used to identify academically gifted children until the notion of giftedness was expanded to include other than intellectual giftedness. In Australia, for example, a high IQ score was the condition for entry to opportunity classes (Fetterman, 1988), offered from the 1930s for academically gifted and talented children (Braggett, 1993; Larsson, 1986), as well as for selective high schools, such as the Conservatorium of Music in Sydney. As support for IQ testing dwindled, alternative forms for predicting school achievement have flourished (Alloway & Alloway, 2010; Sternberg, 1985). The much-

researched and established reliability of the IQ test to predict school achievement continues, however, to be reliably demonstrated, for example with a 5-year longitudinal study of more than 70,000 English children (Deary, Strand, Smith, & Femandes, 2007).

Despite such evidence, the IQ test fell out of favour for a number of reasons. These include the damaging assertion that some ethnic and racial groups are superior to others (Herrnstein & Murray, 1994), the IQ test's linguistic and cultural insensitivity, and its inability to identify children who have other than academic gifts (Delisle, 2003) such as music, creativity, and leadership. With traditional IQ tests' strong reliance on timed performance, verbal ability, and general knowledge, also known as *crystalised intelligence*, IQ tests were even seen as unreliable for gifted children as many performed poorly on timed tests, unable to demonstrate their supposedly more natural "fluid" intelligence (Blair, 2006). IQ tests reflective of cultural diversity and reliable measurement of the IQ of children from non-English speaking backgrounds were initially also unavailable.

Considerable criticism was levelled at the general factor that measures intelligence, *g*, first identified by Charles Spearman in 1927 (Shobris, 1996). General intelligence was dismissed as a psychometric artifact, and, as mentioned earlier, multiple intelligence theories such as Sternberg's (1985) triarchic theory of human intelligence and Gardner's (1983) multiple intelligences were quickly embraced.

Therefore, although today's IQ tests are very different from traditional ones, and now only partially rely on timed tasks and general knowledge, the above issues brought on a strong resistance to IQ tests as a measure of intelligence (Lohman, 2006), resulting in the use of a

broader selection of assessment strategies, and in the less frequent use of such IQ tests to identify gifted children. The subject of a proposed strategy in gifted identification as part of the proposed new gifted spectrum approach can be found in Chapter 7.

4.9 Publication — The adjustment of gifted children: Is asynchrony the only reason for their problems?

The following peer reviewed published book chapter was written in order to debate the widely held belief that most problems of gifted children are caused by their typically uneven development. The focus here is on the accepted notion that gifted children are "out-of-sync" with others around them (Silverman, 1997; 1998). This is assigned to the state of being gifted within gifted literature. But are all gifted children out-of-sync? As has been proposed earlier in Chapters 2 and 3, such assumed associations with giftedness may perhaps be due to different styles of attachment.

In the book chapter reproduced on the following pages, my fellow author and I add to the proposed theoretical approach in Chapters 2 and 3 by raising the question whether problems, assigned to uneven development may perhaps be associated with insecure attachment, as there are many shared characteristics. It is also argued in the published book chapter that inconsistent findings on gifted children's socio-emotional adjustment may be due to their attachment style, and that as attachment affects socio-emotional adjustment, it may also affect achievement. In the light of Chapters 2 and 3 and the arguments proposed there, the possibility is raised again that gifted underachievers may be insecurely attached. The discussion includes how Gagné's DMGT model may not provide a pathway for these children's educational and other needs. This is because the catalyst components in his model relate directly to the talent development of eligible children. In Gagné's own words: "In talent

development analysis based on the DMGT, we include only personal influence that impact the talent development process" (2009, p. 4). Underachievers, however, never reach the talent development process: "… high natural abilities may simply remain gifts, and not be translated into talents, as witnessed by the phenomenon of academic underachievement among intellectually gifted children" (Gagné, 2008, p. 6). Also raised here are the possible connections between giftedness, underachievement, learning difficulties, parenting, abuse and neglect, and attachment styles, although these connections are currently based only on ideas, with no evidence of causality between giftedness and other suggested factors. The discussion supports the theoretical approach, raising questions about the assumptions made in relation to asynchronous differentness of gifted children.

The book chapter reproduced on the following pages was published as:

Wellisch, M., & Brown, J. (2009). The adjustment of gifted children: Is asynchrony the only reason for their problems? In D. Wood (Ed.) *The gifted challenge: Challenging the gifted* (pp. 24–31). Merrylands, Australia: NSW Association for Gifted and Talented Children Inc.

Chapter 4

The Adjustment of Gifted Children: Is Asynchrony the Only Reason for Their Problems?

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Gifted children have often been described as being 'out of sync' with chronologically same aged peers and societal expectations, with giftedness linked to particular characteristics (Rogers & Silverman, 1997), a variety of abilities, and high IQ (Winner, 1998). High IQ has also been associated with secure attachment (Van Ijzendoorn & Van Vliet-Visser, 1988), and secure attachment is linked to advanced language ability (Van Ijzendoorn, Dijkstra, & Bus, 1995), and other positive developmental outcomes (Prior & Glaser. 2006).

However, not all gifted children are securely attached (Karrass, & Braungart-Rieker, 2004; Van Ijzendoorn & Van Vliet-Visser, 1988), and the consequences of insecure attachment may impact on achievement. There is a dearth of research on the connection between giftedness and attachment, and more research is needed. This paper will therefore review available information as well as indirect evidence to paint a conceptual picture of how attachment may contribute to some gifted children being 'out-of-sync'. First, asynchrony will be examined, followed by an outline of attachment and finally its impact on giftedness, and on gifted and learning disabled children.

Asynchrony

The construct of asynchrony was conceived in response to a general shift away from the 'gifted' concept to the more achievement oriented and supposedly equitable development of 'talent' (Morelock, 1992). Silverman (1997) argued that the poor social fit of gifted children was due to a less mature but highly sensitive emotional system. She saw gifted children as cognitively complex and emotionally intense, functioning at various developmental ages, for example, with the mental age of a 14-year old and a chronological age of an 8-year old.

According to Silverman (1998), the most asynchronous of all gifted children are gifted children with learning disabilities. Various learning disabilities are thought to be due to particular executive function problems, such as working memory deficits (Alloway & Gathercole, 2006; Pickering, 2006; Swanson & Siegel, 2001), associated with the prefrontal cortex. The prefrontal cortex is particularly involved during intelligence tests, and the magnitude of activation has been tied to intelligence (Flynn, 2007; Shaw, et al., 2005).

Perry (2006), a neuropsychologist and psychiatrist, also describes children who are characterized by uneven development in a number of areas, who have learning disabilities and developmental delays, and yet are not normally associated with the gifted population. They are children who can be described as having an insecure attachment style, described a little later. The outcomes of insecure attachment are remarkably similar to many of the characteristics associated with gifted and learning disabled children, including deficits in attention and behaviour regulation (Perry, 2002). Can there be an overlap of these two populations? To inform the comparison, the following section will give an overview of attachment.

Attachment

Attachment is a biological instinct that enables the survival of the human baby (Prior & Glaser, 2006). In attachment theory (Bowlby, 1969), the term attachment describes the tie between a baby and the attachment figure based on the baby's need for safety, security and protection, with the principal attachment figure best characterized by the mother (Prior & Glaser, 2006). Attachment can be secure and insecure, with insecure attachment forming a number of recognizable patterns, including ambivalent/resistant (anxious) and avoidant attachment (Ainsworth, Blehar, Walters, & Wall, 1978). The attachment process is aided by the timely maturation of particular brain areas that coincide with a time when the mother is in close proximity and available (Joseph, 1999). If the mother is not available during these sensitive periods, the attachment process will be flawed and long-term negative consequences are likely to affect development. The severity of these consequences may well depend on the extent to which the baby's needs were neglected and exactly what part of the brain was developing at the time of the unmet need (Gunnar & Quevedo, 2007). If abuse has also occurred, this will further complicate the consequences.

Secure Attachment, Gifted Children and Social Adjustment

Attachment probably begins in the womb (Kisilevsky, et al., 2003), and by 9 months, most babies will have formed a strong attachment to an adult. Attachment style is established by 3 years of age and informs internal working models of self, others and relationships (McMahon, Barnett, Kowalenko, & Tennant, 2006).

Securely attached children are generally trusting, confident, emotionally regulated, socially competent, and empathetic (as cited in Prior & Glaser, 2006). Interestingly, empathy appears to be associated with higher levels of giftedness, identified as "compassion for others" by 93.5% of parents with exceptionally and profoundly gifted children (Rogers & Silverman, 1997).

Teachers have rated gifted primary school children as being better socially adjusted than children who were not gifted (Preuss & Dubow, 2004), although Winner (2000) argues that teacher ratings may be subject to a "halo effect", and that giftedness has been associated with social problems. We have seen that securely attached children are well adjusted, so the inconsistent findings indicate the involvement of other factors, such as attachment style. Securely attached gifted children may therefore be

well adjusted, and insecurely attached gifted children may experience emotional and social problems, similar to the general child population.

Causes of Insecure Attachment

Attachment style is thought to be shaped by the level of sensitivity in care-giving and responding by the *principal* attachment figure, best characterized by the mother (Prior & Glaser, 2006). Studies have found that 80% of mothers with low sensitivity reported prenatal depressive symptoms (Kemppinnen, Kumpulainen, Raita-Hasu, Moilanen, & Ebeling, 2006).

Both giftedness and maternal depression can be found in all families regardless of socio-economic status, with one study finding that 74% of chronically depressed mothers had insecurely attached babies (McMahon et al., 2006). Maternal depression has been associated with less than optimal cognitive development in children (Cicchetti, Rogosch, & Toth, 1998). Babies, whose mothers are depressed or unable to respond with consistent sensitivity, experience traumatic or neglectful care-giving. The earlier neglect and abuse occurs "the more difficult it is to treat and the greater the damage is likely to be" (Perry & Szalavitz, 2006, p. 152). The way attachment styles affect children, and how they are likely to affect giftedness, will be briefly outlined below.

Insecure Attachment - Ambivalent/Resistant (Anxious)

Children with ambivalent/resistant attachment tend to be anxious, less forceful, less confident, more withdrawn, more passive and more hesitant when faced with a new experience than both the securely attached, and children with avoidant attachment. A finding by Van Ijzendoorn and Van Vliet-Visser (1988) indicated that ambivalently attached children's IQ scores were almost as high as that of the securely attached, with the authors concluding that the ambivalent insecure attachment pattern does not appear to hamper cognitive development. Attachment style does, however, affect social and emotional adjustment, and may therefore have an impact on achievement.

Avoidant Attachment

Children with an *avoidant* attachment style are more hostile, aggressive and have more antisocial behaviours, more negative feelings and are more likely to scapegoat and victimise other children (Prior & Glaser, 2006). Although they appear more confident than the ambivalently attached, they can also suffer from depression, attended by an inhibiting effect on attention, planning, memory and learning (Prior & Glaser, 2006). Giftedness is therefore likely to be affected, and they are unlikely to achieve a high score on emotional intelligence (EQ) (Wellisch, in press) or become all-round intellectual achievers.

Attachment, Giftedness and Characteristics

Certain characteristics relate to both giftedness and attachment style. Perfectionism, is, according to Silverman (1998), the driving force of gifted children, although it has been found to have different expressions depending on attachment style (Rice & Mirzadeh, 2000; Wei, Mallinckrodt, Russell, & Abraham, 2004).

A review found that healthy perfectionists set high achievable personal standards, are organized, satisfied with themselves, have a desire to excel and are motivated to achieve positive outcomes (Wellisch, 2008). Unhealthy perfectionists, however, have unrealistically high standards, ruminate intensely over mistakes, perceive that others require perfect performance, perceive large discrepancy between performance and personal standards, doubt their own actions, and avoid negative consequences (Enns & Cox, 2002). It seems that securely attached gifted children use their perfectionism to achieve, whereas unhealthy perfectionism may be an obstacle to achievement for the gifted who are insecurely attached.

Persistence has been associated with secure attachment, and identified by Renzulli (2005), who calls it "Task Commitment", as one of three defining identifiers of gifted children. Recent findings on persistence have been supportive of Renzulli's assertion (Duckworth, Peterson, Matthews, & Kelly, 2007). Therefore, persistence in the securely attached seems to be a necessary ingredient for high levels of achievement.

We have seen how attachment is expressed in important personality factors and how they may be linked to gifted children. There is also an increasing awareness of children whose giftedness is complicated by learning and other difficulties (Munro, 2002; Winner, 2000). These difficulties will be outlined below.

Gifted Disabled – and Insecurely Attached?

Silverman (2002) has observed gifted children with a visual-spatial learning style, describing them as holistic thinkers who tend to be gifted in mathematics, music and/or the visual arts. She argues that these children seem to have enhanced right-hemispheric development, often achieving unusual IQ scores with a sizeable gap between Verbal and Performance scores.

Perry and Szalavitz (2006) made similar observations about a population of children who were neglected and abused. They wrote that the over-development of the right brain is often seen when developmental needs of certain brain regions have not been met. "It reflects the use-dependent development of the brain: with more developmental chaos and threat the brain's stress response system and those areas of the brain responsible for reading threat-related social cues will grow, while less affection and nurturing will result in underdevelopment of the systems that code for compassion and self-control" (pp. 104-105). Perry (2001) also found that chronically traumatic environments can result in a prominent Verbal-Performance split on IQ testing, and a study of traumatized children found that higher Verbal IQ was significantly associated with fewer traumatic experiences and symptoms in children (Saltzman, Weems, & Carrion, 2006). It therefore appears that a relatively weak Verbal IQ may be associated with insecure attachment.

The condition of Attention Deficit Hyperactivity Disorder (ADHD), and language related problems, have both been observed in gifted children (Silverman, 2002). Perry et al. (2002) have also reported that neglected and abused children who present at health services are typically diagnosed with ADHD, which has been linked with

language disorders, often the first sign that a child may have other psychiatric and learning problems (Toppelberg & Shapiro, 2000). A meta-analyses of 32 studies on attachment, intelligence and language concluded that language development is "stimulated in the context of secure attachment relationships" (Van Ijzendoorn et al., 1995, p. 115). These findings should be considered in relation to gifted children with learning disabilities.

Possible New Treatments for GLD

Anecdotal evidence indicates an increase in gifted children with learning disabilities (Lynn Berresford, personal communication, March 31, 2008), and some may be outcomes of insecure attachment. Underachievement is currently not addressed in the Differentiated Model of Giftedness and Talent (Gagné, 2008), the model used by Education Departments in Australia. The DMTG only provides an educational pathway, and teachers and parents can either choose an educational option, or find their own way through an array of treatments, each claiming to address learning disabilities or socio-emotional problems, although neither choice may specifically address issues arising from insecure attachment. It seems, therefore, that there is a need for a model that includes a spectrum of giftedness with an option for social-emotional therapies for gifted children with learning and social problems.

Helpful evidence based therapies do exist. For example, findings indicate that children's diagnoses and symptoms were reduced when their mothers received medication for maternal depression (Weissman, et al., 2006). There are also promising new programs being developed for children with attachment problems that aim to address early damage (Perry, 2006). These therapies, if successful, may result in greater motivation to achieve in insecurely attached gifted children.

Conclusion

Despite much debate since the inception of the Columbus Group (Morelock, 1992), a current model of giftedness is focused on achievement through educational provisions (Gagné, 2008). However, gifted and attachment characteristics appear to be related, and problems currently associated with asynchrony and giftedness may well arise as a result of insecure attachment. There is a need for more research, and a need for an inclusive model that provides alternate pathways for gifted children who underachieve as a result of insecure attachment. Appropriate treatments may well increase motivation and help ensure a better educational outcome for underachieving gifted children.

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Chapter 4

4.10 Reflective postscript

The construct known as asynchrony in the literature on giftedness is described in Chapter 4. The term is meant to explain the unusual behaviours, emotions, and associated problems of gifted children. Page 26 of the publication makes a reference to perfectionism, and Silverman (1998) was cited in relation to her view that perfectionism was a driving force for gifted children. Silverman would perhaps have felt supported in forming this view because many other experts also noted perfectionism as a gifted characteristic (see Buescher, 1985; Clark, 1983; Delisle, 1986; Hollingworth, 1926; Karnes & Oehler-Stinnet 1986; Kerr, 1991; Kramer, 1988; Lovecky, 1992; Manaster & Powell, 1983; Robinson, 1996; Robinson & Noble 1991; Roedell, 1984; Roeper, 1991; Webb, Meckstroth, & Tolan, 1982; Whitmore, as cited in Silverman, 2007). Gallagher (1990, p. 205) wrote that these children "find it necessary to maintain the fiction of perfect performance", and Clark (2002) even noted that "perfectionism, common among the gifted, can become compulsive behaviour" (p. 123). Such general endorsement and documentation was the reason for Silverman's assertion being addressed in the publication.

The topic also served as another demonstration that there may be a connection between attachment and giftedness. Silverman (2007) did address this issue again in a later article, arguing against the then-recent findings on healthy and unhealthy perfectionism, the same arguments that were raised in Chapter 4 in response to her assertion that perfectionism was a driving force for the gifted. These arguments were mounted in Chapter 4 to demonstrate a need to test the association between attachment, maternal depression, and giftedness, leading to the research projects presented in the following chapter. On reflection, the connections between topics relating to both attachment and giftedness could have been better argued,

perhaps by reducing the citations and moving less rapidly from one topic to the next; by providing some background to the citations, for example outlining that there were a number of articles reviewing past research; separating out the theoretical publications from the research articles may also have been more helpful to the reader. As well, some information about the disciplines being cited could have been included, as they were mostly drawn from a range of psychological areas, with about one fourth of the references drawn from education and gifted studies.These reflections, and a list of conference presentations that follow, conclude Part I of the thesis.

4.11 Presentations and workshops related to Part I of the thesis

Presentations of papers at national and international conferences as well as two workshops were undertaken to test ideas and to consider peer feedback to the proposed gifted spectrum approach as it unfolded, and as the exploratory studies proceeded and concluded. Questions and comments were then taken into account in subsequent presentations and publications.

4.11.1 Paper presentations

4.11.1.1 Presentation 1

Wellisch, M. (2008, March). *The authentically gifted child and the gifted spectrum*. Paper presented at The Early Years (0–8yrs) — Building a solid foundation for our Tall Poppies to grow conference, Auckland, New Zealand.

4.11.1.2 Presentation 2

Wellisch, M. (2008, May). *Connecting gifted identification in young gifted children with their attachment styles.* Paper presented at UNE *TalentEd* conference, Armidale, Australia.

4.11.1.3 Presentation 3

Wellisch, M. (2009, November). *Early identification and the impact of attachment on giftedness.* Paper presented at UWS conference, The gifted challenge: Challenging the gifted, Bankstown, Australia.

4.11.1.4 Presentation 4

Wellisch, M. (2009, August). *The adjustment of gifted children: Are problems due to asynchrony or insecure attachment?* Paper presented at the 18th World Conference for Gifted and Talented Children, Promoting the Dream, Vancouver, Canada.

4.11.2 Workshops

4.11.2.1 Workshop 1

Wellisch, M. (2008, March). *Gifted children with learning and other difficulties: Your child and the gifted spectrum.* Workshop presented at The Early Years (0–8yrs) — Building a solid foundation for our Tall Poppies to grow conference, Auckland, New Zealand.

4.11.2.2 Workshop 2

Wellisch, M. (2008, March). *Working with young children's special strengths and talents.* Workshop presented at The Early Years (0–8yrs) — Building a solid foundation for our Tall Poppies to grow conference, Auckland, New Zealand.

PART II

EXPLORATORY STUDIES

ON

GIFTEDNESS, ATTACHMENT,

AND MATERNAL DEPRESSION

Chapter 5

The Attachment Styles of Gifted Children

5.1 Preamble

This chapter is the first in Part II of the thesis and provides analysis of the data of an exploratory study designed to test the possible associations between giftedness (defined and measured in terms of IQ for the purpose of this study), attachment, and maternal depression. The chapter commences with the aim of the study and a short summary of the literature relevant to the study that has already been reviewed in previous chapters. This is followed by a traditional presentation of the research. The discussion section includes reflective sections on the findings in the light of the proposed approach, the gifted spectrum.

5.2 Aim of the study

Due to the dearth of literature on the association between giftedness, attachment style, and maternal depression, an exploratory study was devised to test possible associations. This exploratory study also aimed to inform the development of further studies within the gifted literature. Eighty children aged 7 to 10 years, both not-gifted children (with FSIQ $\geq$ 80) and gifted children (children who have at least one subtest index score or a FSIQ score $\geq$ 120), and their parents were recruited from Sydney, Australia and from New Zealand to participate in the study. The associations between children's attachment, IQ, socio-emotional adjustment, and learning disorders were the focus of this study.

5.3 Introduction

Ziegler and Raul (2000), who undertook a literature review on gifted research, did not report any studies about the associations between giftedness and attachment. There have, however, been a few studies with a specific focus on IQ and its association with attachment (Karrass &

Braungart-Rieker, 2004; Van Ijzendoorn & Vliet-Visser, 1988). One of these, a Dutch study (Van Ijzendoorn & Vliet-Visser, 1988), tested 65 children's attachment style at 24 months using the Strange Situation (Ainsworth, Blehar, Waters, & Wall, 1978), and measured their IQ level at 5 years with five subtests of the Leiden Diagnostic Test (LDT), a standardised IQ test for Dutch children (Schroots, 1979). Securely attached children had significantly higher IQs ($M = 116$, $p = .016$) than did insecurely attached children. A report on a more recent American study by Karrass and Braungart-Rieker (2004), however, described earlier in the published journal article in Chapter 3, showed that in a similar population of 63 children whose attachments were measured using the Strange Situation (Ainsworth, et al., 1978), insecurely attached babies had the highest IQ scores at 36 months on the Stanford-Binet Fourth Edition (SBIV; Thorndike, Hagen, & Sattler, 1986). The question needs to be asked whether gifted children, therefore, would be more likely to be securely attached, and the intention is to address this research gap with the present study.

5.3.1 Giftedness and attachment

The characteristics of children who are securely attached (Prior & Glaser, 2006) are reminiscent of some common characteristics of gifted children (Rogers & Silverman, 1997). Additionally, as argued in Chapter 2, intelligence may be a protective factor, as suggested by experts from a variety of backgrounds (Fergusson, Lynskey, & Horwood, 1996; Gunnar, 1998; Johnson & Flake, 2007; Perry & Szalavitz, 2006). Given these research findings and suggestions, we could expect to see more securely attached children in a gifted population than in a general sample.

5.3.1.1 Giftedness, attachment, maternal depression, and socio-emotional adjustment

The literature about gifted children often emphasises socio-emotional problems and uneven development, which are explained as a natural by-product of giftedness (Silverman, 1997; Winner, 2000). This general belief co-exists with findings that good adjustment and socio-emotional problems appear to be similarly distributed among the gifted as in the general population (Csikszentmihalyi & Csikszentmihalyi, 1993; Neihart, Reis, Robinson, & Moon, 2002). It has been argued earlier in this thesis that some problems gifted children experience may be due to other factors such as maternal depression and attachment style (see Chapter 3). Attachment problems may also be framed in the context of childhood neglect as a result of limited interactions with the child or poorly timed and inappropriate care-giving behaviours—similar to interactions observed in association with maternal depression (Prior & Glaser, 2006). The association between attachment and maternal depression may be due to lack of energy in depressed mothers, contributing to less attunement with their children, and often resulting in insecure attachment. These adverse early experiences may contribute to negative feeling states and prevent healthy emotional adjustment, as well as inhibit the working memory and executive functions of the brain (Siegel, 2001; Swanson & Siegel, 2001).

5.3.1.2 Giftedness, attachment, and learning disorders

As discussed in Chapter 2, neglect during early childhood may result in some permanent cognitive impairment or specific learning problems (Buchanan & Oliver, 1977; Perry, 2002; Spitz, 1945). For example, learning problems have been found in approximately 30% of abused children (Streeck-Fischer & van der Kolk, 2000).

Furthermore, lower verbal scores and full scale IQs, and large discrepancies between verbal and performance IQ index scores, have been found in children who have experienced early trauma, neglect, and abuse, (Perry, 2002; Perry & Szalavitz, 2006). Large discrepancies in index scores have also been observed in gifted children, often with relatively lower verbal scores compared with higher performance scores (Silverman, 2002; VanTassel-Baska, 2005; Winner, 2000), referred to in this study as the PR–VC discrepancy. Although the associations have not been tested, I am proposing that these gifted children may have had similar adverse early experiences as experienced by the children assessed in Perry's population. It should be noted here that the children Silverman writes about were seen in her clinic and therefore belong to a clinical population.

Discrepancies that may relate to learning disorders were historically identified by the difference between an IQ test result and an achievement test. This has been disputed in the case of gifted children who may have a full scale IQ of 145, with a 30-point discrepancy which would still bring them into an above average level of achievement (Lovett & Lewandowski, 2006). The discrepancy in IQ tests has also been described more specifically by Nielson (2002) in relation to twice exceptional children as 7 points "between the highest and lowest subtests" (p. 100). Research cited by Lovett and Lewandowski (2006) indicates that there is far more scatter in the high ability population. To ensure, therefore, a reasonable discrepancy, a relatively arbitrary 10-point discrepancy was arrived at for the purpose of this research in the case of the PR-VC discrepancy.

Ziegler and Raul (2000) found that control groups were employed in only 22% of studies on giftedness, in their aforementioned review on gifted research, and this is another research

gap that this study attempts to address. The current study has included a comparison group of children without a "gifted" score to compare the outcomes for both gifted and not-gifted children, and to simultaneously address the current dearth of control groups in gifted studies.

5.4 Hypotheses

Care has been taken to discuss associations between variables rather than to imply the direction of the causality. However, as an analytic strategy which was compatible with hypothesised relationships, some variables were regarded as dependent variables and other variables as independent variables. This is a commonly used strategy and is not meant to imply that the analyses will necessarily provide unequivocal support for one particular causal direction.

This exploratory study was designed to examine possible associations between the dependent variables of giftedness, giftedness associated with maternal depression, and giftedness associated with a PR–VC discrepancy score and the following independent variables: attachment, adjustment (measured by internalising and externalising problems), learning disorders (LDs) (as measured by parent reports), the WISC-IV full scale IQ (FSIQ) score, and verbal comprehension (VC) and working memory (WM) subtest index scores to test the following hypotheses:

1. That giftedness is associated with secure attachment.

2. That gifted, securely attached children would be less likely to have internalising and externalising problems (and therefore be socio-emotionally well adjusted), would have

fewer LDs, and would have higher VC and WM scores as measured by IQ in comparison with gifted insecurely attached children. This hypothesis is based on findings reviewed earlier relating to the influence of language development and working memory following early trauma in the general child population (see Chapter 3, Section 3.4 and, pp 119-121 of the article).

3. That gifted children with mothers who had experienced depression during their child's early years have higher internalising and externalising scores, more LDs, and lower VC and WM scores compared with gifted children whose mothers did not experience depression during their children's early years.

4. That gifted children are more likely to have LDs and internalising and externalising problems, and to have lower WM scores and lower full scale IQ scores, if their perceptual reasoning (PR) IQ scores are at least 10 points higher than their verbal comprehension scores (PR–VC discrepancy). This hypothesis is based on both an expectation that gifted children with this IQ profile may have had adverse early experiences (Perry & Szalavitz, 2006) and Silverman's (2002) and Perry's (2002) observations that children with such an IQ discrepancy often have learning and other disorders (see Chapter 3, and p. 122 of the article in Chapter 3).

5.5 Method

This section provides details about the recruitment of child and parent participants, participant criteria, procedures, instruments, and analyses of data.

5.5.1 Child participant criteria

There were three criteria for participation in the study:

- Children were aged 7–10 years
- Children had completed a WISC-IV (Wechsler, 2003) assessment within the previous 18 months
- Children's full scale IQ (FSIQ) was ≥ 80. This would ensure a control group of participants who would have scores equal to or above the "low average" range, as well as allow for the participation of gifted children.

Of the 90 original participants recruited between 2008 and 2010, six children were not retained in the study because they had FSIQ scores below 80 and did not therefore meet one of the criteria for participation. Another four children completed an IQ assessment with a different IQ test to the WISC-IV. Therefore the final sample comprised 80 parents and their children (30 girls and 50 boys). Participating children's full scale IQs ranged between 84 and 149, (M =111.91, SD = 15.13, Mdn = 110.5).

5.5.1.1 The criterion for a gifted IQ score

Most research using cognitive testing involves either parts of an IQ test or abbreviated versions of an IQ test. These methods are used as the full version of an IQ test can take up to two hours to administer for each child, especially if the child is gifted. Administering a full IQ test therefore requires an impractical amount of time, making it difficult for a single non-funded researcher to carry out, possibly greatly reducing the number of participants in their research. For the current research, however, it was important to obtain fully completed test results to comply with the definition of "gifted" including any full scale or subtest index score

≥ 120 deemed as a "gifted" score based on a number of considerations. Gagné (2007), for example, suggested that mild giftedness starts at a full scale score of 120 IQ, as have others (Falk, Silverman, & Moran, n.d.; Lohman, Gambrell, & Lakin, 2008; Winner, 2000). However, changes were made to the revised WISC-IV (Wechsler, 2003), including downward adjustments due to the Flynn effect (a substantial international increase in average scores on intelligence tests). These changes appear to have reduced WISC-IV's full scale IQ in gifted children from a mean of 128.7 (in the previous WISC-III version's validity study) to 123.5 (Flanagan & Kaufman, 2004)—more than a 5-point reduction. Translated to Gagné's mildly gifted full scale score of 120, a 5-point reduction would place the FSIQ at approximately 115, the same score previously identified by others as the starting point for the mildly gifted category (Feldhusen, 1993; Sheely & Silverman, 2000). Despite the above considerations the criterion for giftedness and inclusion in a gifted program are generally still considered to be two standard deviations in FSIQs from the norm, i.e., FSIQ = 130 (Lohman et al., 2008; Winner, 2000), despite calls for it to be reduced to 123 (Falk et al., n.d.).

As twice exceptional children may not achieve a full scale score in the gifted range due to large discrepancies between their subtest scores, the Idaho Department of Education recommends looking for "at least one subtest index score in the gifted range" for identification purposes (Luna, 2010). Nielson's (2002) work with a large number of children with gifts and disabilities has already been mentioned in Chapter 2 (see Section 2.10). As a result of her experiences, she recommended checking for large differences between the highest and lowest subtests (a difference of 7 scaled-score points between the highest and lowest subtests), profile analysis, and a broad definition of giftedness to aid identification. An additional problem in using the full scale score for a gifted classification is that when

large discrepancies are obtained between index scores, calculation of the full scale IQ score, which is derived from the combination of the index scores, is not recommended as it would not adequately represent these children's abilities. The children who have large discrepancies between their scores are often identified as twice exceptional, also known as gifted and learning disabled (and GLD or GALD). As the aim of this study was to ensure the inclusion of gifted children with learning disorders in the gifted group, the criterion for inclusion was therefore not the full scale IQ score, but was set instead at $\geq$ 120 of any subscale index or full scale score. It was argued in Chapter 4 that the estimation of a prevalence of gifted within the population would be unreliable and plays no practical role in a gifted model. The inclusion of a cut-off IQ score here is a necessity for a quantitative study, which by its very nature requires an IQ score for the establishment of the gifted group.

5.5.1.2 Age of participating children

The directors of the psychology clinics (see Section 5.5.3) were requested to recruit only child participants who were either current clients aged between 7 and 10 years or were clients within the past 18 months and who were aged between 7 and 10 years at the time the WISC-IV was administered. The age criterion was therefore monitored by the recruitment sources, except in the case of the NSW Association for Gifted and Talented Children, where it was monitored by the researcher. All other data for the study were collected in real time once participants were recruited, rendering the mean age of participating children too difficult to determine due to the time difference in the collection of IQ data and data collected from other measures. Collection of children's exact age was thus abandoned and should be considered as approximately between 7 and 10 years only. However, the mean age of 11 children who later

participated in the qualitative research project was 8 years at the time of their IQ assessments and can be extrapolated as a guide to the likely mean age of all the child participants.

5.5.2 Parent participants

Both parents had to agree independently to participate. A participant envelope was then posted which included a 2-page information and consent form, and a total of 165 questions in the case of mothers, and 156 questions for fathers. The additional questions for mothers addressed maternal depression. All 80 mothers participated in the study. However, only 54 of the fathers filled in the questionnaires. As questionnaires for mothers and fathers included the same demographic information, for example family income, but would have lacked information in relation to other issues such as attachment and learning disorders, it was decided to use only mothers' data for the analyses.

5.5.3 Participant sources

The completed IQ test criterion necessitated a clinical sample. A selected number of Australian psychology clinics and one clinic in New Zealand, including some that specialised in the assessment of gifted children, were approached by the researcher, and clinic directors were invited to participate in the research. Additionally, to ensure that gifted participants were included in the population, the NSW Association for Gifted and Talented Children was also approached. The Association agreed to advertise for participants who had completed a WISC-IV assessment within the previous 18 months. One Sydney-based psychology clinic willing to participate was not included in the study as the director insisted on a number of concessions that were deemed too demanding in comparison to the extent of data that were required. In all, five organisations agreed to participate in the study: four psychology clinics as well as the NSW Association for Gifted and Talented Children.

The participants included clients from a New Zealand psychology clinic specialising in gifted children (*n* = 58), clients from three Australian psychology clinics (*n* = 11), and participants from the NSW Association for Gifted and Talented Children (*n* = 11), where an advertisement on the website and in the quarterly journal invited participants to join the research.

5.5.3.1 Recruitment

When ethics approval had been granted, organisations approached their clients and only those clients who met the child participant criteria for the study and who willingly volunteered were recruited.

5.5.3.2 Difference between sources

It was found that the IQ measures varied considerably over the five different sources (organisations from which the participants were drawn). Although source was not in itself of interest, it was important to code each one in the initial analyses in order to remove between-source variation for any analyses of variance (ANOVA), should these be required. As there were very few participants from some sources, the original five sources were collapsed into a binary variable (see Table 5.1). Note that this variable was used as an independent variable and did not affect the coding of the gifted outcome variable. The groupings of the clinics were chosen purely to account for as much of the variables due to clinics as possible.

Table 5.1

Coding of Sources for Recruitment of Participants

Clinics coded 0		Clinics coded 1	
MQ	(n = 5)	LC	(n = 3)
NZ	(n = 58)	AG	(n = 11)
K	(n = 3)		

5.5.3.3 Incentive and safety procedures

Participants were offered an incentive to participate with a draw for a free dinner for two in a good restaurant. Additionally, an offer was made for complementary psychological services should participation in the research create any adverse effect (see Information and Consent Form for Mother, Appendix D).

5.5.4 Ethics approval

The project was approved by the Human Research Ethics Committee at Macquarie University, and by relevant persons within the organisations from which the participants were sourced (See Appendix E).

5.6 Procedure

New Zealand parent participants were provided with the research questionnaire package to take home and complete in their own time, while a psychologist at the clinic administered the child attachment questionnaire during the child's WISC-IV IQ assessment (see Section 5.5.2 for instruments used). Parents posted the questionnaires directly to the researcher, and the clinic separately posted the child questionnaires and the WISC-IV assessment results to the researcher. (For research documentation, see Appendix D).

In Sydney the procedure was somewhat different in that those parents indicating an interest in participating were sent the research questionnaire package by post. The completed questionnaires and forms were then collected by the researcher in the homes of participants. The child attachment questionnaire was administered by the researcher to child participants during the visit under similar circumstances to the questionnaires administered in the clinic, as parents were asked to leave the room during administration, minimising any administration differences.

5.6.1 Communication between researcher and sources

The clinics were provided with instructions for recruiting participants as well as procedures for providing the IQ scores, child attachment questionnaires (in the case of the New Zealand clinic), and child adjustment forms (in the case of one clinic) to the researcher. Clinic contact was mainly via email, although the researcher had more direct contact with one of the clinics.

5.6.2 Data collection and survey instruments

The data collection and the instruments used for this study are described in this section. Table 5.2 summarises the data collected and instruments used.

Table 5.2

Instruments Used for Data Collection

Data	Instrument	Mode of administration
Demographic information, e.g., parent qualification, family income	Background questionnaire	Parent reports
Parent and child learning disorders	Background questionnaire	Parent reports
Maternal depression (whether diagnosed, medicated, or suspected)	Background questionnaire	Parent reports
Child's attachment style	The Attachment Style Classification Questionnaire for Latency Age Children (ASCQ; Finzi, Cohen, Sapir, & Weizman, 2000)	Administered by psychologists in New Zealand and researcher-psychologist in Sydney
Child's IQ	Wechsler Intelligence Scale for Children, 4th ed. (WISC-IV; Wechsler, 2003)	Administered by psychologist prior to recruitment
Child's adjustment	Child Behavior Checklist (CBCL) for Ages 6–18 (Achenbach, 2001)	Parent reports

Data collection included parents' self-reported account of their highest level of educational qualification, job title, job tasks, current health and family income status, and their own and their child's learning disorder(s) if any. The questionnaires completed by mothers also asked questions about previous maternal depression (see Appendix D).

5.6.2.1 Income and qualifications as proxy for parents' IQ

Previous research on attachment and children's IQ and maternal depression and children's IQ had not included mothers' full IQ scores for comparison with their children's IQ scores to test

for heritability. Neither were IQ scores for parents available for this study. Such information would be important in determining the true association between IQ and attachment, and giftedness and attachment.

However, income and qualifications are known to be related to IQ (Neisser et al., 1997). For example, studies have found that siblings with higher IQs have higher earnings than do their lower IQ brothers and sisters (Bound, Grilliches, & Hall, 1986; Rowe, Vesterdal, & Rodgers, 1999). In a recent study, Zagorsky (2007), who used the National Longitudinal Survey of Youth 1979 cohort baby boomer data of 7,403 randomly selected respondents for his research on IQ, wealth, income, and financial distress, reported that each point increase in IQ test scores raised income by between $US234 and $616 per year after holding a variety of variables constant. This did not, however, translate to a relationship between IQ scores and wealth as apparently IQ scores do not always lower the probability of being in financial difficulty. Zagorsky reported the correlation between IQ and income to be .297 ($p < 0.01$). Given the above, and as IQ scores for parents were not available, family income and mothers' qualifications were used as proxies.

5.6.2.2 Learning disorder data

As the participants were drawn from a clinical sample at an age when children's problems, including learning disorders in reading or writing in primary school aged children (Reis, Neu, & McGuire, 1995) are generally detected, parents were asked to respond to the following questions: "Does your child have a diagnosed learning disability? If yes, please circle" after which five categories were offered: speech, spelling, reading, mathematics, and handwriting. This was followed by an open-ended question about any learning disorder(s) the parent might

have: "Do you yourself have a learning disability? If yes, please describe", so that a comparison could be made between parents' and children's learning problems. No additional information was sought about children's learning problems, such as who identified them, how they were identified, or level of severity or characteristics. Parents were not asked whether the children had received any intervention (see Form for mother in Appendix D).

5.6.2.3 Maternal depression data

Six questions in the background questionnaire distributed to mothers were on the subject of maternal depression. Questions included whether mothers had been diagnosed with postnatal depression during the first three or the first six months following the birth of their child; after the first six or after the first 12 months following the birth of their child; and whether they had seen a professional, received counselling, been medicated, or whether they had sought informal advice.

5.6.2.4 Child attachment data

Although most authors suggest that children rely on parents to fulfill their attachment needs (Kerns, Tomich, & Kim, 2003) and that attachments to peers do not emerge until adolescence (Allen & Land, 1999; Bowlby, 1982; Marvin & Britner, 1999), Hazan and Shaver (1994) and Hazan and Zeifman (1994, 1999) assert that the emergence of attachments to peers is a gradual process that begins in middle childhood. This notion is supported by research involving 8 to 14 year old children indicating that children exhibit attachment behaviour less frequently and in fewer situations as they get older (Kerns et al., 2003; Lieberman, Doyle, & Markiewicz, 1999). Because of these changes, attachment behaviours are difficult to observe in older children in the same way as the Strange Situation observations used for babies, and researchers have therefore "relied on self-report measures to index attachment in middle

childhood" (Kerns, Schlegelmilch, Morgan, & Abraham, 2004, p. 50). It is acknowledged that there are difficulties with using self-report measures for obtaining an accurate and complete measure of attachment.

The Attachment Style Classification Questionnaire for Latency Age Children (ASCQ; Finzi, Cohen, Sapir, & Weizman, 2000), an adequately reliable and valid instrument described in Section 5.6.1.4, is such a self-report scale that measures elementary school children's working model of attachment. This 15-item scale is an adaptation of the Adult Attachment Style Scale (Mikulincer, Florian, & Tolmacz, 1990) and has been administered to children in research similar to the current research, for example in research on socio-emotional and academic adjustment of school-aged children with learning disorders. The questionnaire takes approximately 5 minutes to administer.

5.6.2.5 Child's IQ data

The WISC-IV (Wechsler, 2003) test was the cognitive measure used in this study, and was administered by a number of psychologists. This test is often used for research purposes, and often administered in an abbreviated form (for an example see West, Mathews, & Kerns, 2013). Five IQ scores were obtained: verbal comprehension (VC), perceptual reasoning (PR), working memory (WM), processing speed (PS), and full scale IQ (FSIQ). Note that the full scale score is derived from the combination of the verbal comprehension, perceptual reasoning, working memory, and processing speed scores. As this was an exploratory study it was important to use subscale indexes because it was not known whether any relationships would be consistent across subscale indexes; however given the possibility that they were consistent the FSIQ would be an important measure in any further analyses, and was therefore included. WISC-IV data were collected with parental permission from the clinics or, in the

case of the NSW Association for Gifted and Talented Children, were obtained directly from the administering psychologist.

5.6.2.6 Internalising and externalising data

The Child Behavior Checklist (CBCL) for Ages 6–18 (Achenbach, 2001) has been in use for over four decades in the assessment of the diverse aspects of children's adaptive and maladaptive functioning, and was used in this study to measure internalising and externalising problems. As pages 1 and 2 in the CBCL are concerned with a child's general competence (e.g., hobbies, school results, friends, and involvement in various activities) rather than adjustment, these pages were not used in this research. A licence agreement to reproduce pages 3 and 4 of the CBCL for the period of the data collection was obtained from the University of Vermont. Pages 3 and 4 are comprised of a 113-item Likert-style questionnaire with answers ranging from 0 (*not true*) to 2 (*very true or often true*). For a copy, see Appendix D. The instrument was chosen for this study because of the convergent and discriminant validity of its scales (Nakamura, Ebesutani, Bernstein, & Chorpita, 2009) and because it has been used frequently in research to assess children's adjustment. For example, it was used in *The Project on Human Development in Chicago Neighbourhoods* (PHDCN), a large scale interdisciplinary study of how families, schools, and neighbourhoods affect child and adolescent development and advance the understanding of the developmental pathways of both positive and negative human social behaviours (Razza, Martin, & Brooks-Gunn, 2012).

5.7 Analyses

A policy was adopted not to carry out adjustments in relation to multiple testing for this study despite the fact that such corrections are usually made where multiple significance tests are

undertaken in order to avoid type 1 errors. The policy was adopted for two reasons (Harris, 1994):

- As a small sample was used, the corrections of significance tests would have otherwise made it difficult to identify any significant correlations.
- The research was exploratory, and there may have been a risk of rejecting a null hypothesis that may have later turned out to be true. Therefore, it was decided that it would be more preferable to make a type 1 than a type 2 error.

Categorical variables were created for Hypotheses 2, 3 and 4 to represent and facilitate testing between groups. Groups were compared using chi-squared analysis for the categorical dependent variables and one-way analysis of variance for the numeric dependent variables unless otherwise indicated in the Results section.

5.7.1 Income, SES, and qualifications

Six categories of family income were determined by dividing 2007–2008 income levels into five approximately equal ranges and adding a CPI adjustment of 6.4%. These categories were collapsed into three categories for the purposes of analysis: less than $73 k per year ($n$ = 10), $73–151 k per year ($n$ = 33), and greater than $151 k per year ($n$ = 33).The socio-economic status of the sample (M = 5.3) was measured by an occupational index ranging between 0 (no job) and 7 (high-level professional). Qualifications included six categories ranging from 1 (less than HSC) to 6 (higher than master's degree). For mothers, these were collapsed into three categories for the purposes of analysis: up to HSC and technical college (n = 20), first degree (n = 34), and postgraduate degree (n = 26).

The majority of the parents (87%) reported their family income at or above $75,000. Most parents had either undertaken tertiary studies (mothers 75%, *n* = 60; fathers 75%, *n* = 41), or held professional diplomas (mothers 15%, *n* = 12; fathers 14%, *n* = 8).

5.7.2 Learning disorders

As learning disorders had already been separately analysed in relation to attachment and maternal depression (see Wellisch, Brown, Taylor, Knight, & Berresford, 2011 and Wellisch, Brown, Taylor, Knight, Berresford, Campbell, & Cohen, 2011), a dichotomous variable was used to measure the presence of at least one learning disorder (1) or the absence of LDs (0) if none were reported.

5.7.3 Maternal depression data

Maternal depression data were initially divided into two separate variables, with one variable indicating the postnatal period of depression and the second variable recording whether the mother had seen a professional, received counselling, received medication, or sought informal advice. Due to the low number of participants (N = 80), and the low number of mothers reporting depression (*n* = 8, 10%), the two depressed conditions were combined into a single variable: depressed. The percentage of mothers reporting maternal depression was reflective of the estimated 9% to 16% of women who suffer from depression, especially during the childbearing years (Buist & Bliszta, 2006). Because of the small number of depressed mothers, analyses of variance were not used to compare these groups.

5.7.4 Child attachment

The ASCQ is a 3 subscale (secure, anxious, and avoidant) established instrument, translated from the original Hebrew to English, deemed both valid and highly reliable for measuring

attachment style among a sample of 98 school-age children (Al-Yagon & Mikulincer, 2004a). The researchers reported that Cronbach's alphas for the three factors of secure, anxious, and avoidant attachments ranged from .64 to .73, implying adequate internal consistency. In another study with 65 children (Finzi-Dottan, Manor, & Tyano, 2006), the Cronbach's α for the anxious subscale was reported to be .80 and for the avoidant subscale .70. Additionally, a Pearson correlation revealed that the two scores were not significantly associated ($r = .32$, $p > .05$).

The instrument's earlier English translation appeared to require a few minor changes to ensure comprehension of items by Australian and New Zealander child participants. Four items (items 3, 6, 9, and 14) were changed while at the same time ensuring the integrity and intent of the items. As an example, Item 3 was changed from "It is easy for me to depend on others, if they're good friends of mine" to "It's easy for me to depend on my good friends". The English translation asked children to rate each item on a 5-point scale from 1 (*not at all appropriate*) to 5 (*very appropriate*). Such wording seemed to provide minimal guidance for 7–10 year old children. Therefore, in this Australian adaptation, they were replaced by 5 Likert-type choices similar to those used in the Bar-On EQi:YV Inventory (Bar-On & Parker, 2000): "*Never true of me*", "*Sometimes true of me*", *Often true of me*", "*Mostly true of me*", and "*Always true of me*".

As in previous research by Al-Yagon and Mikulincer (2004a, 2004b), children were classified as securely attached if the secure score surpassed both their avoidant and anxious scores. Children were classified insecurely attached if either their avoidant or anxious score surpassed their secure score. The possible scores on this measure, as they were made up of the

average of five items, could range from 1 to 5. They ranged as follows: secure (1.25, 4.80), anxious (1.00, 4.60), and avoidant (1.00, 4.40). Six children who could not be confidently assigned to the secure group because they had the same scores on the secure and the insecure scales were assigned to the insecure group.

In the present exploratory study Cronbach's $\alpha = .49$ for secure, $\alpha = .60$ for anxious, and $\alpha = .60$ for avoidant attachments, were lower than in previous studies cited above. As mentioned, these were used as a dichotomous variable, secure and insecure, with Cronbach alpha for insecure increasing to $\alpha = .69$, possibly as a result of increasing the items from 5 to 10, as Cronbach's alpha values are a function of the correlation between the items and the number of items.

5.7.5 IQ variables

Binary variables (≥ 120 or < 120) were created from continuous IQ scores. A total of 16 children classified as gifted ($n = 44$) had FSIQs below 120, ranging from 102 to119, and 28 children had FSIQ scores at or over 120, ranging from 123 to 142. Working memory was also being investigated due to its association with trauma. In the case of the lowest "gifted" FSIQ score of 102, the WM score was 68. Similar large discrepancies and low WM scores (68–88) also contributed to the low FSIQs of four other gifted children with FSIQs less than 115 (the revised mildly gifted range discussed in Section 5.5.1.1).

5.7.6 Internalising and externalising

In this study the testing of child socio-emotional adjustment was based on the presence or absence of two problem types: internalising problems and externalising problems. In the CBCL, internalising was measured through the combination of anxious/depressed,

withdrawn/depressed, and somatic complaints data. The manual for the ASEBA school-age forms and profiles (Achenbach & Rescorla, 2001) indicates that all items discriminate significantly ($p < .01$) between demographically matched referred and non-referred children. Criterion-related validity was also supported by multiple regressions, odds ratios, and discriminant analyses showing significant ($p < .01$) discrimination between referred and non-referred children. Construct validity of the scales has also been supported in a number of ways according to Achenbach and Rescorla (2001), with evidence of significant associations with DSM criteria and predicted long-term outcomes. There are eight syndromes consisting of the following high loading items on the eight first-order factors: anxious/depressed, withdrawn/ depressed, somatic complaints, social problems, thought problems, attention problems, rule-breaking behaviour, and aggressive behaviour. These factors were derived from factor analyses of the problem items contained on pages 3 and 4 of the instrument, and contribute to scores for internalising, externalising, and total problems.

In the present study Cronbach's $\alpha = .80$ for anxious/depressed, .69 for withdrawn/ depressed, and .51 for somatic complaints. Externalising is measured through the combination of "rule-breaking behavior" and "aggressive behavior" data. In the present study Cronbach's $\alpha = .67$ for rule-breaking behavior and .86 for aggressive behavior. For the combinations measured, Cronbach's $\alpha = .81$ for internalising and .88 for externalising behaviours.

5.8 Results

Some general findings will be described here. These include the outcome of the analyses carried out to test each hypothesis, and supplementary analyses. Each hypothesis will be addressed separately.

The mean FSIQ of the not-gifted children was 98.9 (*SD* = 8.67). The mean FSIQ for gifted children was 122.5 (*SD* = 10.17), similar to that for the normative sample of gifted children reported for the WISC-IV, which had a mean FSIQ of 123.5 (cited in Falk et al., n.d.). Specific findings on gender differences between subtest scores have already been reported (for details see Wellisch, Brown, Taylor, Knight, Berresford, Campbell & Cohen, 2011). See Appendix C for information about family income and mothers' qualifications.

In this high SES population, attachment accounted for 2.5% of the variability of IQ, mother's qualifications accounted for 4.9% of the variability in IQ, and income accounted for 3.1% of the variability of IQ. Of the 16 (36%) gifted children with a full scale IQ score below the conventional 120 (mildly gifted), 44% were reported to have between 1 and 3 separate learning disorders, and 56% had a PR–VC discrepancy score. Only four of the 16 children (25%) had neither a learning disorder nor a PR–VC discrepancy score. The FSIQ scores of these four children ranged from 104 to 118. Table 5.3 below shows the IQ scores (means and standard deviations) associated with attachment styles for both the gifted and not-gifted children.

5.8.1 Hypothesis 1

The first hypothesis, that giftedness is associated with secure attachment, was tested using a cross tabulation analysis. No significant gender difference in attachment was found.
Of the 44 gifted children, 33 (75%) were securely attached. In comparison, of the 36 not-gifted children, 20 (55.6%), were securely attached (Figure 5.1). Although in this sample there were more securely attached gifted children than in the not-gifted group, this difference

was not significant, χ^2 (1, N = 80) = 3.35, p = .067, OR = 2.4. Therefore the hypothesis was rejected.

Table 5.3

IQ Scores and Attachment Styles in Gifted and Non-Gifted Children

Groups		IQ scores	
		Means	Standard deviations
Insecure and not gifted	(n =16)	97.6	9.58
Secure and not gifted	(n=20)	100.0	7.96
Insecure and gifted	(n=11)	124.5	12.04
Secure and gifted	(n=33)	121.9	9.58

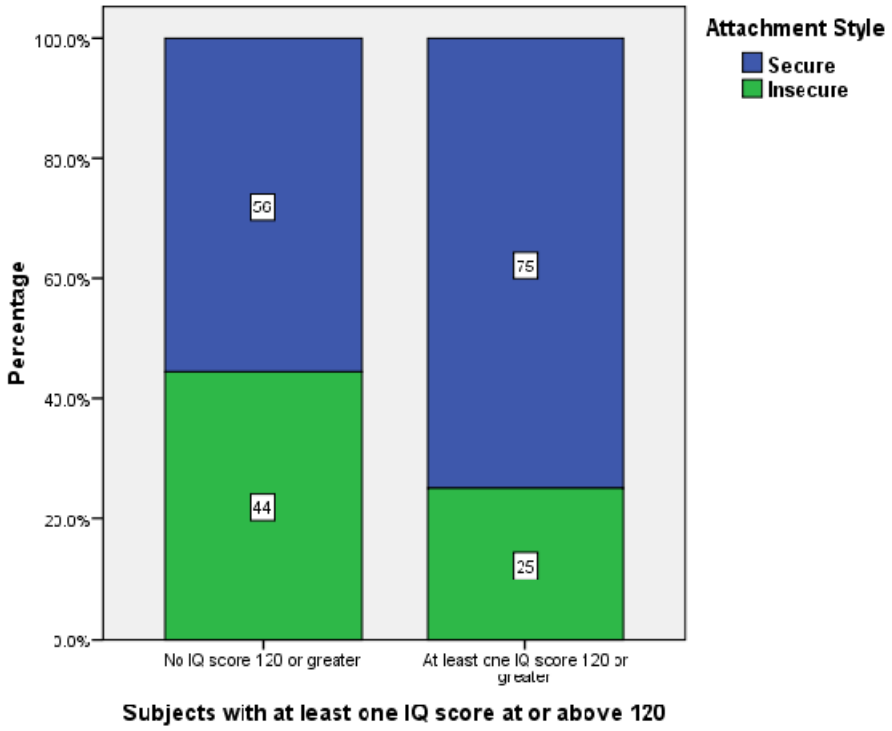

Figure 5.1. The percentage of gifted and not-gifted children who are securely attached.

Chapter 5

It is possible that a direct measure of mother's IQ could have accounted for the association between attachment and giftedness. As mentioned, mothers' IQ data were not available; however, it has already been argued that family income and mothers' qualification may be used in lieu of maternal IQ, with both being associated in relation to IQ (see for example Anders, Sammons, Taggart, Sylva, Melhuish, & Siraj-Blatchford, 2011).

It is also possible that mothers who are more intelligent also provide conditions that favour secure attachment. To test the possibility that the association between giftedness and attachment could be accounted for by maternal intelligence and socio-economic status, a logistic regression was conducted with secure and insecure attachment as the binary dependent variable, and the three categories of mothers' qualifications, the three categories of family income, and the two categories of attachment as independent variables. Although neither income nor mother's qualifications was significant overall, the results in Table 5.4 show that children from families with higher incomes and those whose mothers had higher qualifications were more likely to be gifted, OR >1. Nevertheless, while the effect of attachment was not significant ($p = .116$), a higher p-value than that obtained for the unadjusted OR, $p = .067$), it is worth noting that the adjusted OR of 2.34 was very similar to that obtained when no adjustments were made (2.4), indicating that the strength of the relationship such as it was, was not substantially reduced by taking mother' education and family income into account.

Table 5.4

Logistic Regression to Test Predictability of Giftedness: Attachment Styles, Family Income, and Maternal Qualifications

Variables Step 1[a]	B	S.E.	Wald	df	Sig.	Exp(B)
Secure/ insecure attachment	.851	.542	2.469	1	.116	2.342
Family income			4.902	2	.086	
73–151 vs < 73k	1.859	.851	4.770	1	.029	6.416
>151 vs < 73k	1.270	833	2.327	1	.127	3.562
Mother's qualification			3.958	2	.138	
Bachelor degree vs HS/Tech	1.308	.660	3.936	1	.047	3.700
Hons/ master's vs HS/Tech	.673	.662	1.034	1	.309	1.960
Constant	-2.434	.998	5.951	1	.015	.088

[a.] Variable(s) entered on step 1: attachment type, family income, mothers' qualifications.

An additional analysis was carried out to identify difference in income and qualifications with FSIQ as the outcome. Although FSIQ does not equate to giftedness as operationalised in this study, it does test the association. The association between attachment and IQ as exemplified by the odds ratio was not, in fact, diminished by the inclusion of the other variables. The variance for attachment was η^2 =.053, or 5.3%. Although there was a significant difference between the lowest family income and the middle level (p = 0.03), predicting an almost six-

fold increase in IQ, and a significant difference between the lowest and the middle level of qualifications ($p = 0.47$) predicting a 3.5 point increase in IQ, neither income nor qualifications accounted for the relationship between attachment and IQ, $F(1, 61) = 3.44$, $p = 0.68$. Therefore, if there is a relationship between attachment and IQ, it is not accounted for by differences in family income or mothers' qualification.

5.8.2 Hypothesis 2

The second hypothesis was that gifted and securely attached children (the independent variable) would be less likely to have internalising and externalising problems (and would therefore be better adjusted), would have fewer LDs, and would have higher VC and WM scores (the dependent variables) in comparison with gifted insecurely attached children. A categorical variable was created to represent all four groups, primarily to facilitate testing of the difference between the gifted securely attached and gifted insecurely attached groups, but also to allow comparisons with non-gifted securely and insecurely attached children. The groups were as follows: insecurely attached and not-gifted ($n = 16$), insecurely attached and gifted ($n = 11$), securely attached and not-gifted ($n = 20$), and securely attached and gifted ($n = 33$). Groups were compared using chi-squared analysis for the categorical dependent variables and one-way analysis of variance for the numeric dependent variables.

5.8.2.1 Internalising, attachment, and gifted children

The test of the difference between the four groups was significant, $\chi^2(3, N = 80) = 8.63$, $p = .035$; however, the difference between the percentages for the securely attached gifted ($n = 33$, 42.4%) and the insecurely attached gifted ($n = 11$, 45.5%), was not significant, $\chi^2(1, n = 44) = .03$, $p = .86$, OR = 1.13. Thus the hypothesis was rejected. An unexpected finding was that children in the insecure/not-gifted group were the least likely to have internalising problems

in the borderline clinical or clinical ranges (as defined by Achenbach & Rescorla, 2001), with only one child out of 16 (6.3%) reported to have internalising problems. The percentage in the other groups ranged from 42.4% for the secure/gifted group through to 45.5% for the insecure/gifted group and 50% for the secure/not-gifted group (Figure 5.2).

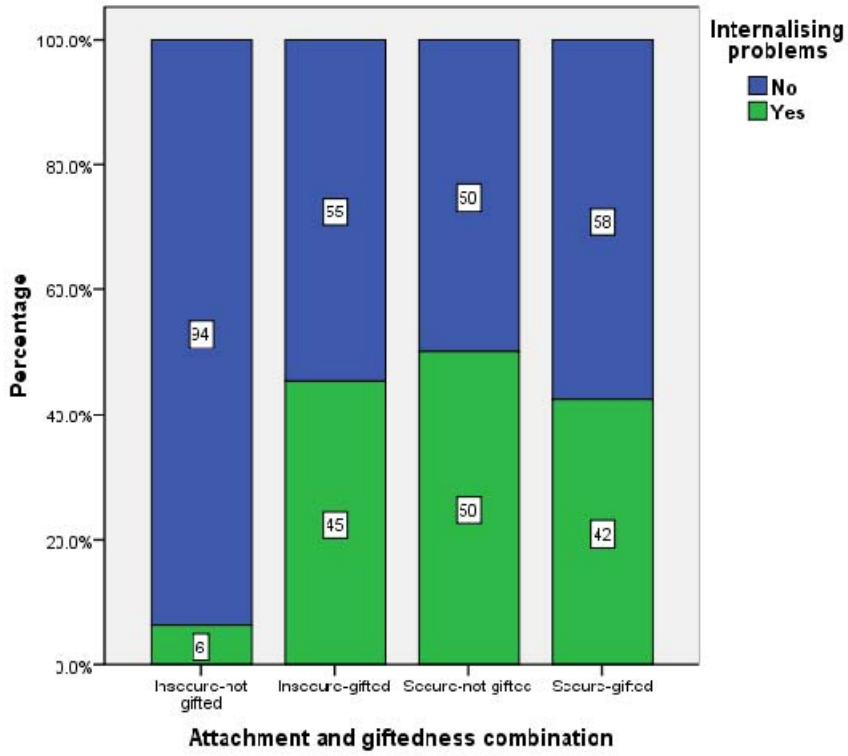

Figure 5.2. Percentage of gifted and not-gifted securely or insecurely attached children with internalising problems.

5.8.2.2 Externalising, securely and insecurely attached gifted children

As Figure 5.3 shows, the securely attached and gifted group was less likely to be classified as having externalising problems (21.2%) compared with the insecurely attached and gifted group (27.3%). However, overall there was no significant difference between the four groups, χ^2 (3, N = 80) = 1.68, p = .641, or between the securely attached gifted and insecurely

attached gifted groups, χ^2 (1, n = 44) = .17, p = .678, OR = 1.39). Thus the hypothesis was rejected.

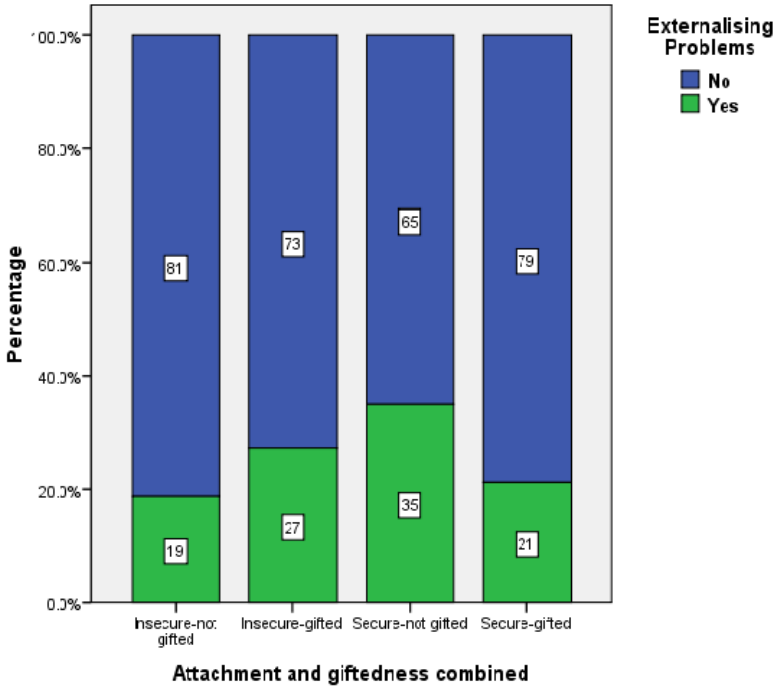

Figure 5.3. Percentage of gifted and not-gifted securely or insecurely attached children with externalising problems.

5.8.2.3 Learning disorders (LDs), and securely and insecurely attached gifted children

Children were classified into two groups: those with no learning disorders (LD), and those who had at least one learning disorder. Children in the securely attached and gifted group (n = 33) were more likely to have at least one learning disorder (n = 9, 27.3%) than were children in the insecurely attached and gifted group (n = 2, 18.2%). Thus the hypothesis was rejected. This finding, although not significant, was unexpected, χ^2 (1, n = 44) = .36, p = .546, OR = .59. The overall difference between the four groups was significant, χ^2 (3, N = 80) = 8.08, p =

.044, reflecting differences between the two not-gifted groups (the percentages for the insecure/not-gifted group and the secure/not-gifted group were 56.3% and 55.0% respectively) and the two gifted groups (the percentages for the insecure/gifted group and the secure/gifted group were 18.2% and 27.3% respectively). See Figure 5.4.

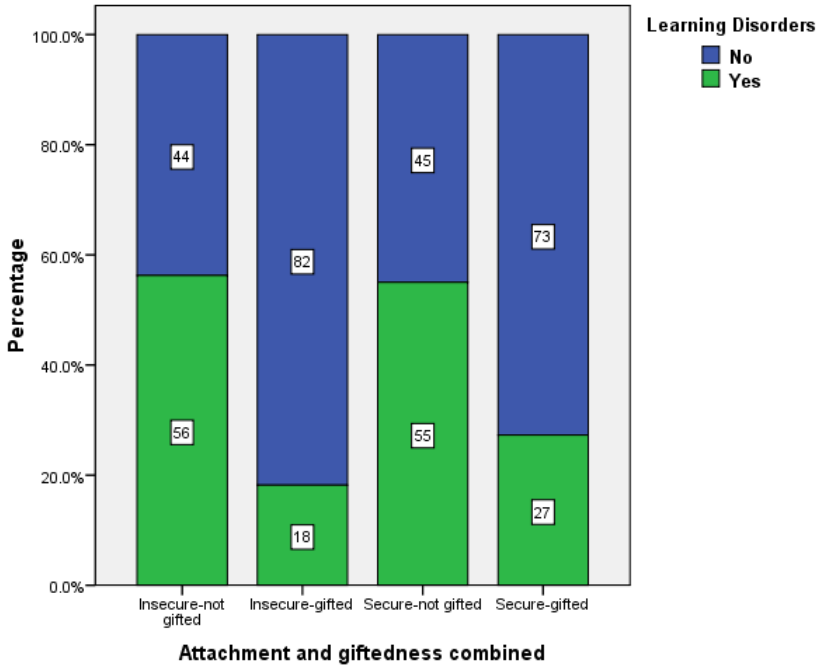

Figure 5.4. The percentage of gifted and not-gifted secure and insecure children with learning disorders.

5.8.2.4 Supplementary analyses on learning disorders

In supplementary analyses of the data it was found that no child with a score of ≥ 120 in the PS or WM index scores had any reported learning disorders, whereas four children with gifted scores in their VC subtest had at least one learning disorder, and 10 children with gifted PR scores had at least one reported learning disorder. Additionally, as Figure 5.5 below shows, there were no reports of learning disorders for children with a full scale IQ of ≥ 127.

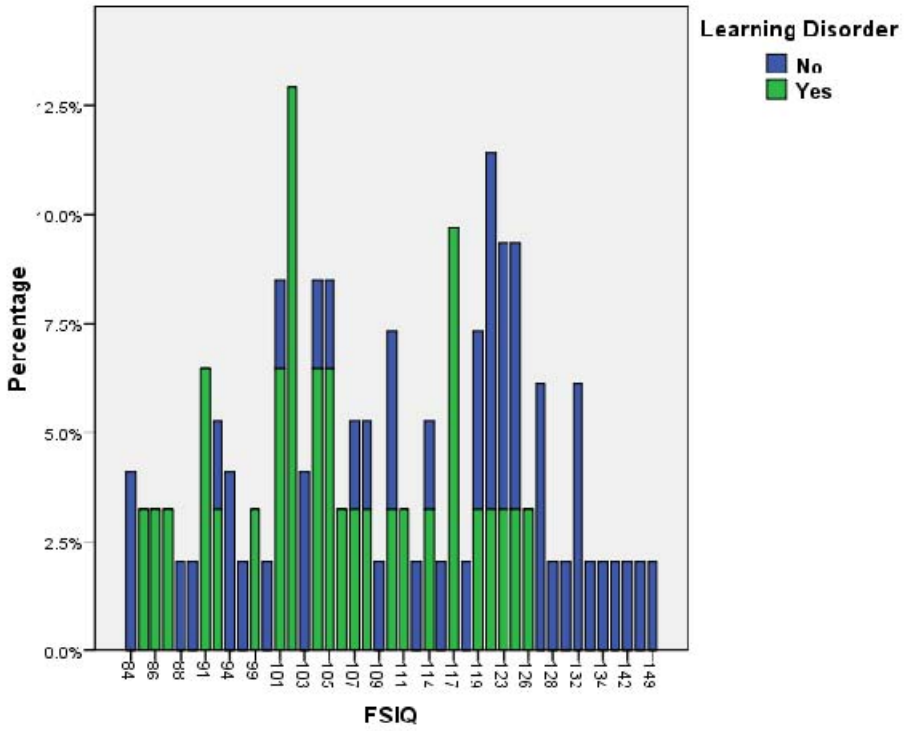

Figure 5.5. Stacked histogram showing the distribution of full scale IQ for children with one or more learning disorders, and those without a learning disorder.

Children from the lowest and highest (but not middle) income and qualification groups had the highest incidence of LDs. Although learning disorders were more likely to occur in children from lower income families than from other income groups, children from families with the highest incomes were more likely to have learning disorders than were children from middle income families, as shown in Figure 5.6.

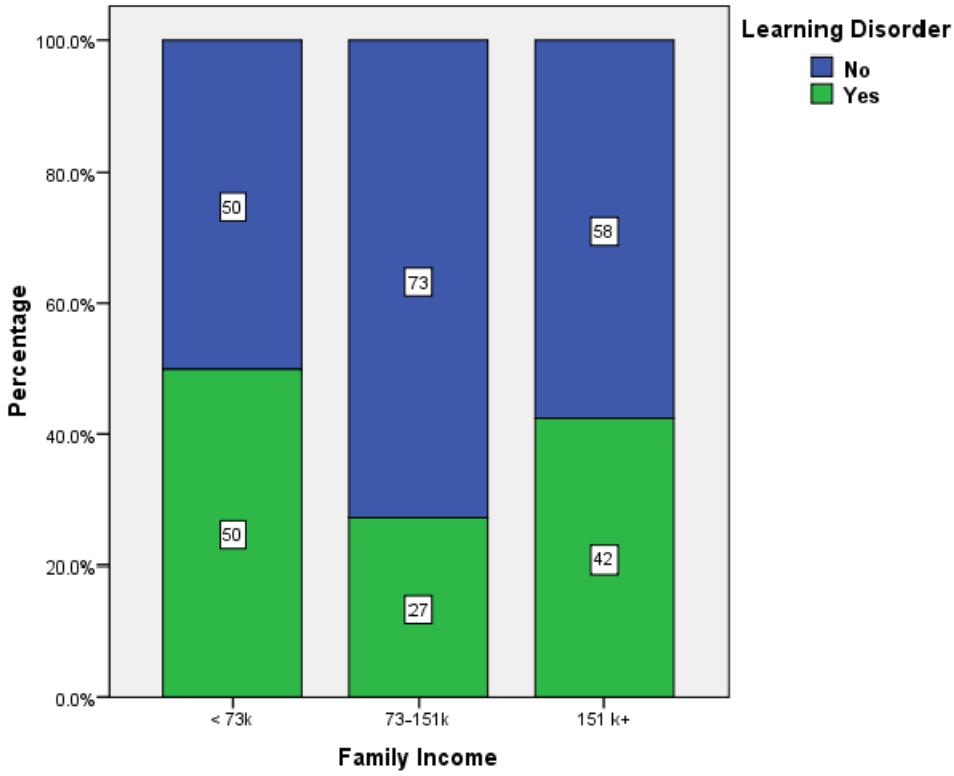

Figure 5.6. The percentages of family income levels and children's reported learning disorders.

The association between mothers' qualifications and children's learning disorders, although not significant, revealed a similar pattern to family income. The children of mothers with the lowest and highest qualifications were a little more likely to report at least one learning disorder in comparison with mothers whose education level was in the middle category, as can be seen in Figure 5.7 below. However chi-square analyses showed no significant relationship between learning disorders and either family income, χ^2 (2, N =80) = 2.49, p. = 0.29, or mothers' qualifications, χ^2 (2, N =80) = 1.54, p. = 0.59. Gifted children's socio-economic backgrounds were therefore not found to be associated with their learning disorders.

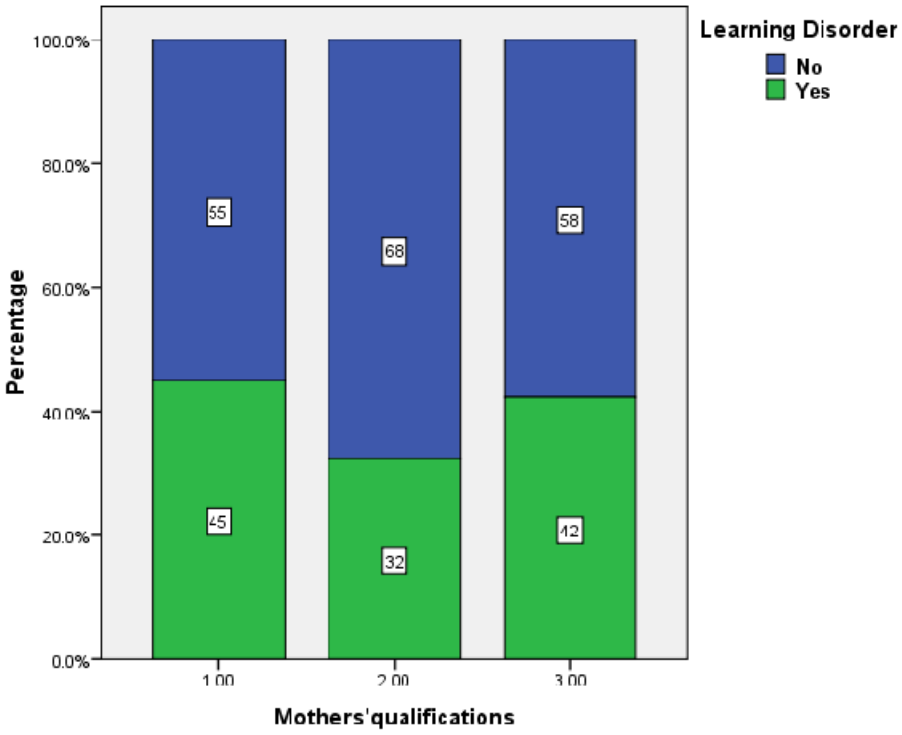

Figure 5.7. Percentage of mothers' level of qualifications and children's reported learning disorders.

As already alluded to above, 91.2% of mothers who indicated that they themselves had a learning disorder also reported that their child had at least one learning disorder. Forty-six mother-child pairs (58 %) did not report any learning disorders. The relationship between mothers' and children's reported learning disorders is shown in Figure 5.8.

Figure 5.8. Scatterplot showing the relationship between the number of learning disorders reported for mothers and the number of learning disorders reported for their children.

5.8.2.5 Verbal comprehension (VC) scores and securely and insecurely attached gifted children

An ANOVA showed that the overall effect was highly significant $F(3, 76) = 11.75$, $p < .0005$, $\eta^2 = .49$, as expected, mainly because the gifted groups obtained higher scores than the not-gifted groups, as having a VC score of 120 or more would have led to a child being classified as gifted. Additionally, the highest mean VC scores were obtained by children who were securely attached and gifted ($n = 33$, $M = 123$, $SD = 10.51$) followed by the insecurely attached gifted ($n = 11$, $M = 120.5$, $SD = 14.76$). The difference between these two groups was not significant, $t(76) = .62$, $p = .538$ (Figure 5.9).

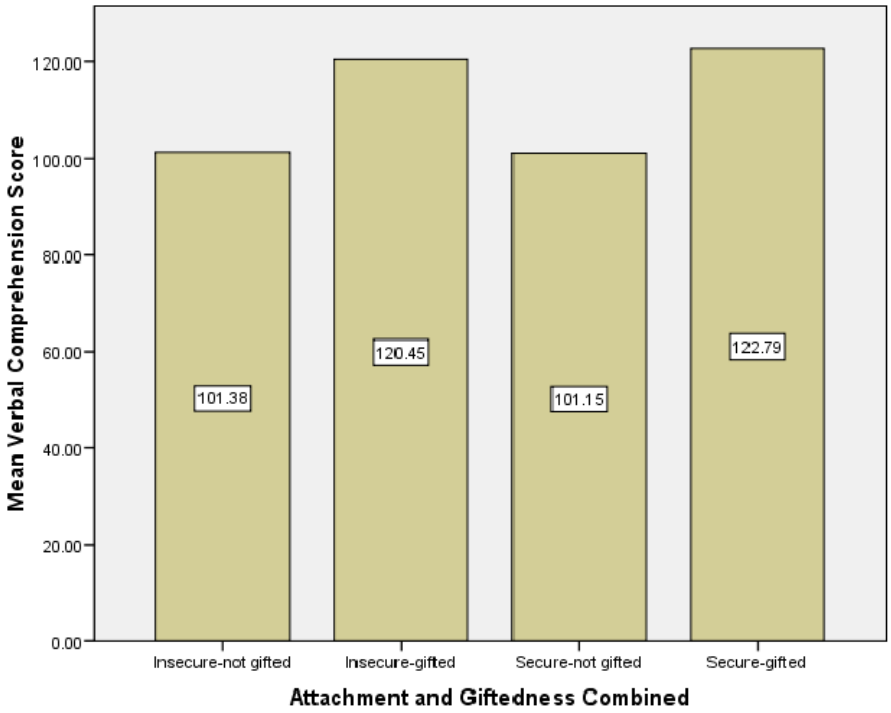

Figure 5.9. Gifted and not-gifted children's attachment styles and verbal comprehension scores.

5.8.2.6 Working memory scores, securely and insecurely attached gifted children

An ANOVA showed that the overall effect was highly significant, as expected, $F(3, 76) = 11.75$, $p < .0005$, $\eta^2 = .32$, mainly because of the difference between the gifted and not-gifted groups. The highest mean WM score was obtained by children who were insecurely attached and gifted, contrary to expectation ($n = 11$, $M = 111.4$, $SD = 16$), followed by the slightly lower scores of the securely attached and gifted group ($n = 33$, $M = 107.5$, $SD = 14$). However, the a priori contrast between the gifted securely attached and gifted insecurely attached children was not significant, $t(76) = .89$, $p = .377$ (Figure 5.10).

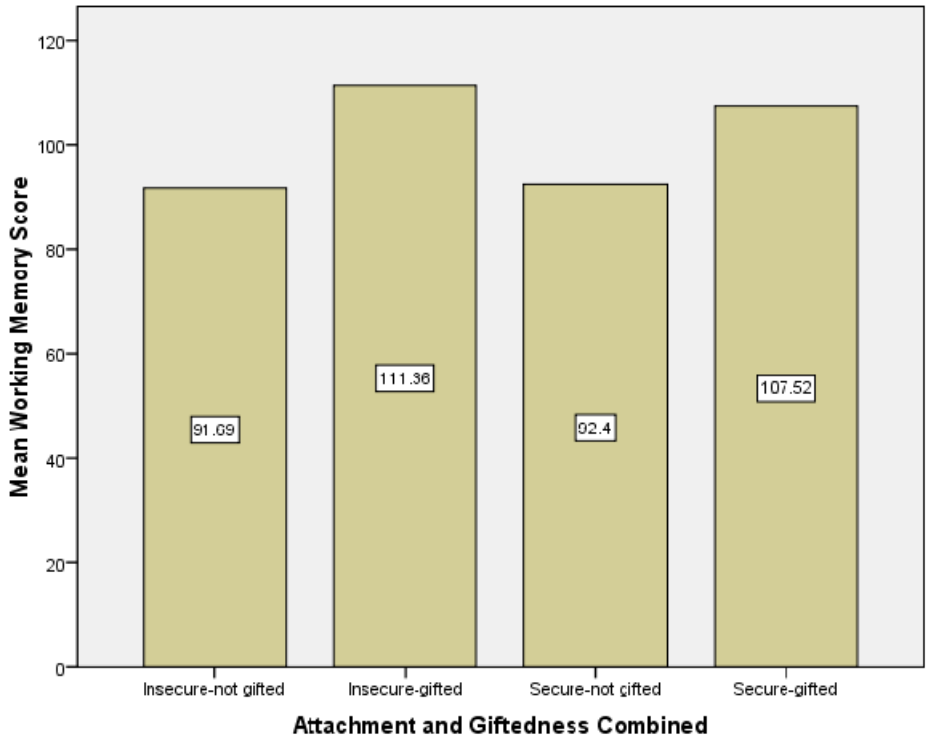

Figure 5.10. Gifted and not-gifted children's attachment styles and working memory scores.

5.8.3 Hypothesis 3

The third hypothesis was that gifted children whose mothers had maternal depression (independent variable) would have higher internalising and externalising scores, more learning disorders, and lower VC and WM scores (dependent variables) than would gifted children whose mothers did not have depression. Eight mothers (10%) reported maternal depression (referred to as *depression* from here for ease in reporting). A categorical variable was created to test the difference between gifted children with depressed mothers compared with gifted children whose mothers had not reported depression, and to compare internalising, externalising, and LDs between gifted and not-gifted groups. The groups were: not depressed not-gifted (n = 33), not depressed and gifted (n = 39), depressed and not-gifted (n = 3), and depressed and gifted (n = 5). The small size of the two depressed groups severely limits the

power of the comparisons and generalisability of the findings, and the findings should therefore be interpreted with caution, although some were consistent with previous research.

Because of the small number of depressed mothers, analyses of variance were not used to compare these groups. However, the 95% confidence intervals for the means of the dependent variables are provided, and these allow for some informal comparisons.

5.8.3.1 Internalising, maternal depression, and giftedness

Gifted children with depressed mothers (80%) had more internalising problems than did gifted children whose mothers had not reported depression (38%). Gifted children with depressed mothers (80%) also had more internalising problems compared with not-gifted children whose mothers reported having been depressed (66.7%) Although this was not expected, the children of both depressed groups scored much higher on internalising problems than did the two not-depressed groups. This finding was expected (Figure 5.11).

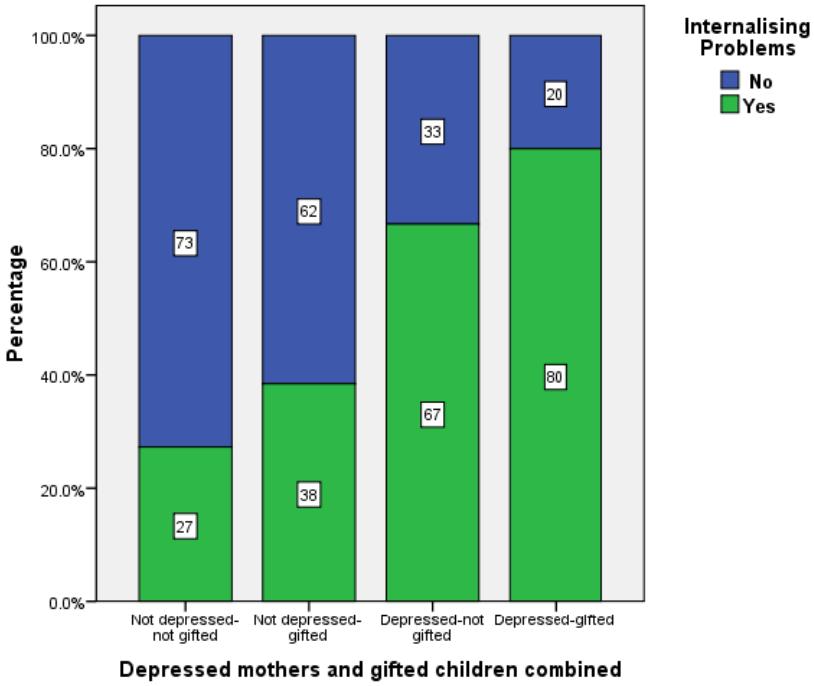

Figure 5.11. Percentage of internalising problems in gifted and not-gifted children with and without depressed mothers.

5.8.3.2 Externalising, maternal depression, and giftedness

One of the five gifted children whose mother had depression (20%) was classified as showing externalising compared with eight children who were gifted and who did not have a depressed mother (23%). Although this was unexpected, it is not possible to draw any conclusions from this result. Both gifted groups had lower externalising scores compared with the two not-gifted groups (Figure 5.12).

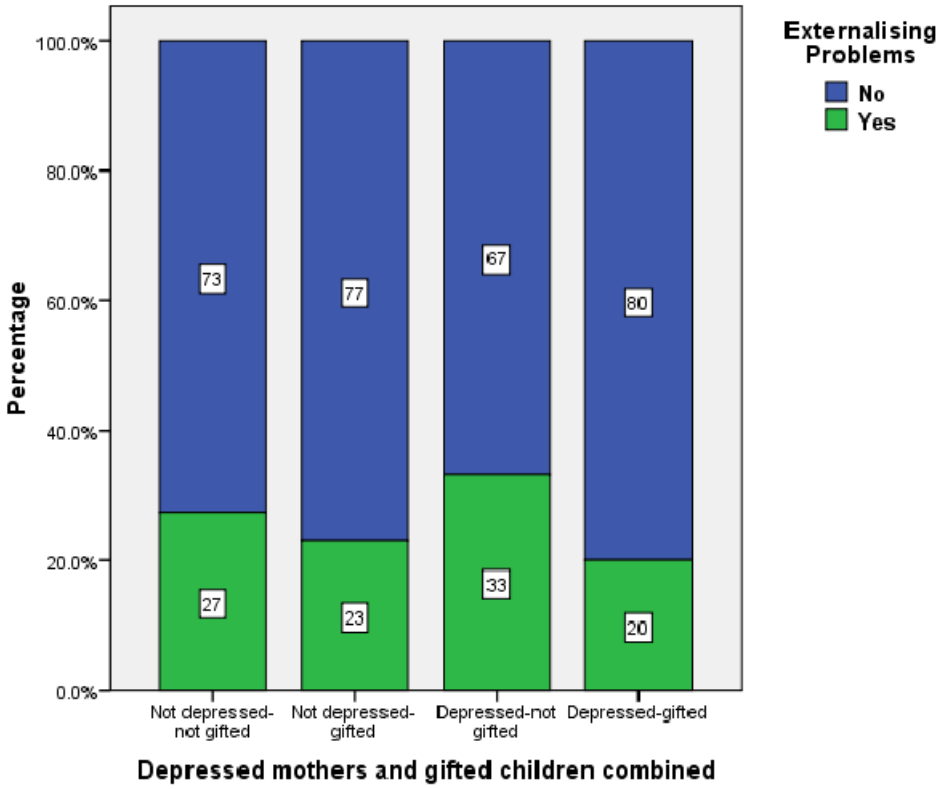

Figure 5.12. Percentage of externalising problems in gifted and not-gifted children with and without depressed mothers.

5.8.3.3 Learning disorders, maternal depression, and giftedness

Sixty percent (n = 3) of gifted children whose mothers were depressed had at least one learning disorder, compared with 21% (n = 8) of gifted children whose mothers were not depressed. This can also be compared with 100% (n = 3) of children whose mothers were depressed and who were not gifted (100%). Although these differences were in the expected direction, the small number of cases precludes any firm conclusions being drawn (Figure 5.13).

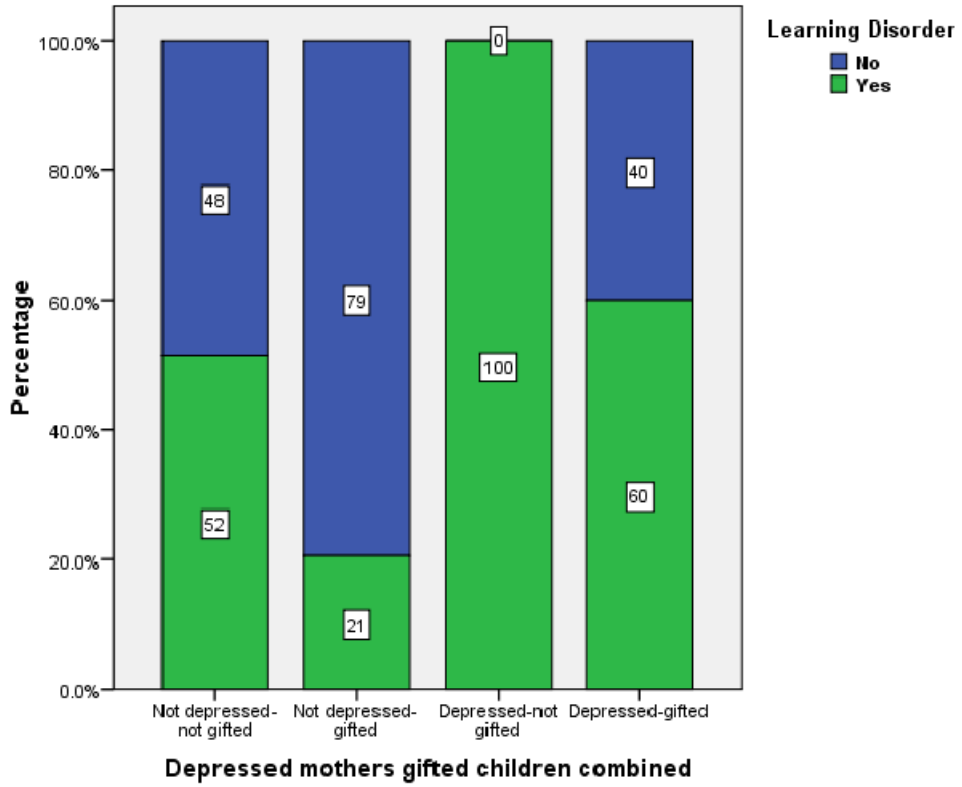

Figure 5.13. Percentage of learning disorders in gifted and not-gifted children with and without depressed mothers.

5.8.3.4 Verbal comprehension scores, maternal depression, and giftedness

The mean VC score of gifted children with depressed mothers was higher at 126.4 IQ (n = 5, SD = 7.37) compared with children whose mothers were not depressed and who were gifted at 121.7 (n = 39, SD = 11.96), contrary to expectation (Figure 5.14).

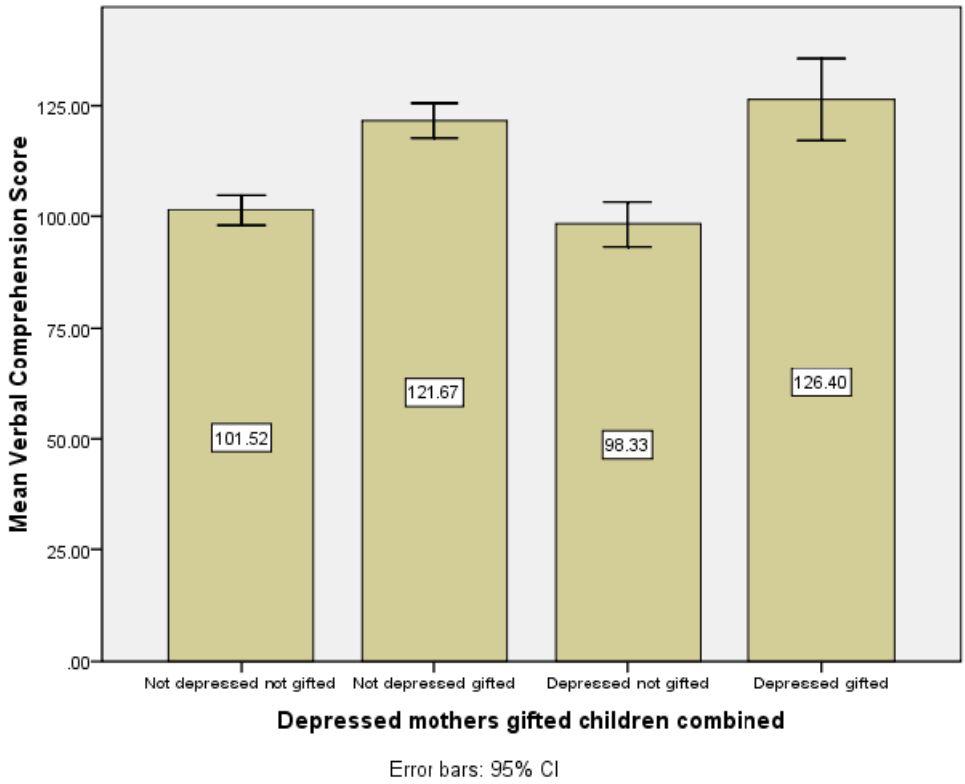

Figure 5.14. Verbal comprehension scores in gifted and not-gifted children with and without depressed mothers.

5.8.3.5 Working memory scores, maternal depression, and giftedness

Children who were gifted and whose mothers were depressed had a slightly lower mean WM score at 104.2 IQ (n = 5, SD = 10.28) than did children who were gifted and whose mothers were not depressed at 109.0, as expected (n = 39, SD =14.84). See Figure 5.15.

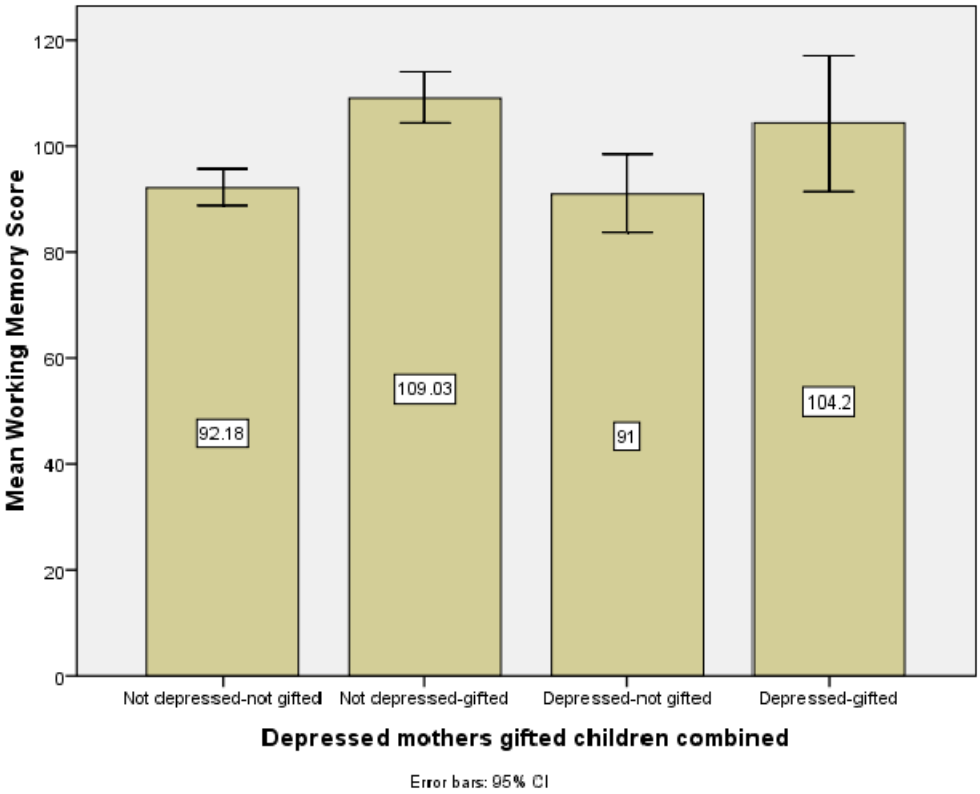

Figure 5.15. Working memory scores in gifted and not-gifted children with and without depressed mothers.

5.8.4 Hypothesis 4

The fourth hypothesis was that some gifted children who have a much higher perceptual reasoning (PR) index score compared to their verbal comprehension (VC) (independent variable) would, in comparison with gifted children without such a discrepancy, have higher internalising and externalising scores, a higher incidence of learning disorders, lower working memory scores, and a lower full scale IQ (dependent variables). The degree of difference was set as being at least 10 points higher for the perceptual reasoning index score compared with the verbal comprehension index score (PR–VC discrepancy). A categorical variable was created with four groups to test the difference between the gifted children with a PR–VC discrepancy and gifted children without a PR–VC discrepancy and, where appropriate,

compare them with the not-gifted groups. Of the 80 participating children, 13 were gifted and had a PR–VC discrepancy score, 31 were gifted and did not have a PR–VC discrepancy, 10 were not-gifted and had a PR–VC discrepancy, and 26 were not-gifted and did not have a PR–VC discrepancy.

5.8.4.1 Internalising, PR–VC discrepancy, and giftedness

The overall test of the difference between the four groups was not significant, χ^2 (3, N = 80) = 1.94, p = .584. It was found that of the gifted children with a PR–VC discrepancy (n = 13), 46.2% had internalising problems. This was similar to the percentage of gifted children with no PR–VC discrepancy (n = 31, 41.9%), OR = 1.12 (Figure 5.16).The difference in the proportions was not significant, χ^2 (1, n = 44) = .80, p = 1.00, OR = 0.84. The hypothesis was therefore rejected.

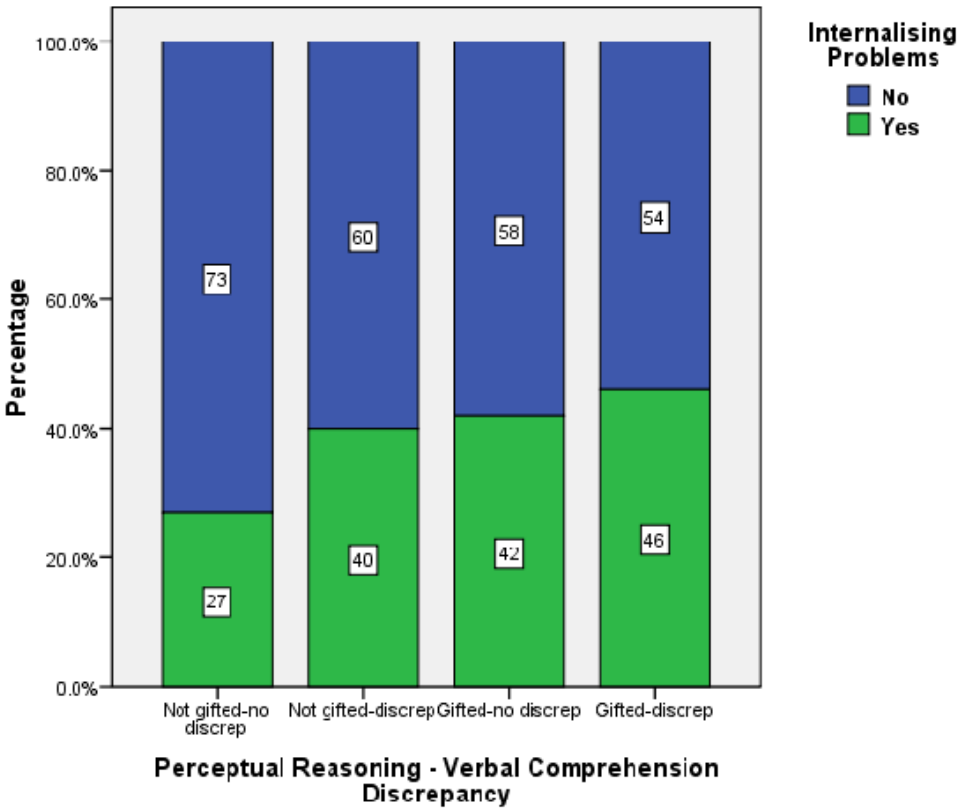

Figure 5.16. Percentage of internalising in gifted and not-gifted children with and without a PR–VC discrepancy.

5.8.4.2 Externalising, PR–VC discrepancy, and giftedness

Gifted children with a PR–VC discrepancy were less likely to have externalising problems (n = 13, 15.4%) than were gifted children with no PR–VC discrepancy (n = 31, 25.8%), OR = 1.92, although this difference was not significant, $\chi^2(1, n = 44) = .45$, $p = .70$. Children who were not gifted with a PR–VC discrepancy were most likely to have externalising problems (n = 10, 30%). The overall test of the differences between the four groups was not significant, $\chi^2(3, N = 80) = .84$, $p = .841$ (See Figure 5.17). The hypothesis was therefore rejected.

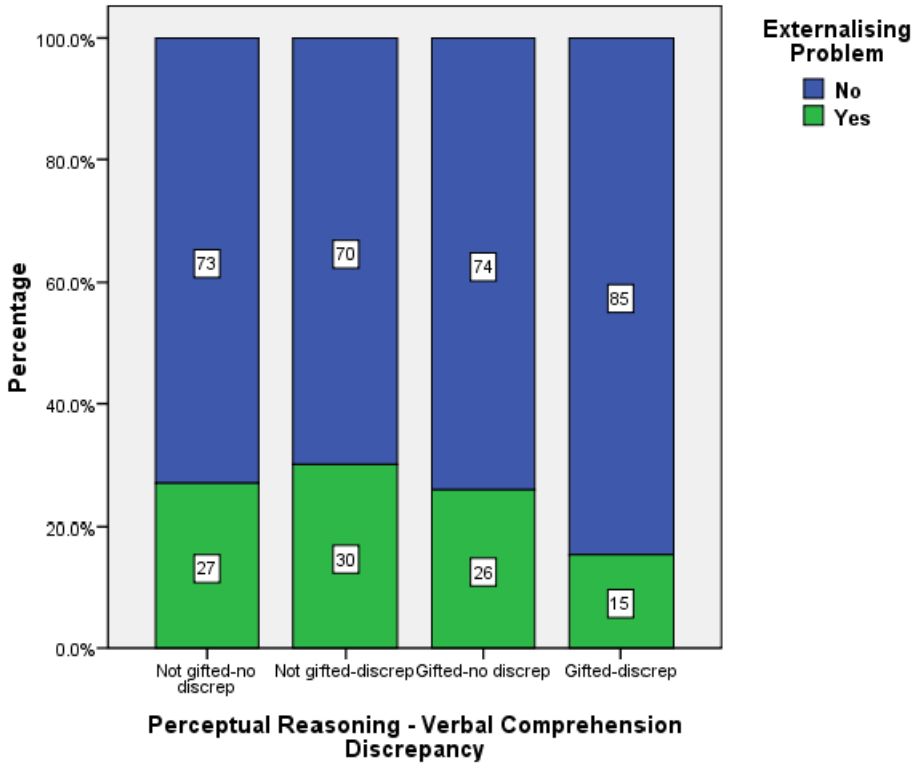

Figure 5.17. Percentage of externalising in gifted and not-gifted children with and without a PR–VC discrepancy.

5.8.4.3 Learning disorders, PR–VC discrepancy, and giftedness

A chi-square analysis indicated that gifted children with a PR–VC discrepancy (n = 13) were twice as likely to have at least one learning disorder (n = 5, 38.5%) than were gifted children who did not have a PR–VC discrepancy (n = 31, 19.4%), OR = 2.6. Similarly, not-gifted children with a PR–VC discrepancy were more likely to have at least one learning disorder (n = 10, 70%) than were not-gifted children without a PR–VC discrepancy (n = 26, 50%). The overall test of the difference between the four groups was significant, χ^2 (3, N = 80) = 10.42, p = .015. However, the difference between the percentages for the gifted children with a PR–

VC discrepancy and the gifted children without a PR–VC discrepancy was not significant, χ^2 (1, n= 44) = 1.78, p = .18 (Figure 5.18). The hypothesis was therefore rejected.

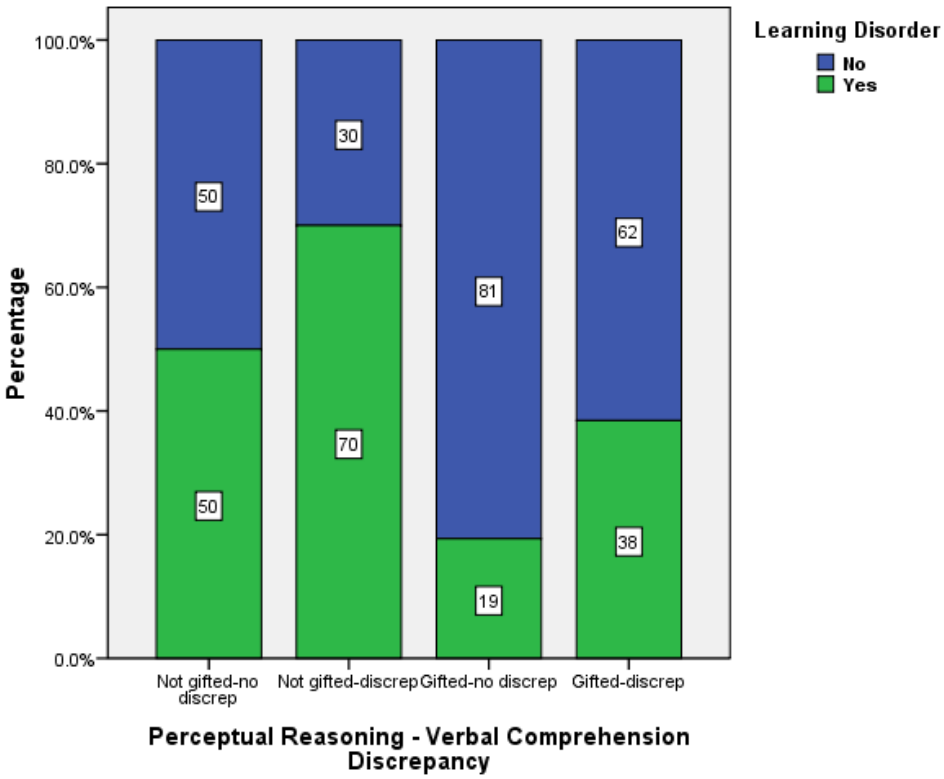

Figure 5.18. Percentage of learning disorders in gifted and not-gifted children with and without a PR–VC10 discrepancy.

5.8.4.4 Working memory, PR–VC discrepancy, and giftedness

An ANOVA comparing the four groups was highly significant, $F(3, 76) = 11.46$, $p. < .0005$, $\eta^2 = .312$, mainly on account of the difference between gifted and not-gifted groups. WM scores for gifted children with a PR–VC discrepancy (M = 109.15 IQ, SD = 16) were very similar to those of gifted children who did not have a PR–VC10 discrepancy score (M = 108.19 IQ, SD = 14), $t(76) = .233$, $p. = 816$ (Figure 5.19). This result was unexpected, and the hypothesis was rejected.

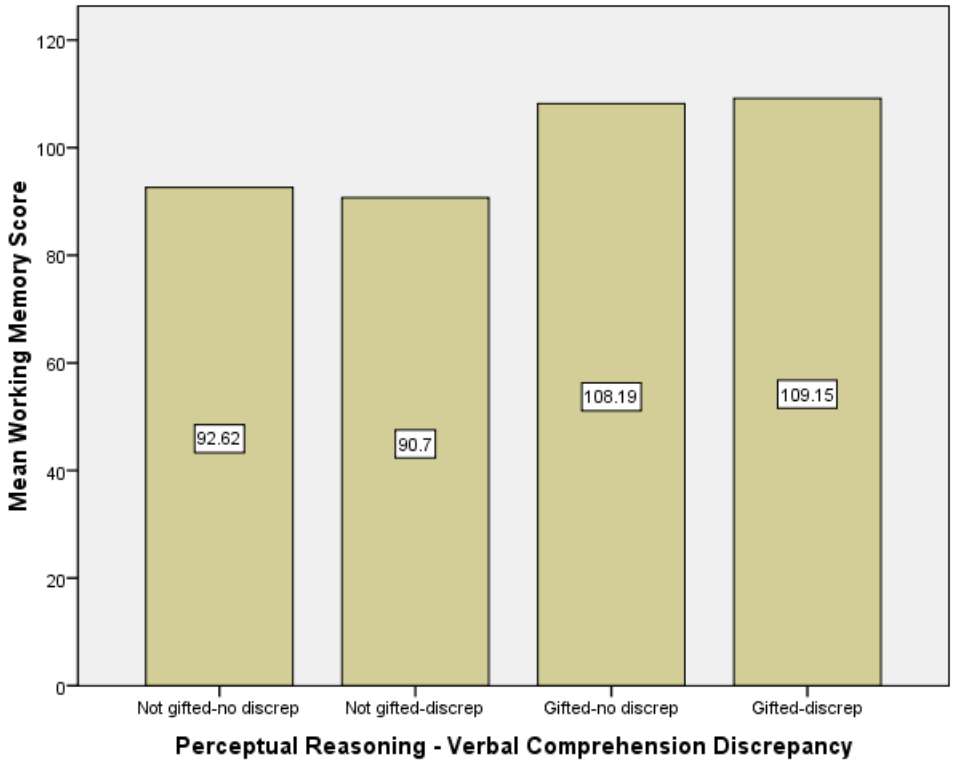

Figure 5.19. Working memory scores in gifted and not-gifted children with and without a PR–VC10 discrepancy.

5.8.4.5 Full scale IQ, PR–VC discrepancy, and giftedness

An ANOVA revealed that there was a significant overall difference between groups (Figure 5.20), mainly because of the difference between gifted and not gifted children, F (3, 76) = 40.92, $p < .0005$, $\eta^2 = 0.61$. An a priori comparison showed that gifted children with a PR–VC10 discrepancy score (n = 13) had a lower average FSIQ score (M = 119.62, SD = 10) than gifted children who did not have a PR–VC10 discrepancy score (n = 31, M = 123.74, SD =10), although this difference was not significant, $t(76) = 1.309$, $p = .19$ (Figure 5.20). Thus the hypothesis was rejected.

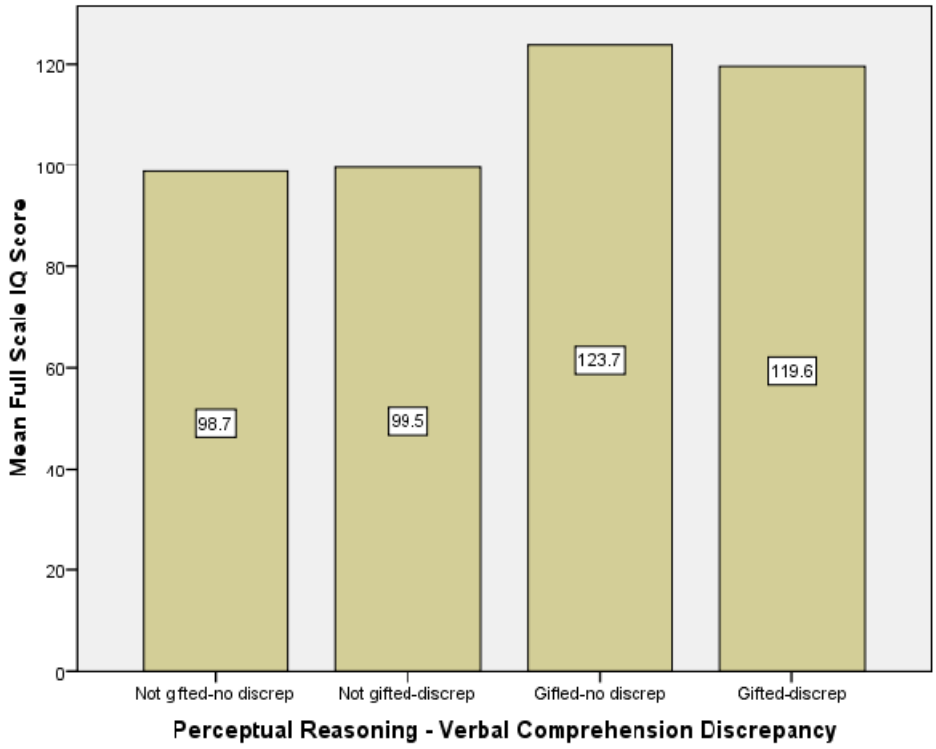

Figure 5.20. Full scale IQ scores in gifted and not-gifted children with and without a PR–VC10 discrepancy.

5.9 Discussion

Although four hypotheses were tested, the purpose of the study was largely exploratory. The sizes of many of the effects relevant to the hypotheses were small, and perhaps not replicable, although others may be replicable and prove to be significant in research with larger samples. Some interesting effects were found, although these may be due to measurement, such as poor reliability of the attachment measure, and parent (self) report measures used to collect data on learning disorders and on maternal depression.

Each hypothesis is discussed separately below, followed by a general discussion. The discussion includes references to intelligence as a possible protective factor in relation to giftedness and maternal depression. This consideration is inferred only, however, as there was no direct measure for intelligence as a protective factor, bearing in mind that in this study IQ has been used as the measure for giftedness.

5.9.1 The Hypotheses

5.9.1.1 Hypothesis 1: Association between giftedness and secure attachment

No previous research appears to have tested whether the findings for gifted children would be similar to or different from the general population. The associations between the dependent variable of giftedness and secure attachment were not supported. In the overall sample of 80 participating children, 66% were reported to be securely attached, a finding similar to the two-thirds of the securely attached found in the general population established through research on attachment (Prior & Glaser, 2006). These results showed that, although not statistically significant, 75% of gifted children were securely attached. The stronger association between attachment and giftedness was not explained by differences in mothers' education and income levels. It is worth noting here that gifted children with learning disorders (LDs) were less likely to be securely attached (65%) in comparison with all gifted participants. Although this was a higher percentage than the 45% found for not-gifted children with LDs in a previous study (Al-Yagon & Mikulincer, 2004a), it did follow a similar reduced pattern of secure attachment in children with LDs.

5.9.1.2 Hypothesis 2: Giftedness, attachment, internalising, externalising, LDs, and VC and WM scores

The hypothesis that gifted, securely attached children would be less likely to have internalising and externalising problems, fewer LDs, and higher VC and WM scores as measured by IQ in comparison with gifted insecurely attached children was not supported. There were no statistically significant outcomes and subsequently the hypothesis was rejected, although some differences were in the expected direction. Both internalising and externalising scores were slightly lower for the securely attached gifted children in comparison with the insecurely attached gifted children. As these results may be just an artefact of this sample, replication of the research may clarify both this, and whether there may be other variables that would better explain these differences. The mean verbal comprehension (VC) subtest score was also slightly higher for gifted securely attached children compared with that of the insecurely attached gifted children. Some differences were not in the expected direction, with the highest mean working memory score obtained by insecurely attached gifted children and not securely attached gifted children, contrary to expectation. Additionally, it was the securely attached gifted children who had more learning disorders, rather than the insecurely attached gifted group, as had been expected, although the difference was not significant.

5.9.1.3 Hypothesis 3: Gifted children of mothers with depression

The hypothesis that gifted children with mothers who had experienced depression have higher internalising and externalising scores, more LDs, and lower VC and WM scores compared with gifted children whose mothers did not experience depression during their children's early years was not supported. Even though the scores were not significant, gifted children who had depressed mothers in this population had higher internalising (although lower externalizing) scores than not-gifted children who had depressed mothers. If children's

intelligence had been a protective factor in relation to maternal depression, as suggested by Johnson and Flake (2007), gifted children whose mothers were depressed would have been *less* likely to internalise than would not-gifted children whose mothers had been depressed.

The number of learning disorders was also highest for the two maternal depression groups compared with the not-depressed groups, with less likelihood of learning disorders for the two gifted groups, as expected, although the small number of cases involved prevents a definitive conclusion. Children who were gifted and whose mothers were depressed had a slightly lower mean WM score than did children who were gifted and whose mothers were not depressed, as would be expected (Hughes, Roman, Hart, & Ensor, 2013). Gifted children with depressed mothers obtained higher VC and WM scores in comparison with not-gifted children with depressed mothers, as expected. However, the VC score of gifted children with depressed mothers was higher than that of the gifted children who did not have depressed mothers. This outcome was unexpected. It is also worth noting that the differences in VC and WM scores may be explained by differences between gifted and not-gifted children. Again, this should be investigated further because of the low number of depressed mothers in this study.

5.9.1.4 Hypothesis 4: Giftedness, PR–VC discrepancy, IQ scores, LDs, and internalising and externalising problems

The hypothesis that gifted children are more likely to have LDs and internalising and externalising problems, and to have lower WM scores and lower full scale IQ scores, if their perceptual reasoning (PR) IQ index scores are at least 10 points higher than their verbal comprehension index scores (PR–VC discrepancy) was not supported. Although not significant, the outcomes for this hypothesis appeared to show a trend towards the expected direction: The mean FSIQ for gifted children with a PR–VC discrepancy was a little lower

than for the gifted group without the PR-VC discrepancy, although this may be attributed to the discrepancy itself, which would be instrumental in lowering the FSIQ, as the FSIQ is made up of the indexes. The likelihood of having at least one learning disorder was higher for gifted children with a PR–VC discrepancy than for gifted children without the discrepancy, although having at least one learning disorder was much higher for the two not-gifted groups of children compared with the two gifted groups. Gifted children with a PR–VC discrepancy were slightly more likely to have internalising problems although less likely to have externalising problems in comparison with gifted children without the discrepancy, with both gifted groups less likely to have externalising problems than were the not-gifted groups.

5.9.2 General discussion

The analyses indicate that a larger proportion of gifted children were securely attached, although this did not reach significance. Nor were significant differences found between gifted and not-gifted children's internalising and externalising behaviours. This supported earlier findings that gifted children's adjustment was similar to that of not-gifted children (Neihart, Robinson, & Moon, 2002). The finding that children in the securely attached and gifted group were more likely to have at least one learning disorder than were children in the insecurely attached and gifted group may be due to other variables, for example, having a more involved parent who is therefore more likely to notice the learning disorder.The two subgroups of gifted children with depressed mothers, and gifted children with a PR–VC discrepancy profile, were more prone to internalising problems than were not-gifted children, regardless of attachment style. This was contrary to expectations, but an interesting finding, raising new possibilities for research about these associations in gifted children.

Conversely, gifted children with depressed mothers (compared with both not-gifted groups), and gifted children with a PR–VC discrepancy compared with not-gifted children with a PR–VC discrepancy were less likely to have externalising problems. One explanation may be that intelligence acts as a protective or moderating factor in relation to externalising problems for these groups of children. Another possible explanation may be that gifted children's advanced reasoning skills override their externalising impulses. Their adjustment problems may perhaps take a more socially acceptable form, that of internalising their problems. Finally, sensitive gifted children who have experienced early adversity, perhaps because of their mothers' depression, may be more likely to learn from past experience or be more influenced by their mothers' depressed views, adopting a glass half-empty view of the world (Belsky & Pleuss, 2009). Future empirical, possibly longitudinal, research with a generalisable sample and with similar subgroups and a significantly greater number of participants may uncover whether internalising could be a "default" disorder in the above vulnerable groups of gifted children.

As mentioned above, gifted children with a PR–VC discrepancy were more likely to have a learning disorder than were gifted children without the PR–VC discrepancy, although it should be noted that having at least one learning disorder was much more likely for children in the not-gifted groups with a PR–VC discrepancy. The socio-economic backgrounds of gifted children in this population were not associated with learning disorders, and being mildly gifted, with an IQ in the 115–129 range (Feldhusen, as cited in Gross, 2000), did not appear to reduce instances of LD in comparison with the not-gifted.

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An interesting and unexpected finding was that no learning disorder was reported for children with ≥ 127 FSIQ, or for children who had "gifted" WM and PS scores ≥ 120 IQ. Working memory and processing speed scores have been used for measuring executive functioning (Ziady, 2012), an area also associated with IQ testing. Poor executive functions associated with working memory have also been associated with adverse early experiences (McDermott, Troller-Renfree, Vanderwert, Nelson, Zeanah, & Fox, 2013), and findings indicate that adverse environments can impair the development of the brain's executive functions, although learning disorders are not specifically mentioned (Center on the Developing Child at Harvard University, 2011). One causative factor for learning disorders is attributed to heredity (Yeo, Gangestad, & Thoma, 2007), and information obtained from mothers indicated a close association between their own and their children's reported learning disorders (see Figure 5.5). As no direct links can be drawn between giftedness, learning disorders, maternal depression, and attachment, further research is required to test these associations.

Finally, it may be the case that findings for gifted children cannot be generalised to other groups of children, just as research findings on children from at-risk backgrounds (Bradley & Corwyn, 2002) do not necessarily apply to other children. For example, in the same way that "there is some agreement that high quality care can enhance [outcomes] (McCartney, 1984), *especially amongst children who are already at-risk for poor outcomes"* [emphasis added], (Sylvia, Stein, & Leach, n.d., p. 4) externalising problems may occur less frequently and internalising more frequently in subgroups of gifted children than in children who are not gifted. However, socio-economic factors may not be a large influence on attachment style or learning disorders, as found in this study.

Although a small non-significant association between giftedness and attachment was found, other mediating factors are also involved. For example, a recent study involving attachment and achievement also identified better quality maternal assistance and higher quality teaching from the mother as significant moderators (West et al., 2013). It may well be the case that specific parental behaviours in addition to poor or inappropriate responsiveness may be contributing factors in attachment insecurity and children's behaviour problems (Fearon, Bakermans-Kranenburg, Van IJzendoorn, Lapsley, & Roisman, 2010). More research is required with a larger non- clinical population, and the above mediating factors should be included in future research on giftedness, attachment, and maternal depression.

5.10 Reflection on implications for a gifted spectrum approach

A gifted spectrum approach has been proposed in this thesis as one inclusive way to explain the variability found among children who are gifted. The approach proposes that a gifted child who is securely attached and has no disorder should be referred to as authentically (intellectually) gifted—authentic, as the child's intellectual potential and achievements are free of hindrances, the only limitations being level of heritable intellectual potential and level and quality of opportunities. The full definition in Section 2.4 should be noted, as this will help prevent the misuse of the term. Further, the proposal was made that a gifted child is more likely to be securely attached.

In addition to the authentically gifted child, the gifted spectrum approach suggests that potentially gifted children who have disorders or disabilities make up the remainder of a gifted spectrum. Evidence cited earlier indicates that children in the general population who

are insecurely attached through insensitive and unresponsive parenting, and/or whose attachment has been disrupted by maternal depression or other trauma, may develop problems and disorders and have reduced IQ scores (Perry, 2002; Prior & Glaser, 2006). It has also been proposed that intelligence may be a protective factor. Such outcomes may, therefore, not be as pronounced in potentially gifted children as in children who are not gifted. Instead, subtle indicators may include an IQ in the mildly gifted (115–129) or moderately gifted (130–144) ranges, as previously suggested in Chapter 3.

As has been discussed above, none of the hypotheses' outcomes was significant. One possible reason for this may be that higher intelligence prevents some adverse outcomes in gifted children, as suggested by others (Fergusson et al., 1996; Gunnar, 1998; Johnson & Flake, 2007; Perry & Szalavitz, 2006). With this in mind, the next section will explore the outcomes of the above research in relation to a gifted spectrum approach.

5.10.1 Gifted spectrum: Gifted and mildly or moderately gifted?

Although not specifically mentioned as part of the gifted spectrum approach, gifted children with a PR–VC discrepancy may be more likely to have a lower full scale IQ score in comparison with children without the discrepancy. In this study children with learning disorders were found only within the mildly gifted IQ range. These findings support the reasoning behind the inclusion of children with scores of 120 or more in *any* subtest index *or* full scale IQ in the research criterion of gifted. The decision was made on the assumption that children with subtest scores of at least 120 who did not have an FSIQ of at least 120 may include children who had experienced early trauma, had learning disorders, and/or had an IQ

profile associated with gifted children who have certain difficulties (Perry, 2001; Silverman, 2002), as outlined earlier.

Interestingly, through this selection criterion for the formation of the gifted group for the quantitative research described in this chapter, 44% of children were reported to have at least one learning disorder, and 56% had a PR–VC discrepancy, a profile that has been associated with a reduced full scale IQ. Silverman (2002) has also indicated that this IQ profile is associated with a visual-spatial learning style in gifted children that is incompatible with the auditory-sequential style normally employed in schools. The inclusion of these children in the gifted group was exploratory, testing the suggested broadening of giftedness to include gifted potential in children who may require additional support alternatives to educative intervention to achieve their intellectual potential. It is unknown whether any of the children in this study had in fact experienced early trauma. However, only 4 (9%) of the gifted group with an FSIQ score below 120 had neither a reported LD nor a PR–VC discrepancy profile. Including children with subtest index scores of 120 in the gifted group as children with potential may therefore be defended as a reasonable approach.

5.10.2 Gifted spectrum: Learning disorders

An interesting and unexpected finding was that no learning disorder was reported for children with ≥ 127 FSIQ, or for children who had "gifted" WM and PS scores of ≥ 120. Working memory and processing speed scores have been used for measuring executive functioning (Ziady, 2012), an area also associated with IQ testing. Poor executive functions have also been associated with adverse early experiences (McDermott et al., 2013). Findings indicate that adverse environments can impair the development of the brain's executive functions, although learning disorders are not specifically mentioned (Center on the Developing Child at

Harvard University, 2011). One causative factor for learning disorders is attributed to heredity (Yeo, Gangestad, & Thoma, 2007), and information obtained from mothers indicates a close association between their own and their children's reported learning disorders (see Figure 5.5).

Learning disorders were marginally more likely in gifted securely attached children in comparison with their insecure counterparts, in contrast to expectation. The contrast appeared to be even more pronounced in gifted children whose mothers reported maternal depression compared with gifted children whose mothers did not report maternal depression and in gifted children with a PR–VC discrepancy in comparison with gifted children without the PR–VC discrepancy. It appears from these outcomes that LD may not be particularly associated with insecure attachment, although it may be more prevalent among gifted children whose mothers have been depressed or in gifted children who have a PR–VC discrepancy. Again, these are the two subgroups where problems were expected, and these outcomes, although not significant, may support the gifted spectrum approach, although definitive conclusions cannot be drawn due to the low numbers. As no direct links can be drawn between giftedness, learning disorders, maternal depression, and attachment, further research is required to test these associations.

5.10.3 Gifted spectrum: Subtle socio-emotional symptoms

This research provided an opportunity to test whether intelligence might be a protective factor with gifted children who had depressed mothers. These children were less likely to have a learning disorder and also less likely have externalising problems than were not-gifted children with depressed mothers, although the findings cannot be generalised due to the low numbers within the subgroups.

Subtle differences were also found in gifted children in the PR–VC discrepancy group. These children were slightly more likely to have at least one learning disorder, to internalise, and to have slightly lower full scale IQ scores than were gifted children without the discrepancy, with only a slight difference found in verbal comprehension and working memory scores. Although subtle, these findings may indicate that this IQ profile may perhaps be associated with early adverse experiences (Perry, 2002; Silverman, 2002). Additionally, although these findings are not significant, possibly due to the low number of participants in the subgroups, they nevertheless appear to support the reasoning for including children with $\geq$ 120 subtest index scores in the gifted group who did not obtain a full scale IQ of $\geq$ 120, a consideration that may be included in the identification processes in schools.

An unexpected but interesting outcome was that gifted children whose mothers were depressed were *more* likely to have internalising problems when compared with the not-gifted children whose mothers were depressed. Gifted children with a PR–VC discrepancy were also slightly more likely to have internalising problems compared with gifted children without the discrepancy as well as with the two not-gifted groups. Given that higher internalising problems were found in these gifted subgroups, it is conceivable that these children may be more sensitive and therefore more prone than other children to have internalising (and not externalising) problems following adverse events (Belsky & Pleuss, 2009). More research with a larger subgroup of participants (e.g., maternal depression / PR–VC discrepancy) is required to test these findings further.

Expected outcomes on verbal comprehension and working memory subtest scores were inconsistent. As expected, verbal comprehension was marginally higher for the securely attached gifted than for the insecurely attached gifted children. Working memory was lower for children in the maternal depression subgroup, as expected. However, securely attached gifted children scored marginally lower in working memory compared with insecurely attached gifted children. None of these outcomes was large or significant.

5.11 Limitations

This research project was limited in its ability to test the hypotheses comprehensively. There are several reasons for this. It was not a longitudinal study, the size of this clinical convenience sample yielded insufficient data and had insufficient power for sensitive measurement of subgroups (such as mothers with reported maternal depression), only one measure of children's attachment (to peers, not to parents) was used, and in the present study the alpha levels of this measure were lower than those reported in previous studies, raising concerns about its reliability and making it a poor measure of attachment styles, demonstrating the difficulty in measuring child attachment. The most reliable and well-researched assessment of attachment has been of babies in what is known as the Strange Situation (Ainsworth & Wittig, 1969). This procedure is time consuming and complex. Until recently there has been a dearth of attachment measures available for 7 to 10 year olds (Prior & Glaser, 2006), and behaviour is less relevant for this age group than their representations of their working model of attachment. The measure used in this research, the Attachment Style Classification Questionnaire for Latency Age Children (ASCQ; Finzi, Cohen, Sapir, & Weizman, 2000), was designed with this in mind, adapted from a Hebrew translation of the much-researched Hazan and Shaver's adult attachment style scale (Mikulincer, Florian, &

Tolmacz, 1990). However, concepts about relationships are difficult to grasp, and although a self-report measure is relatively easy to use and requires less time than do observations or interviews, validity may be a problem as there is no certainty that children will report their working model of attachment through an accurate assessment of their feelings or behaviours. Therefore, at least two different attachment measures would have been preferable to compare the consistency of children's responses.

Only indirect measures of parents' IQ were collected through their education and income status, data provided by parents and children were self-reported, only basic information was collected on learning disorders, reported maternal depression could not be verified retrospectively, there was inconsistency in the administration of children's ASCQ questionnaires, as some were administered in clinics, while others were administered in their homes, and another limitation was the lack of correction for multiple comparisons. A more reliable method in relation to learning disorders data would have been the collection of existing psycho-educational evaluations or learning disorder, similarly to the already existing IQ data used in the present study. In relation to maternal depression, it is difficult to measure retrospectively. There are only a few valid structured diagnostic interview measures that can measure maternal depression retrospectively, although it would have been difficult to administer these due to the distance between participants who were recruited from both Australia and New Zealand. Another option would be qualitative research, the method subsequently used with a small group of mothers (see Chapter 6).

For some of these reasons, the discussion in Section 5.9.2 was based on the results of analyses that in many cases were not statistically significant, even when results were

consistent with the hypothesis being tested. These, therefore, had to be discussed descriptively, while they are at the same time acknowledged as not being statistically significant. In other cases, the number of subjects was too low to allow any conclusions to be drawn either way.

Although child participants may have seen a psychologist for no other reason than because their parents wanted a WISC-IV assessment of their child's IQ—an assessment only permitted to be administered by a registered psychologist—they are considered to be drawn from a clinical population as a result of having seen a psychologist. The outcomes of this study should therefore be compared only with similar clinical populations.

Additionally, in relation to the PR-VC discrepancy, Hypothesis 4 would perhaps have provided more meaningful results if it had been exploratory, looking at how many points of difference was observed, rather than testing an arbitrary difference of 10 points. However, some relevant data were collected, and the outcomes of the one attachment measure used did show similar proportions of children with secure and insecure attachment to those found using other measures in the general population. Although some findings are not consistent or supportive of the gifted spectrum approach, other findings do indicate that there is some justification for the consideration of a broadening model of gifted identification, education, and intervention. In order to ensure I did not rely too much on null hypothesis testing, I was careful to include both *p*-values and effect sizes where relevant which would allow readers who may wish to replicate the study to understand and perhaps compare the effect sizes with their own results. For more information about null hypothesis significance testing in emerging literature, see also Makel and Plucker (2014).

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This study has highlighted the need for further research into the internalising, externalising, and learning disorders of children defined as gifted in this study. As was expected, a number of the children in the gifted group did not reach the full scale IQ score between 120 and 130 generally considered to be the start of the gifted range (Falk et al., n.d.; Gagné, 2007; Lohman et al., 2008; Winner, 2000). I have argued throughout this thesis that these children who did not reach such full scale scores may be potentially gifted, and that their disorders could act as barriers to their potentially valuable contributions to society (Davis & Rimm, 2004). The criterion of a ≥120 score in any index or full scale score for inclusion in the "gifted" group for this study may be considered as a limitation, as intellectual giftedness is generally demonstrated by the full scale IQ score. Alternatively, a relatively high IQ score in a subtest index score (≥ 120) but not in the full scale IQ as used in this study may be one indicator of a gifted child who requires identification and intervention to achieve his or her full potential.

5.12 Future research

The finding that higher IQ was associated with secure attachment in West, Mathews, and Kerns' recent study (West et al., 2013) appears to provide some support to the gifted spectrum approach proposed in this thesis, although the purpose of their research was not specifically to study the association between giftedness and attachment. There is therefore a need for further research with a large sample of gifted children and a control group. Helpful inclusions in future research would be more in-depth information on individual children's learning disorders, including those children's involvement in intervention and gifted programs, how their and their parents' learning disorders were identified, and associations between children's specific learning disorders and those of both their parents. Ideally, not only learning disorders, but all other data collected, should include information about fathers. Additionally, more

reliable and valid measures should be used to collect data on attachment and maternal depression than the self-reporting measures used in this exploratory study. Finally, mothers' and fathers' IQ scores for comparison with their children's IQ scores should be included in future studies to separate out genetic influence and attachment styles more accurately. If this is not possible, then a much larger and more heterogeneous population should be sourced. For example, Australian education departments, employers of school counsellors who often administer IQ tests to children from all SES levels, may be a more appropriate source for the recruitment of gifted children.

In summary, the findings of this study indicate that gifted children may be more likely to be securely attached than are not-gifted children. Due to the low number of participants, the subgroups were too small to yield significant outcomes. Future research with more extensive measures and randomised participants would be needed to further test any associations between attachment, maternal depression, and potentially gifted children.

5.13. Conclusion

None of the hypotheses were supported. The low numbers of participants in the subgroups were too small to yield significant outcomes, and more research is needed to test associations between attachment, maternal depression, and potentially gifted children with more extensive measures and randomisation. The study outcomes nevertheless tended in the general direction of some aspects of the gifted spectrum approach in that the gifted group was more likely to be securely attached, and gifted children who may have experienced early trauma may have learning and other disorders. These children may require alternatives to educational interventions in order to prevent underachievement and to increase their chances of realising

their full gifted potential. This study has therefore paved the way for future research of this new topic in gifted education.

Chapter 6

Potential for Being Misunderstood: A Gifted Disadvantage?

Literature Review, Qualitative Study, and Discussion

6.1 Preamble

This chapter commences with a literature review on the impact of maternal depression on young children to augment the literature already reviewed on this topic in Chapters 2, 3, and 5. This supplementary review will support the published article that follows, describing an exploratory qualitative study about the relationship between mothers and their gifted children, in particular whether and how maternal depression and attachment problems can affect gifted children's socio-emotional adjustment. This literature review brings together some of the key aspects described in the earlier chapters with a focus on three areas:

- Maternal depression and children's neurological and executive functioning
- Specific periods of maternal depression and children's problems
- Prenatal and postnatal depression and children's development and problems.

6.2 Maternal depression

Maternal depression has been the subject of a range of studies across disciplines, including psychology, and a number of areas in child development. Maternal depression has been associated with adverse outcomes in affective, cognitive, interpersonal, neuroendocrine, and brain functioning (Goodman & Tully, 2006). Severe early childhood deprivation related to maternal depression is uncommon in the general population. However, milder adverse incidences as a result of maternal depression *are* more common, and have the potential to affect the care offered to infants during the first year of their lives due to less contingent

responsiveness of mothers to their infants (cited in Evans et al., 2012). Small specific associations were found in a meta-analysis of 193 studies that examined the strength of the association between mothers' depression and children's behavioural problems or emotional functioning. These included that maternal depression was significantly related to higher levels of internalising and externalising behaviours in children (Goodman, Rouse, Connell, Broth, Hall, & Heyward, 2011). Goodman (2007), who has reviewed research on depression, particularly maternal depression, found that depression is a highly recurrent disorder, with 80% of previous sufferers likely to have more than one episode, and with women more likely than men to have recurrent short episodes.

6.2.1 Association between maternal depression and children's problems

In an in-depth review of research about maternal depression, Goodman (2007) listed the following associations between children's problems and their mothers' depression:

- Infants are more likely to show negative affect
- Toddlers are more likely to be aggressive and to display more heightened emotionality
- Preschoolers are more likely to be excessively compliant and to be excluded by their peers
- Older children are more likely to be anxious and aggressive, externalise, have ADHD, blame themselves for negative outcomes, view the world negatively, find it harder to recall positive aspects of themselves, score lower on measures of intelligence, and obtain poorer academic performance.

In a study of 296 infants, language development was also found to be affected by maternal depression (Quevedo et al., 2011). Some research reviewed by Goodman (2007) indicates that children of depressed mothers are more likely to become depressed themselves, that the rate of depression in these children varies between 20% and 41%, is more likely to include girls and has an earlier age onset, and is associated with greater functional impairment and higher likelihood of recurrence. In a recent study of long-term outcomes, evidence was found of intergenerational transmission of relational difficulties in youth of mothers who had experienced depression (Katz, Hammen, & Brennan, 2013). Gunlicks and Weissman (2008) reviewed studies about depression and treatment effects with child participants up to the age of 18. They concluded that although there is some evidence of successful treatment of parents' depression and subsequent improvement in children's symptoms and functioning, treatment may not be sufficient for improving cognitive development, attachment, and temperament in infants and toddlers.

6.2.2 Maternal depression and neurological studies

Specific and significant neurological associations have been found in two psychobiological systems associated with maternal depression and emotion regulation and expression. The first is a stress response with higher heart rate, lower vagal tone, and higher cortisol as an index of hypothalamic pituitary adrenal axis activity, and the second is cortical activity in the prefrontal cortex with greater relative right frontal electroencephalogram (EEG) asymmetries (Goodman, 2007). Dawson et al. (2003) also found that the stressfulness of infants' interactions with an insensitive depressed mother is associated with reduced activity in the left frontal region of the brain, involved in the use of logic, language, and analytical thinking. They concluded that the frontal brain activation and contextual risks of marital discord and stress mediated the relationship between maternal depression and child behavior problems.

6.2.3 Maternal depression and child executive functioning (EF)

Findings of a longitudinal study of 126 children (Hughes et al., 2013) indicate that the executive function (EF) of children whose mothers reported depressive symptoms early in their lives was adversely affected and that chronicity of maternal depression may matter. According to Hughes, Graham, and Grayson (2004), EF refers to higher order processes such as working memory; inhibitory control, essential for inhibition of impulsive actions; goal-directed action, essential for planning; and responses to novel situations, aiding flexibility. Deficits in EF have also been associated with autism (Robinson, Goddard, Dritschel, Wisley, & Howlin, 2009), ADHD (Pauli-Pott & Becker, 2011), and problem behaviours (Riggs, Blair, & Greenberg, 2003). EF appears to be more susceptible to environmental influence than are other neuro-cognitive functions (Nobel, Norman, & Farah, 2005) and relates to the frontal lobe and associated areas of the brain, which have a very protracted development. These are also the areas of the brain associated with measurement of cognitive functioning through IQ tests (Passingham, 2006; Shaw et al., 2006).

6.2.4 Maternal depression and developmental outcomes

Maternal depression is a term used for both prenatal and postnatal depression, and is determined through a variety of criteria, including having to meet the current DSM criteria (Gravener, Rogosch, Oshri, Narayan, Cicchetti, & Toth, 2012), or relying on mothers' own self-appraisal and reports (Evans et al., 2012).

Numerous research projects have been carried out with the aim of identifying the most critical time for maternal depression in relation to child outcomes, for example on cognition and behavior. Barker, Jaffee, Uher, and Maughhan (2011) conducted a study of 3,298 mother-offspring pairs. They measured maternal anxiety and depression at 32 weeks of gestation, and

at 1.5 years after birth. Other prenatal risks were also assessed. Their results suggest that maternal depression during both prenatal and post natal periods had wider impact on child maladjustment than maternal anxiety.

Postnatal depression and its relationship to attachment have been discussed in depth in Chapter 3. A review of key findings associated with prenatal depression is also outlined below.

6.2.4.1 Cognitive associations

A recent study was conducted beginning during pregnancy of a total of 5,029 mothers who were assigned to 8 groups depending on whether depression occurred in the antenatal, postnatal, preschool period, any combination of these times, or not at all. Only depression during the prenatal, and not the postnatal, period was associated with an average reduction in children's IQ of 3.19 IQ points (Evans et al., 2012). Barker et al. (2011) found that prenatal depression and risks such as drug taking had a prospective association with a small decrease in verbal IQ and an increase in child externalising problems. These researchers speculate whether their finding may help validate other research showing that although interventions may successfully reduce the effects of developmental problems, they may not entirely reverse these child-adverse outcomes of prenatal depression.

6.2.4.2 Other factors

The results of a recent research project conducted with 130 mothers who had a history of postnatal major depressive disorder showed that maternal self-criticism was positively associated with attachment insecurity and internalising in children, whereas toddlers criticised by mothers were more at risk for developing externalising symptoms (Gravener et

al., 2012). In another study, mothers' affection and responsiveness to toddlers were found to mitigate the current and long-term consequences of depression (Leckman-Westin, Cohen, & Stueve, 2009).

In summary, maternal depression early in children's lives has been associated with more problems during later years. Maternal depression is associated with attachment difficulties, affecting left and frontal brain activity related to cognition and language, a small reduction in IQ, increased negative affect, and more aggressiveness in toddlers. As preschoolers, children of mothers with depression have been found to be more compliant than are others, but more likely to later become aggressive and develop psychological disorders including ADHD and depression, have a more negative self-concept and possibly learning disorders, and exhibit poorer academic performance. No studies were found on the association between maternal depression and young gifted children.

6.3 Publication – Gifted and misunderstood: Mother's narratives of their gifted children's socio-emotional adjustment and educational challenge

An exploratory qualitative study undertaken as part of this thesis is reported in a journal article later in this chapter. The study was conducted with children and their mothers drawn from the sample employed in the quantitative study described in Chapter 5 (see item 8 in Appendix D for the information and consent documentation). Children with at least one index score or full scale score of ≥120 were categorised as gifted for the quantitative research, and 11 of their mothers were drawn from this sub-population for the qualitative research. The reason for this specific gifted categorisation is explained in full in Section 5.5.1.1 of Chapter 5. Although the sample is small, it conforms in size with other studies on gifted children that use qualitative methodology (Jolly & Matthews, 2012). The article describes the findings of

semi-structured interviews with the mothers that explored the lived experience of parenting a gifted child. Particular subjects of interest were mothers who may have under-reported their depression in the questionnaire. During interviews I sought to explore whether mothers may have been depressed during the children's early childhood and, if so, whether that and any other adverse experiences may have affected their children's socio-emotional development. The interviews also explored the extent to which mothers were aware of their children's advanced abilities and how mothers dealt with their children's giftedness (see Appendix D for qualitative research questions).

A modified inductive analysis was employed to analyse the narratives obtained through the interviews. This was then used to describe a contextual frame with which to identify important categories and interrelationships (Figure 1 in the article).

Explicit criteria used in analysis were not included in the published paper but are warranted for definition of categories to enable replication involving a much larger study with two or more coders to ascertain reliability of the categories. Subcategories were coded according to key words (e.g., feminine) or concepts (e.g., child being somehow misunderstood). Related categories became subsumed under the main categories. Subthemes within the theme *misunderstandings by peers* (refer to page 8 of the article) are presented in Table 6.1 to illustrate the criteria used for coding. Bold font in the table indicates words, a phrase, or a sentence used for coding purposes.

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Table 6.1

Criteria Used to Code the Responses of Mothers

Subcategory codes	Definition of code	Criterion	Example of quote coded
Strong sense of justice	A reference to child's judgement of situation and fairness of consequences	Meaning	*…**he'll say my teacher yelled at so-and-so today. And they didn't deserve that…***
Atypical gender behaviour patterns	A description of child's behaviour as different from other children of the same gender	Phrase	*…**he's quite feminine**, I think a lot of gifted children are less gender stereo-typed…*
Bullying	A word used in the appropriate context	Word	*…don't know whether I would call it **bullying**, but they were manipulating her the whole time and making her life hell. She'd cry all the time in the morning and they'd laugh at her while she was crying…*
Social problems for boys who are not sporty	A word used in the appropriate context	Word	*…there were kids who were **sporty**, kids who were nerdy, and he was, there wasn't a spot for him to feel that he had friends that he could really truly relate to*
Non-conformist within the peer group	A reference to a child's behaviour demonstrating a deliberate choice not to conform to expected peer behaviour	Meaning	*…they've got to the stage where they are very much into cliques, and because **she doesn't want to play with just one person, she's always been, she's always been a floater**, it makes it very difficult for her…*

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This qualitative study may be seen as a study of cases. Common themes were created on the basis of the narratives of mothers whose responses could be classified within a particular theme that was recurring throughout the data.

When reading this article it is important to bear in mind that it depicts a small qualitative study aimed at identifying important themes and insights. Any conclusions, therefore, are not generalisable to other populations of mother-gifted children dyads. The article is published as:

Wellisch, M., Brown, J., & Knight, R. (2012). Gifted and misunderstood: Mothers' narratives of their gifted children's socio-emotional adjustment and educational challenges. *Australasian Journal of Gifted Education, 21*(2), 5-18.

Due to copyright restrictions pages 160-173 have been omitted from this thesis. Please refer to the following citation for details of the article contained in these pages.

Wellisch, M., Brown, J., & Knight, R. (2012). Gifted and misunderstood: Mothers' narratives of their gifted children's socio-emotional adjustment and educational challenges. *Australasian Journal of Gifted Education, 21*(2), 5–18.

Chapter 6

6.4 Reflective postscript

The connecting focus between the quantitative and the qualitative study was the aim of exploring any association between maternal depression and gifted children's attachment. Although the literature review in the article did explore these issues, there were several references made to "mothers' problems", perhaps creating an unintended impression that the focus was more broadly on health problem instead of maternal depression and other personal problems that may affect the attachment relationship, the actual intention of this study.

Page 7 of the article briefly reports that children were considered gifted "if they had a minimum of one score of at least 120", with the definition of what constituted a 120 score provided in the footnotes for Table 1 (page 8 of the article). The criterion for "gifted" may therefore have been improved through further clarification. Because the article had already been published, further information about the criterion can be found in Chapter 5, Section 5.5.1.1 of this thesis.

Although only one participating mother had experienced separation and divorce, this is a social issue that does impact on a much larger population of parents and children. It was therefore decided that themes arising from her experiences provided a useful representation of this larger population, an additional insight into the mother-child relationship, and may also be useful for future research.

The results section of the article describes the different contexts, home, preschool/school, and peers, where children were misunderstood. Only a little over half the participating children were misunderstood by their mothers as shown in Figure 2. The

narratives of the mothers were the source of the information, which indicated misunderstandings of the child in these three social contexts. Gifted characteristics, for example precocious development, appeared to be the cause of these misunderstandings, as explained in the article. Although children with the highest IQ scores were less likely to be misunderstood, the focus was maternal depression, where the link was demonstrated with children being misunderstood. This included two children with IQs of 124 and 134.

Qualitative research explores the lived experience of the participants, and their perceptions of that lived experience. The interview questions for this study were designed to help explore problems in parenting gifted children, including maternal depression, which is thought to be under reported (beyondblue, 2008). The interviews were transcribed and it was in this context that the narratives were analysed and categorised into important categories, showing clear links between their narratives and the said categories. Mothers who described symptoms and behaviours that were indicative of depression, or who admitted during the interviews that looking back they had probably been depressed, were placed in the depressed group together with the two mothers who had reported formal diagnosis.

The article stated that one mother's understanding of her caregiving role came "too late". Upon reflection, a gentler way to summarise her narrative may have been preferable, as she did learn from her first experience of being a mother. Although the first child missed out, she explained that she was able to "do it with this new baby … I get another start … I get to re-do it". Additionally, the summary of Mary's, Josie's, and Sue's experiences in the last paragraph

before the conclusion in the article indicated a generalisable outcome. Given the few participants, the summary should have been worded to better convey that the outcome was limited to the participants of the study.

A more detailed Table 1 in the article may have been more informative for the reader. Table 6.2 is an amended version of that table which now includes the case identification number (Case Id) of each participating mother-child dyad in the first column. Additional data for each participant can be found in Appendix C, easily identified through the case identification number. These data provide the opportunity for further post-doctoral case studies.

Table 6.2

Summary of Participant Data and Elements in Primary Social Contexts

Case Id	"Names"	Child's age	FSIQ	≥120 scores	Mother depressed	Child Misunderstood			Child's CBCL
						Home	Peers	School	
59	Nancy/Alex	6.6	116	1	N/A	✓			✓
61	Alice/Mark	6.4	120	2	Not Diagnosed			✓	
62	Helen/Tom	10.4	119	2	Not Diagnosed	✓	✓	✓	✓
64	Mary/Steven	8.11	120	3	N/A	✓		✓	
65	Josie/Kate	9.9	149	4	Not Diagnosed	✓		✓	
66	Christine/Jack	6.1	144	5	N/A	✓			
67	Sharon/Robert	9.0	128	3	N/A		✓	✓	
70	Sue/Aaron	8.2	124	3	Diagnosed	✓	✓	✓	✓
72	Annie/Peter	8.1	134	3	Diagnosed	✓	✓	✓	✓
73	Tina/Natalie	7.10	120	2	Not Diagnosed			✓	
74	Andrea/Skye	6.9	114	2	Not Diagnosed	✓	✓	✓	✓

The primary contexts where children can be misunderstood are described in the article as a model, but it is essentially a conceptual framework, rather than a model. The framework

differentiates the contexts between home, preschool, and school in terms of the ways that a gifted child may be misunderstood.

Finally, some readers may argue that there are alternative explanations for these gifted children's problems to those of attachment and maternal depression causing children to be misunderstood. For example, the mother's chemistry causing her depression may have been inherited by the child, resulting in the child's high internalising scores, or the child's problems as measured by the CBCL may be an outcome of parenting style There are also studies that show that children of mothers with depression are more likely to be depressed (Goodman, 2007), although it is unclear whether the depression is caused by environment or heritability. Gunlicks and Weissman (2008), who reviewed studies about depression and treatment effects with child participants up to the age of 18, concluded that there is some evidence of successful treatment of parents' depression and subsequent improvement in children's symptoms and functioning. There is also a solid body of research demonstrating the impact of maternal depression on child outcomes, such that the Australian government has put in place early intervention strategies to identify mothers who are at risk of depression (beyondblue, 2008) with the expectation of beneficial environmental effects for the children.

This exploratory study brings another perspective to Part II of the thesis. It provided insight into possible factors associated with well-being in gifted children, advocated by Jones (2013) as a subject that should be examined. The study also raised possibilities for developing effective strategies used by some mothers in their quest to obtain better educational outcomes for their children. Together, these two findings reflect earlier research that suggested that

positive outcomes are realised only through a coordinated effort between school and home in addressing underachievement (Baker, Bridger, & Evans, as cited in Jolly & Matthews, 2012), a related issue discussed in Chapter 9.

6.5 Reflection on implications for a gifted spectrum approach

The major emergent theme, that gifted children are misunderstood—in some cases even by their mothers—was unexpected. Although the sample is small and generalisations cannot be made from it, the interview data provided insight into the genesis of internalising and externalising disorders in this cohort of participating gifted children. From a gifted spectrum approach, the study supports the need for early identification of giftedness through IQ tests and other qualitative means, with the added benefit of helping mothers understand why their gifted children may be behaving differently from their normative expectations. In that sense, assessment may in fact help to avoid the likelihood of children being misunderstood, thus possibly preventing internalising problems.

6.6 Presentations related to Part II of the thesis

6.6.1 Presentation 1

Wellisch, M. (2010, July). *The relationship between cognitive development and attachment style.* 27th International Congress of Applied Psychology, Melbourne, Australia.

6.6.2 Presentation 2

Wellisch, M. (2010, July). *Relationship as a condition for higher functioning*. International Association for Relationship Research Conference, Herzliya, Israel.

6.6.3 Presentation 3

Wellisch, M. (2010, August). *Grappling with the effects of attachment: A gifted model for dual exceptionality.* 11th Asia Pacific Conference on Giftedness, *Thinking Smart: Effective Partnerships for Talent Development*, Sydney, Australia.

6.6.4 Presentation 4

Wellisch, M. (2010, September). *Attachment, adjustment and achievement in intellectually gifted children.* Presentation for ANZAP *Attachment, Adjustment and Creativity.* Australian Museum, Sydney. Double presentation with Louise Newman. Sydney, Australia.

PART III

THE ASSESSMENT, IDENTIFICATION,

AND EDUCATION OF THE GIFTED

Chapter 7

The Characteristics of Gifted Children

This chapter is the first of four chapters in Part III of the thesis. Part III addresses Contributing Research Question 4: How can an association between attachment styles, maternal depression, gifted identification, and underachievement best be reflected in a new approach and a novel model of giftedness? The aim of Part III is to draw on the theoretical aspects of Part I and the exploratory studies of Part II to situate the proposed gifted spectrum approach within models on giftedness. Such a multi-layered spectrum would include, for example, a range in IQ scores, a range of gifts, a range of levels within each of these gifts, levels of achievement/underachievement, and a range between gifted socio-emotional adjustment and maladjustment.

7.1 Preamble

This present chapter, Chapter 7, links the exploratory studies in Part II to Part III by contrasting previous attempts to identify common gifted characteristics with some data collected from the narratives of mothers in the qualitative study described in Chapter 6. The link is made through a journal article with the aim to create awareness of the ways children's gifted characteristics may vary with the impact of adverse early experiences and possible associated disorders (Wellisch & Brown, 2013)—and factors that may mask giftedness (Brody & Mills, 1997). The article is published as:

Wellisch, M., & Brown, J. (2013). Many faces of a gifted personality: Characteristics along a complex gifted spectrum. *Talent Development & Excellence, 5*(2), 43–58.

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In the article we argue that recognition by educators of both gifted characteristics and those of associated disorders can provide an initial screening for both giftedness and more commonly associated disorders of gifted children.

The article was written following the publications that are located within Chapters 8 and 9. However, it has been placed before these chapters as it serves as an appropriate precursor to the proposed new model discussed in Chapter 9 at this point in the thesis, before an in-depth analysis of what would make an appropriate model, presented in Chapter 8. The article also provides a review of the literature on the characteristics of gifted children and a platform for presenting and discussing additional findings of the qualitative study. The discussions form the basis for an argument about the importance of considering a wider variety of characteristics in the gifted identification process, developed further in Chapter 9.

7.2 Publication — Many faces of a gifted personality: Characteristics along a complex gifted spectrum

Selected writings and research on gifted characteristics are reviewed in the article, and the following are discussed:

- Gifted types (Betts & Neihart, 1988; Roeper,1982)
- The theory of positive disintegration (TPD). This is a personality theory popular with some researchers and experts in the field, a theory that appears to be a good fit with some gifted children. It is then argued that "gifted" behaviours and problems that appear to fit well with the theory may actually be diagnosable psychological disorders

- A sensitive personality type (Belsky & Pleuss, 2009) that may explain why some gifted children appear to be significantly affected either positively or negatively in comparison with other children
- The influence of maternal depression and attachment style on gifted characteristics, compared with Csikszentmihalyi and Csikszentmihalyi's (1993) two gifted types
- How attachment styles may be expected to influence basic gifted characteristics
- Outcomes of studies undertaken for this thesis related to gifted characteristics.

The article ends with the conclusion that the large variability in gifted types and characteristics may be at least partly due to the complex factors and contexts in children's early development, and may contribute to a gifted spectrum.

A screening tool is provided in a table format in the appendix to the article based tentatively on the first author's personal observations and reading of the available literature on disorders and the DSM-5 characteristics, and predictions on how these may affect observable gifted characteristics. Within the thesis, the aim of the tool, the *spectrum of characteristics*, is an attempt to practically illustrate the gifted spectrum approach, including the notion of potential giftedness, through the changes in observable giftedness (whether through characteristics or through achievement) when associated with early adverse events.

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Many Faces of a Gifted Personality: Characteristics Along a Complex Gifted Spectrum

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Abstract: This article will explore previous attempts to categorise gifted children according to certain types, and examine attempts to find common gifted characteristics, including characteristics that may have resulted from adverse environmental and other influences affecting attachment security. The discussion will highlight the difficulty in identifying gifted children who have associated disorders, and propose that disorders can affect core gifted characteristics. If this were the case, then seemingly discrepant and unexpected behaviours in some gifted children may be explained by such disorders. It will be argued that characteristics can be reliably used to initially screen children for both giftedness and for more commonly associated disorders, including anxiety and ADHD. A screening tool, *The Spectrum of Gifted Characteristics*, includes characteristics of disorders more frequently associated with giftedness, characteristics associated with attachment, and predicted gifted characteristics when combined with separate disorders and attachment styles.

Keywords:

personality, gifted spectrum, attachment, disorders, gifted characteristics, gifted identification, Theory of Positive Disintegration, twice exceptional children, maternal depression

The term *personality* is generally thought of as a dynamic and organized set of characteristics that uniquely influences a person's thoughts, feelings, motivations, behaviours (Rykman, 2004), that are heritable and relatively stable by the age of 30 years (Costa & McCrae, 1992). However, recent research challenges the importance of such heritability, and even the stability at age 30 (Roberts, Walton, & Viechtbauer, 2006). For example, irritability, an aspect of neuroticism (McCrae, Costa, & Busch, 1986) and previously thought to be heritable, appears to be caused or called forth by maternal stress during pregnancy (Prior & Glaser, 2006; Rice, Jones, & Thapar, 2007). Caspi et al. (2003) have also produced evidence of gene x environment (G x E) interaction. It may, therefore, be more accurate to theorise that there are heritable personality *tendencies* that are either more or less receptive to environmental influences. How to identify the optimum environment that eventually helps create the gifted personality, or how to define giftedness itself are subjects yet to reach consensus amongst scholars. Freeman wrote in 2005 that there were more than one hundred suggested models of giftedness, and more have since been proposed. Gifted identification has also been difficult (VanTassel-Baska, 2005), not least due to the diversity found amongst gifted children, going some of the way to explain why defining the gifted personality has been so elusive.

This article will explore some of the attempts to define specific gifted personalities, and examine a variety of characteristics associated with giftedness including those that can be environmentally derived or influenced. Such characteristics, based on research, could be reliably used to initially screen children for both giftedness and the more commonly associated disorders. We will also argue that the diversity of characteristics, shaped by environmental and other factors, make up a spectrum of giftedness. To begin, let us take a brief look at some attempts to group children into gifted types in order to enable recognition of particular needs.

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Gifted Types

Roeper (1982) suggested five types of gifted children. The types, based on their emotional needs, were the *perfectionist*, the *child/adult*, the *winner of the competition*, the *self-critic*, and the *well-integrated child*. Betts and Neihart (1988) suggested a theoretical concept of six recognisable profiles of gifted children that included their behaviour, feelings and needs. Their profiles were recently updated (Neihart & Betts, 2010) and are the *successful*, the *creative*, the *underground*, the *at-risk*, the *twice/multi exceptional* and the *autonomous learner*. Neither Roeper nor Betts and Neihart made the claim that their groupings of gifted types were based on research. However, Neihart and Betts's twice/multi exceptional and at-risk profiles are of particular interest, as they include characteristics not generally associated with gifted children. For example, they theorised that twice/multi exceptional children may have sloppy handwriting, try to avoid failures, may be stubborn, impatient, disruptive, confused, stressed, frustrated, feel discouraged, rejected, helpless, isolated; and that the at-risk child is angry, depressed, self-isolated, disruptive, and defensive. These negative characteristics may seem quite different to the common perception of children who are gifted. One particular personality theory, the Theory of Positive Disintegration, has been embraced by some scholars who have argued that the differentness of gifted children and their varying characteristics may be explained through this theory (Ackerman, 2009; Silverman, 2009).

Theory of Positive Disintegration (TPD)

Dabrowski's Theory of Positive Disintegration (1972) can be applied to gifted individuals who, according to the TPD, have increased sensitivity of the neurons, detectable in one, some, or a total of five psychic overexitablities (OEs) to stimuli. Piechowski (1997a) explains overexcitabilities as modes of experiencing, or channels for colours, textures, insights, visions, and experiences. *The psychomotor, sensual, imaginational, intellectual, and emotional* OEs, can also be used to predict developmental potential (DP). Each OE has its own particular characteristics, and the Imaginational, Intellectual and Emotional OEs are particularly pertinent to gifted children, as OE characteristics describe a heightened awareness and passion. For example, intellectual OE does not only signify high intellectual ability, but a *love* of solving problems, and a *need* to search for truth, and Imaginatinal OE includes a vivid imagination and inventiveness that can be expressed through thoughts, words or deeds. A strong drive is created through the OEs to achieve individuality through breakdown of psychological structures accompanied by strong anxieties and depression as a person progresses through five levels of development. The TPD involves other elements and as it is a complex theory, space does not allow for further elaboration, however, interested readers are encouraged to read more widely (Ackerman, 2009; Mendaglio, 2008).

OEs as Identifiers

OEs were lauded by some scholars in giftedness as an alternative or additional way to identify both potential and giftedness, and several instruments were designed with this in mind (Falk, Lind, Miller, Piechowski, & Silverman, 1999; Lysy & Piechowsky, 1983; Piechowsky, 1997b). However, they have proven to be less reliable than initially anticipated, with one result able to identify only 70.9 per cent of gifted participants (Ackerman, 1997). Carman (2011) concluded that although a personality-based measure may prove to be useful in identifying gifted children in the future, there is currently no such valid measure.

TPD and Twice-Exceptional Children

Some scholars have expressed concern that Attention Deficit Hyperactivity Disorder (ADHD) and other disorders may be misdiagnosed in gifted children with certain OE characteristics. Amend (2009), for example, raised the risk of OEs being mistaken as

disorders, and misdiagnosed, preventing children's further personal development. Anecdotal evidence indicates that such views, while they have merit, are often taken out of context and used to mythologise a romanticized version of *the* gifted personality by parents encouraged by less informed and practitioners, who normalise problem behaviours, that may then remain unaddressed. It is also possible that TPD-type therapy may not suit a particular problem, nor prevent further deterioration, a risk that requires the close monitoring of highly skilled practitioners. Antshel (2008), for example, whose research was carried out with the awareness that some scholars believed ADHD should not be diagnosed in gifted children, found instead that ADHD was legitimately diagnosed in children who were gifted, and that their diagnoses had similar educational implications as in children who were not gifted. Therefore, if problems arise that are unrelated to inappropriate educational provisions and TPD-type therapy is not the therapy of choice, then there are other evidence based therapies that can help reframe problems and assist the child to progress (Wellisch, Brown, Taylor, Knight, & Berresford, 2011).

Evidence is consistent that the majority of gifted children are well adjusted (Neihart, Reis, Robinson, & Moon, 2002). So how do the problems of some gifted children arise?

The Highly Sensitive Personality

Belsky and Pleuss (2009) posit that a negative, "difficult child" is conceivably of a genotypic influence, although this does not preclude the acquisition of a highly sensitive nervous system during gestation or experientially (Aron & Aron, 1997; Belsky, 2005). This heightened sensitivity makes these children more reactive, and therefore more susceptible to both positive and negative experiences – a hypothesis that can be likened to Dabrowski's OEs. For example, Belsky and Pleuss (2009) found that children with difficult temperaments as infants were significantly affected by insensitive parenting and poor quality non-maternal care, and that they were more positively affected by sensitive parenting and high quality caregiving in comparison with children who were not identified as difficult when they were infants. We will examine research findings on some early environmental factors associated with adverse child outcomes, such as insecure attachment and maternal depression. We will then consider vulnerabilities specific to gifted children, and the effects of these factors in observable characteristics.

Attachment Theory and Maternal Depression

Attachment was first noted by Bowlby (1969), who observed that when babies and young children would feel threatened or uncomfortable they sought out their mothers, who would then respond. The term *attachment* refers to this special reciprocal relationship between baby and mother (Prior & Glaser, 2006). Bowlby (1969) theorized that children became either securely or insecurely attached and constructed internal working models or cognitive maps of social interaction based on their experience and responsiveness of their attachment figures. For example, if a mother was too intrusive, the child may copy this behaviour, and may also project this type of behaviour onto others. One study found that 74% of chronically depressed mothers had insecurely attached babies (McMahon, Barnett, Kowalenko, & Tennant, 2006). This is compared with approximately 33% for the general population (Prior & Glaser, 2006). Maternal depression at a key time in the baby's development has been linked to disorders in attachment and less than optimal cognitive development (Cicchetti, Rogosch, & Toth, 1998) and socio-emotional adjustment (Wellisch, Brown, &, Knight, 2011). Predictors of child vocabulary, for example, have been associated with the mother's vocabulary (Snow, 1998) and negative effect on caregiving, which can then affect children's language (Stein, Malmberg, Sylva, Barnes, & Leach, 2008). It may, therefore, also affect verbal IQ and social interaction, and may be a key cause of social difficulties experienced by gifted children. This notion appears to be supported by recent findings that depression appeared to be the most influential factor in their children's later problems with peers and at school (Wellisch, Brown, & Knight, 2011). A recent study

(Wellisch, Brown, Taylor, Knight, Berresford, Campbell, et al., 2011) found that maternal depression was also associated with learning difficulties in gifted children in the area of hand writing. Other studies have found that children's hand writing can be an indicator of giftedness, and that the interaction between hand writing and concentration (e.g., attention) can be a significant indicator of underachievement (Stoeger, Ziegler, & Martzog, 2008; Stoeger & Ziegler, 2010). It is therefore conceivable that there is a connection between maternal depression, particularly during the first 12 months (Joseph, 1999), and language development, handwriting, and underachievement.

As has been outlined above, maternal depression at a key time in the life of a developing child may contribute to later learning difficulties and disorders. These may show themselves in *learning disorders*, other *underachievement* problems and in the *social interactions* of twice-exceptional children.

Effect of Attachment Style on Intelligence

A theme of two types of giftedness has been noted by several scholars. Basing her review on past research, Winner (2000) concluded that beside for gifted children who did well there was a group gifted in mathematics, visual arts, and music who may have enhanced right-hemisphere brain development. She also cited studies demonstrating that artist had a disproportionate incidence of language-related learning disorders, lacked interest in academic achievement, and were disproportionately diagnosed with manic depression (now known as Bipolar Disorders). Csikszentmihalyi and Csikszentmihalyi (1993) found one gifted type to be highly *intelligent*, effective and successful, coming from warm, supportive and stimulating families. The other type identified was highly *creative* (e.g.scientists, artists, musicians), individuals who had in many cases triumphed over early disruptions and traumatic circumstances, indicating that these two gifted types may overlap with secure and insecure attachment styles respectively. For example, insecure attachment and traumatic early experience may lead to permanent effects, with repercussions for some or all areas of development (Perry, Pollard, Blakley, Baker, & Vigilante, 1995). Ainsworth and Wittig (1969) identified two insecure attachment styles: the insecure *ambivalent* (sometimes also referred to as *anxious*), and the insecure *avoidant* style, although there is only one secure attachment style.

Secure Attachment and Gifted Children

A recent longitudinal study found that maternal support was strongly predictive of the size of the hippocampus in non-depressed school children Luby et al., 2012). The hippocampus, an area in the brain related to learning, memory and coping with stress, was almost 10 per cent larger than in other children. Perry & Szalavitz (2006) observed that intelligence may enable and accelerate recovery from poor care taking once the environment improves, and that intelligent children may learn more quickly to associate pleasure with their mothers' responses, even when pleasurable interaction is in short supply. Intelligence may, therefore, be a protective factor, a suggestion also made by other experts from a variety of backgrounds (Fergusson, Lynskey, & Horwood, 1996; Gunnar, 1998; Johnson & Flake, 2007). If this were the case, we could expect to see more securely attached children in a gifted population than in a general sample. This was, in fact, the conclusion in a study of 65 Dutch middleclass children (Van Ijzendoorn & Van Vliet-Visser, 1988). A recent study involving eighty 7–10 year old children found that children with scores >IQ120 on any Wechsler Intelligence Scale for Children (WISC-IV; Wechsler, 2003) index or FSIQ were more likely to be securely attached (Wellisch, Brown, Taylor, Knight, Berresford, Campbell, et al., 2011). Although this difference was not significant, a power analysis indicated the finding would have reached significance with 150 participants.

Secure Attachment Characteristics

Although there has been a general conception that gifted children tend to be introverted

(Silverman, 2002; Winner, 2000), it is possible that only children who have been affected by insecure attachment and/or maternal depression may develop this characteristic. For example, a recent qualitative study with 11 mothers (Wellisch, Brown, & Knight, 2011) found that children with no adjustment problems were reported to be *extraverts*, whereas children who were identified with internalising problems tended to be introverted (see table 1). More research with a larger population is needed to confirm this finding.

Two other important characteristics of both secure attachment and giftedness are curiosity and persistence. Studies have found less curious and exploratory behaviour in humans and animals under adverse and deprived environments (Joseph 1999). Secure attachment calls forth a positive attitude (Greenberg, 1999), which in turn leads to higher levels of engagement and persistence (Blair, 2002).

Persistence is an essential characteristic in the manifestation of potential, and a factor in enduring practice to ensure achievement (Ericsson, Prietula, & Cokely, 2007). A similar characteristic, "task commitment" requires persistence, and is one of three defining identifiers of gifted children, according to Renzulli (2005). The results above, however, indicate that it would be possible to be gifted *and* at the same time lack in persistence due to early experience, generally seen in children known as gifted underachievers. A classical longitudinal study on gifted children found just two factors separating the most and least successful gifted individuals: Drive to achieve – requiring persistence – and all-round social and emotional adjustment (Terman & Oden, 1959). As we have seen, these are both associated with secure attachment.

Perfectionism is another characteristic often mentioned in relation to gifted children, and Speirs Neumeister and Finch (2006) found two types of perfectionism: adaptive and maladaptive. They found that adaptive perfectionism, involving the commitment to continue perfecting an ability, was associated with secure attachment, whereas maladaptive perfectionism, for example, setting unrealistically high standards was associated with insecure attachment.

In summary, secure attachment via a well-adjusted mother can be seen as natural precursors for giftedness as it promotes language and other aspects of development. Securely attached gifted children are likely to be *extraverted*, *adaptive perfectionist, competent, socially and emotionally well balanced, curious, persistent, self-confident,* and *positive.*

Insecure Attachment Characteristics

Characteristics We Can Expect From an Insecure Anxious Gifted Child. Anxious insecurely attached babies tend to cry more, and are immediately and intensely distressed when their mothers leave, but are not particularly comforted upon their return (Prior & Glaser, 2006). Insecure anxious children are less forceful, less confident, more withdrawn, more passive and more hesitant in relation to new experience than children who are securely attached (Prior & Glaser, 2006). Their learnt reluctance to attempt new experiences, and the anxiety and tendency to depression brought about by their insecure attachment style may affect both intellectual and all other potential.

Children's negative traits (Perry & Szalavitz, 2006) are likely to stem from maternal depression and insecure attachment (McMahon et al., 2006). A recent study (Wellisch, Brown, Taylor, Knight, Berresford, Campbell, et al., 2011). found that children whose mothers reported being depressed had higher internalising and total problem scores on the Child Behavior Checklist (Achenbach & Rescorla,1991). Maternal depression has also been associated with poor school performance and underachievement (Leschied, Chiodo, Whitehead, & Hurley, 2005), subjects often linked with gifted children.

Speirs Neumeister and Finch (2006) reported that maladaptive perfectionism was associated with insecure attachment. Maladaptive perfectionism may show itself as habitual procrastination and frequent destruction of drawings or work due to dissatisfaction with consequent lack of productivity and underachievement.

What We Can Expect From the Insecure Avoidant Gifted Personality. The effects of early and ongoing attachment problems have proven difficult to remedy (even when the environment changes, for example, when the mother's depression has been addressed), possibly due to the initial malorganisation of neural functions in the developing brain (Davidson, 1994; Joseph, 1999; Perry, 2002). These may be the residual issues that cause the problems in some gifted children.

Babies who are avoidantly insecure have been observed to explore equally well in the mother's absence or presence, to seek little contact with mothers, and rarely show distress when their mothers leave (Prior & Glaser, 2006). When older, these children are angry, aggressive, more hostile than others, have more antisocial behaviours, more negative feelings, and are more likely to bully other children even as preschoolers. They are usually more demanding and commanding, more likely to have poor peer relationships, and to be depressed (Lyons-Ruth, Easterbrooks, & Cibelli, 1997). Insecurely attached children may also have ongoing problems that include learning disabilities, and psychological and behavioural problems. Motivation is also likely to be affected early in life. For example, when a baby's needs are rarely met, "learnt helplessness" is the result, with the child eventually giving up, and withdrawing rather than persisting (Seligman, 1990).

Summary of Insecure Characteristics

In summary, insecure anxious attachment may result in the following characteristics: *introverted*, *negative*, a tendency to become *anxious* and *depressed*, and a *reluctant to attempt new experiences*. Although the anxiously attached may eventually achieve, both types of insecure attachment can share the characteristics of *maladaptive perfectionism* and *underachievement*. Additional characteristics related to insecure avoidant attachment also include *hostile*, *angry*, *aggressive*, *demanding and commanding behaviours* with *antisocial behaviour* with *poor peer relationships*.

Gifted Characteristics

The review of negative characteristics associated with attachment difficulties early in life appears to clarify the reason behind the difficulty in defining, identifying, and grouping gifted children. In order to reconcile these diversities, we need to examine the types of characteristics associated with giftedness regardless of diverse backgrounds or levels of giftedness.

Basic Gifted Characteristics

Frasier and Passow (1994), who were interested in promoting the development of children from diverse backgrounds, identified 10 core gifted characteristics, not all necessarily possessed by each individual. They were: *Motivation, intense unusual interest, highly expressive communication skill, effective problem solving ability, excellent memory, inquiry (curiosity), quick grasp or insight, uses logic and reasoning, imagination or creativity*, and able to *convey and pick up humour*. As well as being reliable characteristics for children of diverse backgrounds, they also appear to overlap with a selection of the characteristics identified by parents of highly and profoundly gifted children (Rogers & Silverman, 1997). In addition to these, *high sensitivity* (Rogers & Silverman, 1997; Silverman, 1998; 1983) has frequently been linked to giftedness, and *ability to read fluently before school age* has been identified as a reliable sign of the more highly gifted (Clark 1992; Rogers & Silverman, 1997).

It is important to note here that gifted characteristics are culturally defined, and some characteristics considered to be signs of giftedness in a minority culture may run counter to the dominant culture. For example, a significant characteristic of giftedness amongst Aboriginals in Western Australia is *one-ness*, or belonging with the mob (Cooper, 2005),

and the key for giftedness according to Maori values is the possession of exceptional skills in *helping others* (Bevan-Brown, 2005). Neither gifts would elicit competitiveness or a penchant for achievement in children from these cultures, although competitiveness and achievement are valued in Western culture, and may more easily catch a teacher's attention. Teachers of a diverse group of children may therefore fail to look for or identify giftedness in some children who for cultural reasons are unwilling to demonstrate their abilities.

Current Study and Socio-Emotional Characteristics

The research focus of our current study (Wellisch, Brown, & Knight, 2011) was any parenting effect on children's socio-emotional development, particularly the effect of maternal depression. Results indicate that gifted children may be vulnerable to being misunderstood due to their differentness. We found that gifted children were more likely to have clinical or borderline internalizing problems if their mothers had been depressed, and if they had been serially misunderstood in a variety of primary social contexts – at home, by peers, and in those educational settings that failed to provide appropriately for their advanced and different educational needs. However, these factors did not individually cause serious adjustment problems, and children who experienced isolated contexts of being misunderstood did not have adverse outcomes. There appeared to be an additive pattern of being misunderstood at home, rejected and bullied by peers of a different maturity and ability, and ongoing educational indifference and neglect that together contributed to some children's chronic internalizing and externalizing problems.

Differences in Basic Gifted Characteristics May Relate to Problems

As has been demonstrated, the 12 identified gifted characteristics may not be sufficiently reliable to correctly screen gifted children with socio-emotional and other problems. These children may lack motivation, persistence, and sufficient attention for on-going interests in particular skills or topics, their language and communication skills may not be quite so advanced if their mothers have been depressed and withdrawn, and their memory may not be as sharp as could have been otherwise expected due to loss of confidence, when affected by anxiety or depression. In fact, they may only show a few of the gifted characteristics, and may, instead, exhibit some other characteristics, as already mentioned. This can be illustrated with data from our qualitative study, partially reported here. We were able to access quantitative data on the participants, collected when they participated in a previous larger study. Permission was obtained by the first author to search the interview transcripts, and the new data on comments mothers made about their children's characteristics is reported here. Table 1 sets out the pattern of 17 characteristics as reported for five gifted children identified with borderline or clinical internalising problems, and for the remaining six children who were reported to be well adjusted.

Although the population for this research was small and care should be taken in generalising the findings, table 1 indicates that a gifted child with socio-emotional problems may present as a precocious developer with possible learning difficulties who is introverted, sensitive, highly creative, perfectionist, less likely to be sporty in the case of boys, more likely to have a keen sense of humour, a child who demonstrates occasional and inconsistent gifted characteristics.

Four of the five children with internalising scores had higher Perceptual Reasoning (PR) scores than their Verbal Comprehension (VC) sub-test scores on the WISC-IV. Silverman (2002) noted similar IQ discrepancies between the verbal and performance scores in the IQ tests of students she identified with 'visual-spatial' orientation, who thought in pictures and had difficulty in demonstrating their giftedness through achievement.

Table 1. Characteristics of Gifted Children With and Without Internalising Problems[a]

Characteristics	Internalising children[b] (*n*=5)	Non-internalising children (*n*=6)
Easily Frustrated	Alex, Tom, Skye	Robert, Kate
Perfectionist	Alex, Tom, Skye	Robert
Intense	N/A	Robert, Natalie
Wilfulness	Aaron	Steven, Kate, Jack, Natalie
Testing boundaries	Peter	Kate, Jack, Natalie
Sexually atypical behaviour	Alex, Tom	Steven, Kate, Robert
Persistent	Peter	N/A
GLD	Tom, Aaron, Skye	Steven
Great sense of humour	Tom, Aaron, Peter, Skye	N/A
Introvert	Alex, Tom, Aaron	Jack
Empathetic	Peter, Skye	Kate, Natalie
Creative	Peter, Aaron, Skye	Steven, Robert
Sensitive	Tom, Peter, Skye	Natalie
Extravert	Peter	Mark, Steven, Kate, Robert, Natalie
Precocious developer	Tom, Peter, Skye	Natalie
Great communicator	Peter, Skye	Mark, Steven, Kate, Natalie
Not sporty (boys)	Alex, Tom, Peter	Robert

[a] Children with higher Perceptual Reasoning (PR) scores in comparison to their Verbal Comprehension (VC) scores on the WISC-IV were Jack, Alex, Tom, Aaron, Peter
[b] Real names are not used

The Gifted Spectrum – A Conclusion

We have attempted to demonstrate in this article that children who are gifted may be difficult to define and identify without a clear concept of the complex factors and contexts that may be involved in their early development and their resulting characteristics and personalities. There appears to be some agreement about two specific expressions of giftedness (Csikszentmihaly & Csikszentmihaly, 1993; Winner, 2000) and as has been demonstrated, they may be accompanied by any number of diverse characteristics with a multitude of possible combinations. The first is the positive, well adjusted, resilient, intellectually gifted achiever, and the second may be anxious, introverted, creative, possibly mathematically or scientifically gifted, and susceptible to both positive and negative experiences that appear to determine level of adjustment and achievement (Belsky, 2005; Dabrowski, 1972; Winner, 2000).

A spectrum of gifted characteristics is proposed, based on current and relevant research (Appendix; DSM-5; American Psychiatric Association, 2013). The Spectrum of Characteristics can be used as an initial screening tool to aid early identification of children who may be gifted, although care should be taken to ensure it is not used for diagnosis. The Spectrum of Characteristics provides an overview of disorders, their tentative predicted effects on observable gifted characteristics based on the literature and authors' observations, and possible attachment styles. The tool should be used with caution, as children may have concurrent disorders, which may then alter the observable characteristics of giftedness. It is our hope that this screening tool will more precisely help identify children's abilities and needs within the spectrum of giftedness, so that they can be offered the adequate and appropriate educational and therapeutic support that may prevent underachievement and encourage them to blossom.

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Appendix

DSM-5 Disorders	Length of Disorder Symptoms, Age and Other Conditions	Brief Summary of Characteristics Described in DSM-5	Observable Gifted Characteristics* *NOTE: Author's own tentative predictions based on observations and reading of the literature.	Attachment Characteristics*
NIL	NIL	NIL	**Motivation** – Evidence of desire to learn **Interests** - intense, sometimes unusual **Communication skills** – highly expressive with words, numbers or symbols **Problem solving** – Effective, often inventive, strategies for recognizing and solving problems **Memory** – Large storehouse of information on school or non-school topics **Inquiry** – Questions, experiments, explores **Reasoning** – logical approaches to figuring out solutions **Imagination, Creativity** – Produces many ideas; highly original **Humour** – conveys and picks up humour well **Sensitive** – could be highly tuned into senses (may be positive or negative) **Able to read fluently before school** (if highly or profoundly gifted) **May be a perfectionist** (adaptive type, able to refine ability and striving to constantly improve)	**Secure Attachment:** ***extraverted***, competent, socially and emotionally well balanced, curious, persistent, self-confident, and positive.
Attention-Deficit/ Hyper-activity Disorder (ADHD)	Symptoms present for **at least 6 months prior to age 12 years.** More common if also found in first degree biological relatives. Significantly impaired social or academic functioning. Co-occurs in 50% of cases with Oppositional Defiant Disorder, with Conduct Disorder in 25% of cases, and often with Specific Learning Disorder. Peers likely to reject and tease child with ADHD.	**Inattentive:** Difficulty in sustaining attention, easily distracted, often does not finish work, disorganised, does not seem to listen, avoids long-lasting activities (e.g., homework), forgetful, loses things. **Hyperactive and impulsive**: Fidgets, taps hands or feet, frequently leaves seat, inappropriate running and climbing, blurts out answers or interrupts, inability to play quietly, often on the go, "driven like a motor", intrudes on others, finds it difficult to wait for turn.	**Motivation** – Enthusiasms to learn may be sporadic, may not finish work **Interests**, intense, sometimes unusual **Communication skills** – highly expressive with words, numbers or symbols **Problem solving** – Often inventive strategies for recognizing and solving problems although may not attend for sufficient length of time **Memory** – not applicable in practical situations, forgetful **Inquiry** – experiments, explores but may take risks, and may ask questions but not wait for answers **Reasoning** – logical approaches to figuring out solutions **Imagination, Creativity** – Produces many ideas; highly original **Humour** – conveys and picks up humour well although may be disruptive to others **Sensitive** – may be intolerant to certain smells, textures, sounds	N/A

DSM-5 Disorders	Length of Disorder Symptoms, Age and Other Conditions	Brief Summary of Characteristics Described in DSM-5	Observable Gifted Characteristics* *NOTE: Author's own tentative predictions based on observations and reading of the literature.	Attachment Characteristics*
Specific Learning Disorder (SLD) **Includes impairment in reading, written expression and mathematics.**	Neurodevelopmental disorder with biological origin as basis for abnormalities at cognitive level. Persistent difficulty learning key-stone academic skills. **Onset during years of formal schooling observed for at least 6 months.** SLD, including Dyslexia, more common in first degree relatives. Learns to compensate. Often associated with ADHD, autism spectrum disorders, anxiety, depressive and bipolar disorders.	May have had delay in language or motor skills when younger, or was inattentive at preschool. May have oppositional behaviour and reluctance to engage in learning. Non-responsive to intervention, although may improve with evidence-based interventions.	**Motivation** –Desire to learn may be diminished due to low self esteem **Interests**, intense, sometimes unusual **Communication skills** – highly expressive with words, numbers or symbols, although may find it difficult to express in writing, and not in the area of LD **Problem solving** –not in the area of LD and may have lost interest due to low self-esteem on account of LD **Memory** –not in area of LD **Inquiry** – enthusiasm may have been affected by LD and loss of confidence **Reasoning** –may have been affected by LD and loss of confidence **Imagination, Creativity** – Produces many ideas; highly original **Humour** – conveys and picks up humour well **Sensitive** – may be intolerant to certain smells, textures, sounds	**Insecure Anxious Attachment:** ***introverted,*** anxious, less forceful, less confident, more withdrawn, more passive and more hesitant, more likely to be diagnosed with internalizing disorders such as anxiety and depression.
Autism Spectrum Disorder Level 1 – 'requiring support' **Previously known as Asperger's Disorder**	Deficits in social communication, Typically recognised **between 12 and 24 months of age**. Functional language by 5 years. Four times more frequent in boys and between 37% and 90% heritability. Others in the family may be diagnosed or have similar symptoms. Interventions or compensations improve symptoms, but disorder will continue to cause impairment in social and, occupational areas of functioning. Seventy per cent have co-occurring disorder, for example as ADHD. Prone to anxiety and depression.	Delayed language development. Apparent lack of social interest. Appears deaf, but this is usually ruled out. Odd and repetitive behaviours. Socially naïve and vulnerable. Inflexible, has difficulty switching between activities. Has non-verbal deficits and may speak in a stilted and overly literal language, with one-sided conversation lacking in reciprocity. When young, shows little or no initiation of social interaction, no sharing of emotions, and reduced or no imitation of others.	**Motivation** - Evidence of desire to learn **Interests**, intense, sometimes unusual **Communication skills** – advanced verbal ability, may speak with 'posh' accent, tending to deliver verbose monologues about topic of intense interest. **Problem Solving Ability** – effective, often inventive, strategies for recognising and solving problems **Memory** – large storehouse of information, particularly on subject of intense interest **Inquiry** – questions, but does not listen and tends to ask same question, again and again; experiments, explores **Reasoning** – logical approaches to figuring out solutions **Sensitive** – tendency to be hyper-sensitive to certain sounds, textures, and other sensory events **Able to read fluently before school** (if highly or profoundly gifted) **May be perfectionist** (most likely the maladaptive type, depends of current state of anxiety)	N/A

DSM-5 Disorders	Length of Disorder Symptoms, Age and Other Conditions	Brief Summary of Characteristics Described in DSM-5	Observable Gifted Characteristics* *NOTE: Author's own tentative predictions based on observations and reading of the literature.	Attachment Characteristics*
Disruptive Mood Dysregu-lation Disorder	**Onset between 6 to 10 years.** Children predominantly male. **Symptoms present for at least 12 months**. Cannot co-occur with Oppositional Defiant Disorder (ODD) or bipolar disorder. Marked disruption in child's family relationships and school performance, has trouble initiating and sustaining friendships. High rate of co-occurrence with many other disorders, including ADHD and Conduct Disorder.	Chronic and severe irritability, recurrent temper outbursts, verbal rages, physical aggression toward people or property grossly out of proportion to situation or provocation, and inconsistent with developmental level. Persistently angry most of the day.	May interfere with observable gifted characteristics. Between angry outbursts there may be **glimpses of gifted characteristics**. Child may also be unlikely to finish work, performing below ability in tests and assessments.	**Insecure Avoidant Attachment:** hostile, angry, aggressive, antisocial behaviours, negative feelings, and likely to scapegoat and victimise other children, demanding and commanding, more likely to have poor peer relationships and suffer from depression.
Post-traumatic Stress Disorder (PTSD)	Can occur **at any age** including first year of life. Symptoms usually begin **within 3 months of trauma, although this may be delayed significantly**. Recurrent distressing dreams, intrusive symptoms and memories, avoidance of activities or places. Can result in impaired functioning. Eighty per cent more likely than others to be diagnosed with at least one other mental disorder.	Self-blame, negative beliefs about self ("I am bad"), irritable, angry, aggressive, hyper-vigilant, exaggerated startle response, feeling detached from body and from others, prone to dissociation, difficulty sleeping. May re-enact scene of trauma repetitively through play.	May interfere with observable gifted characteristics. During periods of fatigue, anxiety, and depression there may be only **glimpses of gifted characteristics** as a result of lack of motivation. Child may also be unlikely to finish work, performing below ability in tests and assessments. If this behaviour is unusual and has a sudden onset, an appointment should be made with a psychologist as soon as possible.	**Insecure Avoidant Attachment:** hostile, angry, aggressive, antisocial behaviours, negative feelings, and likely to scapegoat and victimise other children, demanding and commanding, more likely to have poor peer relationships and suffer from depression.
Conduct Disorder (CD)	Can be mild, moderate and severe. Onset **before age 10 years, with behaviours present for the past 12 months.** Typically male, physically aggressive to others, disturbed peer relationships, may have had Oppositional Defiant Disorder during early childhood. Often with co-occurring ADHD. More likely to develop Antisocial Personality Disorder when older.	Bullies others, fights, uses weapons, is cruel to animals or others, steals, sets fires, deceitful, skips school, can lack remorse and empathy.	**Communication skills** – highly expressive with words, numbers or symbols **Problem solving** – although not usually used for positive outcomes **Imagination, Creativity** – Produces many ideas; highly original, although may be used to lie to others **Humour** – conveys and picks up humour well, although may see humour in misfortune of others **Sensitive** – may be intolerant to certain smells, textures, sounds May be a **perfectionist** (maladaptive type, e.g. re-does and rips up work, procrastinates)	**Insecure Avoidant Attachment:** hostile, angry, aggressive, antisocial behaviours, negative feelings, and likely to scapegoat and victimise other children, demanding and commanding, more ... *(continued on next page)*

DSM-5 Disorders	Length of Disorder Symptoms, Age and Other Conditions	Brief Summary of Characteristics Described in DSM-5	Observable Gifted Characteristics* *NOTE: Author's own tentative predictions based on observations and reading of the literature.	Attachment Characteristics*
Opposi-tional Defiant Disorder (ODD)	Often results in significant emotional, social, and academic impairments. Commences in early childhood and if younger than **5 years**, behaviour occurs on most days **for at least 6 months, if older, behaviour at least weekly for diagnosis**. Can occur in just one setting (e.g. home). More common with harsh, inconsistent or neglectful parenting. Can co-occur with Conduct Disorder, ADHD. As adults, at risk of antisocial behaviour, impulse-control problems, substance abuse, anxiety, and depression.	Frequent conflicts with parents, teachers, peers. Argumentative, loses temper, defiant or refuses to comply, annoys others, blames others for behaviour, annoyed by others, angry, spiteful, and resentful.	**Communication skills** – highly expressive with words, numbers or symbols **Problem solving** – Effective, often inventive, strategies for recognizing and solving problems. although not usually used for positive outcomes **Imagination, Creativity** – Produces many ideas; highly original, although may be used to lie to others **Humor** – conveys and picks up humor well, although may see humour in misfortune of others **Sensitive** – may be intolerant to certain smells, textures, sounds May be a **perfectionist** (maladaptive type, e.g. re-does and rips up work, procrastinates)	*(continued from above)* ... likely to have poor peer relationships and suffer from depression.
General-ized Anxiety Disorder (GAD)	Excessive anxiety and worry compared to actual likelihood or impact of event. Twice as likely in females. Diagnosed if symptoms persist for **at least 6 months**. Likely to also meet criteria for other anxiety and unipolar depressive disorders, and can be over-diagnosed in children instead of other anxiety disorders. Can co-occur with panic attacks.	Children tend to be overly conforming, perfectionists, unsure of themselves, worry excessively about their competence or quality of performance. Worry may shift from one concern to another. Anxiety is distressing. May be keyed up, restless, have muscle tension, be on edge, easily fatigued, have difficulty concentrating, mind going blank, be irritable, have disturbed sleep. May worry about catastrophic events like earthquakes or nuclear war.	Presence of the gifted characteristics of **Motivation, Interest** and **Memory** depends on level of anxiety, may show only glimpses, and these characteristics may be unstable due to anxiety. **Communication skills** – highly expressive with words, numbers or symbols, although may be shy **Problem Solving Ability** – effective, often inventive, strategies for recognising and solving problems **Inquiry** – questions, although can be tempered by shyness and less likely to experiment and explore **Reasoning** – logical approaches to figuring out solutions **Imagination, Creativity** – Produces many ideas; highly original **Humour** – conveys and picks up humour well **Perfectionist** (maladaptive type e.g., re-does and rips up work, procrastinates)	**Insecure Anxious Attachment:** ***introverted,*** anxious, less forceful, less confident, more withdrawn, more passive and more hesitant are more likely to be diagnosed with internalizing disorders such as anxiety and depression.

DSM-5 Disorders	Length of Disorder Symptoms, Age and Other Conditions	Brief Summary of Characteristics Described in DSM-5	Observable Gifted Characteristics* *NOTE: Author's own tentative predictions based on observations and reading of the literature.	Attachment Characteristics*
Separation Anxiety Disorder	Clinically significant distress or impairment in social or other important areas of functioning. Early onset **at preschool age or older**. For diagnosis symptoms persist for **at least 4 weeks** in children. Equally common in males and females. In children highly co-occurring with General Anxiety Disorder (GAD) and specific phobia.	Excessive distress when separating from home or attachment figure, worry about losing them or harm coming to self or attachment figures (e.g. mother), and therefore reluctant or refuses to go to school or elsewhere, or to stay with others, or be alone, or to sleep without proximity to attachment figures. Nightmares about separation, headaches, stomach aches, nausea or vomiting when separated or when anticipating separation. Clinging behaviour, and shadowing of attachment figure.	Presence of the gifted characteristics of **Motivation, Interest** and **Memory** depends on level of anxiety, may show only glimpses, and these characteristics may be unstable due to anxiety. **Communication skills** – highly expressive with words, numbers or symbols, although may be shy **Problem Solving Ability** – effective, often inventive, strategies for recognising and solving problems **Inquiry** – questions, although can be tempered by shyness and less likely to experiment and explore **Reasoning** – logical approaches to figuring out solutions **Imagination, Creativity** – Produces many ideas; highly original **Humour** – conveys and picks up humour well May be a **perfectionist** (whether adaptive or maladaptive type depends of severity of anxiety)	**Insecure Anxious Attachment:** ***introverted,*** anxious, less forceful, less confident, more withdrawn, more passive and more hesitant are more likely to be diagnosed with internalizing disorders such as anxiety and depression.
Obsessive-Compulsive Disorder (OCD)	More common in males during childhood and in females when older. Nearly 25% of males diagnosed **before 10 years of age**. Marked by dysfunctional beliefs, may not recognise obsession as excessive or unreasonable. If untreated, can be life-long, with 40% in remission as adults. Often co-occurs with anxiety or depressive disorders. Interferes with routine, social activities, and relationships.	Reduced quality of life and high levels of social and occupational impairment, (e.g. avoidance of places, doctors or excessive hand washing in fear of contamination and high reliance on others). Repetitive rituals and compulsions are lengthy (e.g., more than 1 hour per day) and typically performed in response to obsessions (hand washing, ordering, counting, checking, hoarding) to prevent (unrealistic) dreaded event or situation.		
Major Depressive Disorder	At **any age**, change in behaviour over a **2-week period** on most days marked by five or more of these symptoms: Depressed mood, diminished interest or pleasure in most activities, decrease or increase in appetite, insomnia or sleeping much more, physically agitated or much less active, fatigue and lack of energy, feeling worthless or inappropriately guilty, difficulty concentrating, recurrent thoughts of death.	Irritable, angry, blaming, frustrated over minor matters, feels sad, discouraged, hopeless, has difficulty making decisions, can have bodily aches and pains rather than showing or feeling sadness, slow in speech, thinking and bodily movements, avoids activity previously enjoyed, socially withdrawn.	During periods of depression child may show only **glimpses of gifted characteristics** as a result of lack of motivation, and is also unlikely to finish work, performing below ability in tests and assessments. If this behaviour is unusual for the child, an appointment should be made as soon as possible with a psychologist.	**Insecure Anxious Attachment:** ***introverted,*** anxious, less forceful, less confident, more withdrawn, more passive and more hesitant, are more likely to be diagnosed with internalizing disorders such as anxiety and depression.

Chapter 7

7.3 Reflective postscript

The section in the article on TPD and twice-exceptional children about misdiagnosis may have been unclear to those not familiar with this theory. According to this theory, certain behaviours (behaviours that may be interpreted as signs of disorders) are an essential stage in the development of giftedness, and emanate from *over-excitabilities* (OEs), or increased sensitivities. This is in contrast to the argument built in the article for the large variability in gifted characteristics that may change according to any associated disorders in a gifted child. The article identifies 12 basic gifted characteristics that have been observed across most levels of giftedness, and 10 of these have been observed across a variety of cultural or socioeconomic backgrounds of children (Frasier & Passow, 1994; Rogers & Silverman, 1997). Some, several, or all of these characteristics may be observable in gifted children. The presence of several or all of the characteristics is likely to result in a child being noticed and identified, whereas fewer observable characteristics are likely to diminish a child's chances of being identified as gifted. The aim of the spectrum of gifted characteristics in the article's appendix is to compare the characteristics of specific child-related DSM-5 disorders commonly associated with gifted children (Rogers, 2011; Silverman, 2002) with the basic gifted characteristics, and infer how observable gifted characteristics may change with each disorder.

A total of 11 common child-related disorders are listed, such as ADHD and anxiety disorders, with inferences about how these may reduce or change basic observable gifted characteristics. The list of disorders included in the appendix to the article were based on the literature of disorders associated with attachment (Al-Yagon, 2003; Anda et al., 2006; Hawley, 2000; Goodman et al., 2011; Moss et al., 2006; Perry, 2007; Prior & Glaser, 2006;

Schore, 2001), disorders associated with maternal depression (Goodman, 2007; Goodman et al., 2011; Prior & Glaser, 2006; Quevedo et al., 2011), and observations of gifted children with disorders (, Rogers, 2011; Silverman, 2002). Taken in order, they include:

- ADHD (Finzi-Dottan et al., 2006; Ruban & Reis, 2005; Silverman, 2002)
- Disorders based on symptoms and characteristics as also found in internalising problems—generalised anxiety disorder (GAD), separation anxiety disorder, obsessive compulsive disorder (OCD), and major depressive disorder (Achenbach, 1991; Essex, Klein, Cho, & Kraemer, 2003; Goodman et al., 2011; Johnson & Flake, 2007; Mychailyszyn, Mendez, & Kendall, 2010; Perry, 1998; Ruban & Reis, 2005)
- Autism spectrum disorder (Amend, Schuler, Beaver-Gavin, & Beights, 2009; Attwood, 2007; Mayes et al., 2009; Neihart, 2000)
- Disorders based on symptoms and characteristics as also found in externalising problems—disruptive mood dysregulation disorder, posttraumatic stress disorder (PTSD), conduct disorder (CD), oppositional defiant disorder (ODD) (Achenbach, 1991; Goodman et al., 2011; Gravener et al., 2012; Hawley, 2000; Johnson & Flake, 2007; Perry et al., 1995)
- Specific learning disorders (Al-Yagon, 2012; Al-Yagon & Mikulincer, 2004 a; Al-Yagon & Mikulincer, 2004b; Barker et al., 2011; Baum et al., 1991; Olenchak & Reis, 2002; Perry, 2002; Quevedo et al., 2011; Silverman, 2002).

The appendix consists of five columns, as shown below. The first column, from left to right, lists the DSM-5 disorders, with the second column showing age and symptoms. DSM-5 characteristics of each disorder are listed in column three (DSM-5; American Psychiatric

Association, 2013). Column four lists gifted characteristics (Frasier & Passow, 1994; Silverman & Rogers, 1997) adapted according to predictions made based on the known characteristics of each specific disorder. The last column contains the expected attachment characteristics associated with specific disorders (for example, insecure attachment in the case of an anxiety disorder).

DSM-5 disorders	Length of disorder symptoms, age and other conditions	Brief summary of description in DSM-5	Observable gifted characteristics	Attachment characteristics

Attachment styles were predicted based on disorders being indicative of attachment style (for example, anxiety is associated with insecure attachment), and also based on the literature (see American Psychiatric Association, 2013; Prior & Glaser, 2006). Note that the first entry in the appendix is not associated with any disorders, listing only the basic gifted characteristics of an authentically gifted child, described in Chapter 2.

Table 7.1 provides an example of how suppositions were made about gifted characteristics when associated with a disorder. The column on the left lists the basic gifted characteristics. These characteristics can then be compared with the column on the right listing the expected gifted characteristics of a child on the gifted spectrum with, in this case, autism spectrum disorder level 1 (previously Asperger's disorder). Note that the appendix to the article does not list an attachment style associated with this disorder. This supposition was based on findings that severity of autism is associated with attachment insecurity (see Naber et al., 2007).

Table 7.1

Comparison of Gifted Characteristics with no Disorders and Predicted Gifted Characteristics with Autism Spectrum Disorder Level 1 (Previously Asperger's Disorder)

Basic gifted characteristics (no disorders)	Expected observable gifted characteristics in a child with autism spectrum disorder level 1 (previously Asperger's disorder)
Motivation – Evidence of desire to learn	**Motivation** - Evidence of desire to learn[a]
Interests - intense, sometimes unusual	**Interests**, intense, sometimes unusual
Communication skills – highly expressive with words, numbers or symbols	**Communication skills** – advanced verbal[b] ability, may speak with 'posh' accent, tending to deliver verbose monologues about topic of intense interest.
Problem solving – Effective, often inventive, strategies for recognizing and solving problems	**Problem solving ability** – effective, often inventive, strategies for recognising and solving problems
Memory – Large storehouse of information on school or non-school topics	**Memory** – large storehouse of information[b] particularly on subject of intense interest
Inquiry – Questions, experiments, explores	**Inquiry** – questions, but does not listen and[b] tends to ask same question, again and again; experiments, explores
Reasoning – logical approaches to figuring out solutions	**Reasoning** – logical approaches to figuring out solutions
Imagination, Creativity – Produces many ideas; highly original	**N/A**
Humour – conveys and picks up humour well	**N/A**
Sensitive – could be highly tuned into senses (may be positive or negative)	**Sensitive** – tendency to be hyper-sensitive[b] to certain sounds, textures, and other sensory events
Able to read fluently before school (if highly or profoundly gifted)	**Able to read fluently before school** (if highly or profoundly gifted)
May be a perfectionist (adaptive type, able to refine ability and striving to constantly improve)	**May be perfectionist** (most likely the[b] maladaptive type, depends of current state of anxiety)

[a] Highlighted characteristics are unchanged.

[b] Characteristics that are not highlighted have been amended based on the literature (Amend et al., 2009; American Psychiatric Association, 2013; Attwood, 2007; Schuler et al., 2009; ; Mayes, 2009; Neihart, 2000). Note that humour has been removed. This is because children with this disorder tend to have a literal interpretation of what is said and frequently do not understand when someone is joking; similarly, imagination and creativity have been removed, as children with this disorder tend to lack ability for spontaneous play (see for example, Attwood, 2007).

Therefore, as autism spectrum disorder Level 1 also varies in severity, attachment style cannot easily be predicted. Similarly, the attachment style of ADHD was not predicted because although ADHD is more likely to be associated with insecure attachment (Perry et al., 1995), possibly as part of maternal depression (Johnson & Flake, 2007), one study indicated that this was specifically associated with the hyperactive impulsive type (Finzi-Dottan et al., 2006).

Although Gagné's DMGT has not been mentioned in this chapter in relation to the issues discussed, I have previously argued that early adverse experiences, associated socio-emotional problems, and potential barriers to learning are not addressed in this model, which is currently used in Australian schools. This may, however, not be the perception of some educators and experts in giftedness, as a child's maladaptive behaviours may seem to belong within intrapersonal catalysts in the DMGT model and maternal influences may seem to fit within the environmental/individuals catalysts. However, Gagné (2013) himself does not appear to see his model in this light in terms of the intrapersonal catalyst: "… the scientific community has known for many decades that personality characteristics, as well as motivational constructs like needs and interests, have significant genetic roots" (p. 11). He also had an alternative view in relation to environmental influences: "It seems strange at first glance to discuss the biological underpinnings of environmental influences [yet] significant individuals…behave in ways that have been progressively sculpted by both genetic and environmental influences…[and act] indirectly through … their own biological underpinnings …" (p. 12). Again, in remarks about disorders Gagné cited only references related to biology (Gagné, 2013). These views leave little room within the catalysts for any association between adverse prenatal or postnatal environmental circumstances and the development of children.

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Gagné's (2013) explanations in respect to children's development were along biological and physiological examples and citings of literature only related to this position. His views on any external influence is evident in the following quote: "The concept of giftedness, as a set of biologically anchored natural abilities or aptitudes, has been the target for some decades of strong attacks by a small group of researchers who defend a strict environmental ideology of talent development" (p 12). As for the positive or negative influence by the maternal/parental catalyst, he provides the following behavioural example:"...any interventions by the parents... could impact the development of related natural abilities [and]...could foster a child's mental or physical natural gifts" (p.15). In the following chapter, therefore, I will further develop the argument that Gagné's catalysts relating to the positive or negative influence of children's characteristics and level of motivation are seen by him as influenced through mainly biological factors, and that parents/individuals in a child's life are catalysts that specifically relate to educative interventions for the purpose of talent development.

Although the predicted characteristics and attachment styles are based on information in the literature, there is currently no specific research related to the association between characteristics, attachment, maternal depression, and giftedness. The tentative nature of these predictions is therefore conveyed in the article: "The spectrum of characteristics provides an overview of disorders, their tentative predicted effects on observable gifted characteristics based on the literature and authors' observations, and possible attachment styles" (p. 50). The finding related to extraversion was also based on a study with a small number of participants (Wellisch & Brown, 2011) and should therefore be interpreted with caution. There are further cautions to readers that "the tool should be used with caution, as children may have concurrent disorders, which may then alter the observable characteristics of giftedness" (p.

50). Additionally, should the appendix be separated from the article, an asterisk appears next to the *Observable Gifted Characteristics* column on each page, followed by a cautionary note: "Author's own tentative predictions based on observations and reading of the literature" (pp. 54–58).

Chapter 8

The Need for an Alternative Gifted Model

This second chapter in Part III addresses the fourth research question by critically examining Gagné's differentiated model of giftedness and talent (DMGT) in the light of the broader gifted spectrum approach advocated in Chapter 7.

8.1 Preamble

Gagné's DMGT is the preferred model used for gifted education in Australian schools (Gagné 1985, 2005, 2009). The review includes the DMGT's more recent elaborations, the academic talent development model (ATD; Gagné, 2011) and the expanded model of talent development (EMTD; Gagné, 2013). In this chapter I argue that in a practical educational sense the DMGT is a talent development model that provides a pathway for those children who demonstrate their giftedness through achievement. I further argue that an alternative gifted model is needed for those children who may have great potential, possibly unnoticed, and can be nurtured through educational and other interventions. This is an argument taken to Gagné through an opportunity for commentary (Wellisch & Brown, 2011) to his target article on educating gifted children (Gagné, 2011). The commentary, which is reproduced at the end of this chapter, was published as:

> Wellisch, M., & Brown, J. (2011). Where are the under-achievers in the DMGT's academic talent development? *Talent Development & Excellence, 3*(1), 115–117.

In response to the commentary, Gagné (2013) agreed that a "special alternative pathway" is needed for underachieving children (p. 145), although he saw this pathway as distinct from that for gifted achievers.

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There is no shortage of theories and models on giftedness, including those of Folsom (2000), Milgram (1990), Moon (2002), Piirto (1999), Van-Tassel-Baska (1997), and Ziegler (2005). In the United States a number of experts' theories and models are recognised, accepted, and implemented in schools, including those of Renzulli (1986, 1978, 1995) and Sternberg (1985, 2005). In Australia, where I live, the education departments of all state and territories reference the DMGT (Gagné, 2000, 2009) for the purpose of departmental policies and for its application to the identification, assessment, and education of gifted school students. This therefore necessitates an examination and critique of Gagné's DMGT (1985; 2005; 2009; 2011) and its application to Australian gifted underachieving children.

Cohen asserted in 2006 that research was at cross-purposes within the gifted field. There was no consensus on the nature of giftedness, nor was consideration given to how giftedness, talent, intelligence, creativity, and prodigiousness are related and, importantly, little motivation has been displayed to understand others' definitions and conceptions, an essential factor in finding common ground. Since then little progress has been made in reaching a consensus on the nature of giftedness. Additionally, there has been no practical model proposed that can accommodate not only the identification, assessment, and education of gifted achievers, but also the identification, assessment, and education of potentially gifted but not yet achieving children with adverse early experiences, and other gifted underachievers.

Chapter 8

8.2 Chapter overview

The following topics are addressed in this chapter:

- Gagné's DMGT
- Specific problematic aspects of the DMGT in relation to the needs of gifted underachievers—catalysts, developmental process, and predictors of performance
- Gagné's (2013) updated model, the expanded model of talent development (EMTD)
- Gagné's (2011) academic talent development model (ATD)
- Under-performance or underachievement.

It is argued in this chapter that there is a need for an inclusive model so that these children's intellectual potential can be identified and addressed. This preamble is followed by a review of Gagné's models, and, as mentioned above, the chapter concludes with the published commentary by Wellisch and Brown (2011) about Gagné's target article.

8.3 Gagné's gifted model

Gagné's DMGT and his many papers and presentations have made an enormous contribution to how "schools see their goals as helping students identify, understand and develop their talents" (Feldhusen, 2004, p. 152). The rationale for a focus on Gagné's DMGT (Gagné, 2009), therefore, and on his recently expanded model, the expanded model of talent development (Gagné, 2013) is twofold. First, the DMGT is the accepted talent development model used in Australian schools. Second, the DMGT specifically addresses only the needs of gifted *achievers*, a point made very clear in Gagné's recent publications (Gagné 2011, 2013). The application of the DMGT is therefore problematic given that the aim of education is to ensure equity of opportunity so that all children can realise their full potential, bearing in mind that "equity is about access" (Jeanneret, n.d.). This raises the need for a different model

that can provide a pathway for the potentially gifted, who have not yet been identified and have not yet achieved, and for gifted underachievers, who are unable to achieve without additional support. In order to discuss specific aspects of the DMGT, an introductory description of the model follows.

8.3.1 Brief introduction to the DMGT

It is outside the scope of this thesis to provide a complete review of the DMGT, which was first proposed by Gagné in 1985. This is because, despite its original simplicity, the model has since become quite complex due to several amended versions and associated publications to explain the model (Gagné, 2000, 2009, 2011, 2013). A brief and simplified review of the 2009 version of the model as currently used in Australian schools is outlined in Figure 8.1 overleaf and described below.

8.3.1.1 Main components

Viewed from left to right, the main components are natural abilities or gifts with six specified domains, environmental and intrapersonal catalysts, developmental process, and the concluding component, competencies, with nine specific areas of developed competencies or talents.

8.3.1.2 Chance

As depicted in Figure 8.1, chance lies beneath all but the competencies component. Chance was previously explained as a fifth causal factor associated with the environment, and also

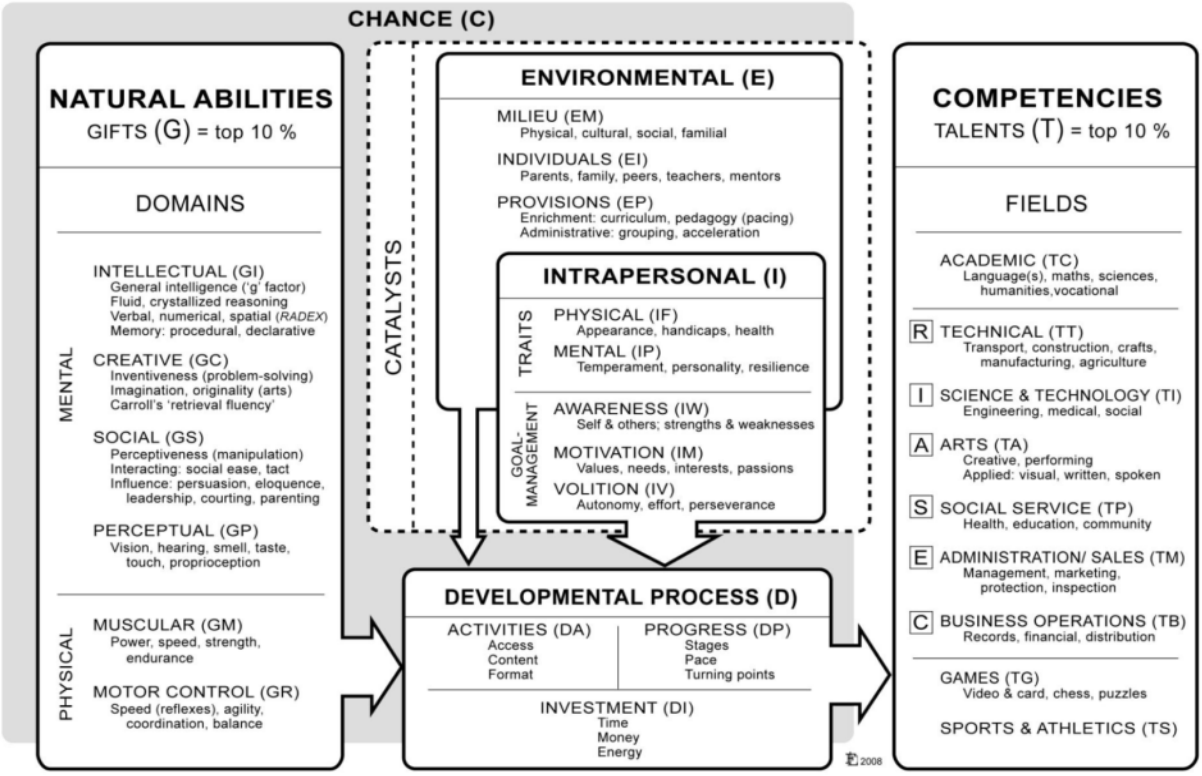

Figure 8.1. The 'ground level' of the differentiated model of giftedness and talent (DMGT). Reprinted from handout, Gagné, F. (2009, April). *"Building gifts into talents: Brief overview of the DMGT 2.0"*. Seminar presented at James Ruse Agricultural High School, Carlingford, Australia. Copyright (n.d.) by F. Gagné. Reprinted with permission.

associated with genetic endowment, for example being born in a particular family or enrolled in a program for talented students (Gagné, 2000). Later, in the 2009 version of the DMGT, chance was reduced to "its 'true' role" as "that of a *qualifier* of any causal influence" (Gagné, 2009, p.5). Since then chance has been removed completely from the model (Gagné, 2013).

8.3.1.3 Natural abilities

The natural abilities or gifts that "do develop yet possess undeniable biological under-pinnings" are situated "underneath" the model (Gagne, 2009, p. 5). Natural abilities enable gifted children to advance through developmental stages with greater ease and speed compared with others (Gagné, 2013). Natural abilities, as defined here, can be identified among four mental domains: intellectual, creative, social, and perceptual; and between two physical domains: muscular and motor control. The arrow leading from natural abilities directly to the developmental process component explains the essential role of natural abilities within the model. The catalyst component for the purpose of talent development consists of two aspects: the environmental catalyst and the partially overlapping intrapersonal catalyst, the latter of which has a filtering role in relation to the environment.

8.3.1.4 Environmental and intrapersonal catalysts

Catalysts are either present or absent and as a result exert either a positive or a negative influence on the development of talent (Gagné, 2009). Gagné considered three environmental components to be influential in the development of a child's talents:

- The milieu or climate, culture, and economic background
- Individuals significant to the development of talent
- Educative provisions

Environmental influences pass through the translating sieve of the intrapersonal catalyst and the individual's needs, interests, or personality traits (Gagné, 2013). Both environmental and intrapersonal catalysts feed directly into the developmental process, which consists of activities, progress, and investment, with all their associated sub-components. The

developmental process is the path to the developed competencies or talents, as shown by the arrow.

The intrapersonal catalysts are divided into traits and goal-oriented processes. The biological underpinnings "ensure the proper development" of "many intrapersonal catalysts" (Gagné, 2009, p. 5). These are situated underneath the model, and are addressed in the next section.

8.3.1.5 Beneath the DMGT

In his 2009 update of the DMGT of the model, Gagné stated that the DMGT represents a theory of talent development and is "limited to direct observable behaviour". At the same time he explained that observable behaviour is "limited to the 'ground level'" (p. 5, Gagné, 2009), with three supporting biological structures, which have now been updated, situated underneath (Gagné, 2013). These biological structures are closely associated with the development of natural abilities and intrapersonal catalysts. For example, the physiological processes are related to gifts and intrapersonal catalyst components, and the anatomical processes are related to brain size. Figure 8.2 illustrates the supporting biological structures beneath the DMGT (Gagné, 2013).

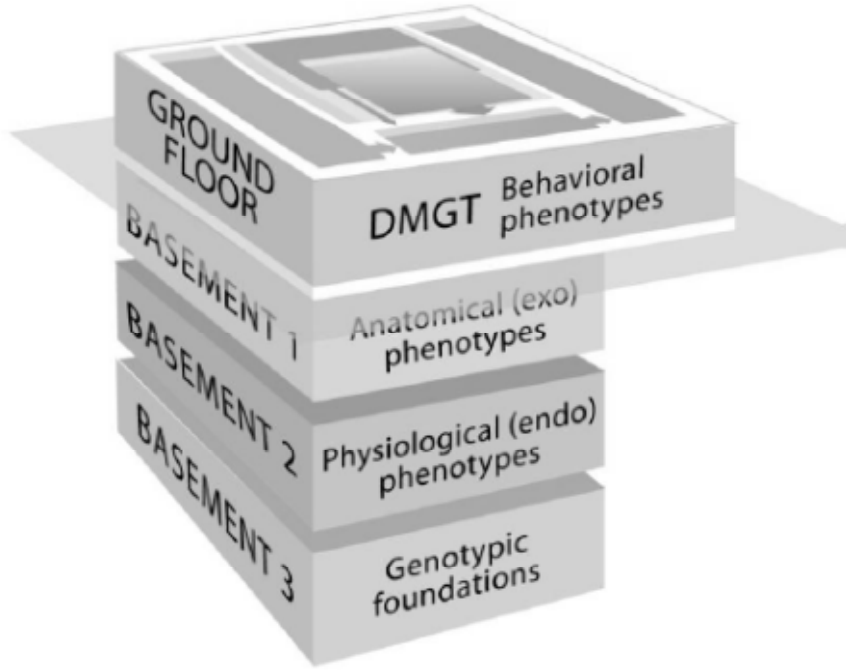

Figure 8.2. Biological underpinnings of the DMGT. Reprinted from Gagné, F. (2013). "The DMGT: Changes Within, Beneath, and Beyond." *Talent Development & Excellence 5*(1), 5-20. Copyright 2013 by F. Gagné. Reprinted with permission.

8.3.2 The EMTD: A transformed model

Gagné has recently expanded and transformed his model from the DMGT to the expanded model of talent development (EMTD; Gagné, 2013). See Figure 8.3. The expansion involves the addition of the first two columns, separately named the developmental model for natural abilities (DMNA). The remainder of the EMTD consists of the amended DMGT. Amendments include the removal of chance from the model as "chance is strictly speaking not a causal factor [and]…should no longer appear in visual representation of the DMGT" (Gagné, 2013, p. 8).

The new EMTD is a developmental model, commencing with the biological basement previously described as the area underneath the DMGT (see Figure 8.3) with a direct link to

the development of gifts, which at this stage occurs through maturation and informal learning (Gagné, 2013).

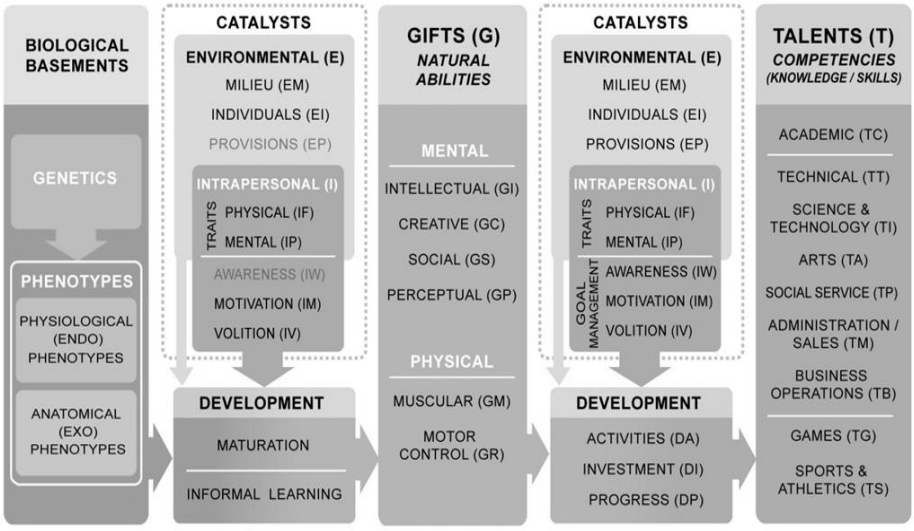

Figure 8.3. Gagné's (2013) expanded model of talent development (EMTD). Reprinted from Gagné, F. (2013). "The DMGT: Changes Within, Beneath, and Beyond". *Talent Development & Excellence 5*(1), 5-20. Copyright 2013 by F. Gagné. Reprinted with permission.

Gifts can then be developed further through catalysts into specific talents. The new section, pertaining to the development of gifts, raises the question about what age a child can be considered to have developed such an "outstanding expression in gifts" (Gagné, 2013, p. 14). Gagné estimated that this may happen sometime before late childhood or early adolescence, when children "… will choose a talent field that fits their perceived profile of natural abilities and interests" (Gagné, 2013, p. 16). The two sets of catalysts (see the second and fourth columns of the EMTD) are structurally unchanged. Thus, catalysts continue to exert either a positive or negative influence, although expectations are reduced in the DMNA, exemplified by the light fonts for (educational) provisions. This is because Gagné expected educational

provisions to be informal and because "… we cannot expect young children to show the same level [of awareness]…as older individuals would" (Gagné, 2013, p. 14).

8.3.3 Gagné's academic talent development model (ATD)

This proposed model is anchored in the DMGT's talent development model. The definition of talent development, in turn, is anchored in the distinctions between Gagné's definitions. These comprise the notions that giftedness is the possession and use of natural abilities or aptitudes among at least the top 10% of age peers and that talent is the mastery of systematically developed outstanding abilities (or competencies) among at least the top 10% of age peers active in that field. Gagné's (2011) proposed ATD model is not accompanied by a diagram but follows on from a detailed descriptive analysis of the facets of the developmental process (D) sub-component of the DMGT (see Figure 8.1). The ATD model includes six main constituent elements: an enriched content of course, excellence goals, limited access for only gifted with outstanding academic achievements, regular practice, regular assessment of progress, and personalised faster pacing (Gagné, 2011).

8.3.4 Augmentation of brief review

The above brief review can be augmented with recent updates to Gagné's model (2008; 2009; 2013). Components that are specifically relevant to the thesis will be discussed in more depth in the following section.

8.4. Critique of Gagné's predominantly biological/behavioural model

According to Cohen (2006), the perennial question that remains unanswered in gifted research is whether giftedness should be attributable to genetic brain differences or environmental influences. Gagné has determined that much can be explained through biology, including

gifts, or "biologically anchored natural abilities or aptitudes" (Gagné, 2013, p. 12). He lamented the "strict environmental ideology of talent development" which he considered a "politically correct view" (Gagné, 2013, p. 12). However, Gagné himself seemed to be influenced by these "politically correct" views, oscillating between opposing positions about whether the genesis of giftedness is genetically acquired or developed. He stated that natural abilities are "not innate" (Gagné, 2013, p. 13), but he also referred to children's early preferences, mental traits, and studies that show "… very large individual differences" (Gagné, 2013, p. 14). Later, he stated that, "... the most significant distinction between gifts and talents remains the amount of direct genetic contribution" (Gagné, 2013, p.15). Yet he argued earlier in his article that gifts are developed through "maturation and informal learning" (Gagné, 2013, p. 5), a reference to a child's early years, and explained this as "… somewhat similar to the talent development process" (Gagné, 2013, p. 15).

8.4.1 The DMGT's talent-specific environment

Despite an instinctive assumption that environment catalysts would include a child's socio-emotional influences, including attachment, Gagné's recent interpretations clarify the importance he places on talent development through either behavioural or biological causality. This is evidenced in his separation of biological underpinnings underneath the "strictly behavioral DMGT framework" (Gagné, 2013, p. 9), each example provided to illustrate these components. For example, "… measures of environmental effects are themselves influenced by genetic influences" (Gagné, 2013, p. 12), and personality characteristics, an aspect of the interpersonal catalyst, have "significant genetic roots" (Gagné, 2013, p. 11). Even the child's IQ may be affected due to biological environmental catalysts such as "parasitic and infectious diseases" (Gagné, 2013, p. 15).

Chapter 8

Within the DMGT, parents belong among individuals within the environmental catalyst. Research associated with parental influence on developmental outcomes includes emotional adjustment (Prior & Glaser, 2006); attachment and maternal depression (Martins & Gaffan, 2000); attachment, neuropsychology, and early development (Joseph, 1999; Perry, 2002); and attachment and IQ (De Ruiter & Van IJsendoorn, 1993; Karrass & Braungart-Rieker, 2004; Van IJsendoorn & Vliet-Visser, 1988). Thus, the attachment relationship between parents and children may be one key factor in shaping giftedness and may affect a child's motivation, self-awareness, and both cognitive and socio-emotional development. Attachment, as we saw earlier, is based on the mother's sensitivity and is not affected by the child's inborn temperament, a conclusion drawn by Prior and Glaser (2006), who reviewed research about attachment. Prior and Glaser (2006) based their conclusion on the review of research on stress during pregnancy, attachment organization of mothers and fathers, intervention to increase maternal sensitivity, infants' proneness to distress and the 'Strange Situation', and twin studies of shared environment and attachment. It may therefore be assumed that parental influence on children's early experiences and attachment style in some way contributes to the environment being either a positive or a negative catalyst in children's gifted development. Attachment may indeed be one of the gatekeepers of giftedness.

Gagné, however, separated talent development from any socio-emotional influences, with a focus on only the direct "… personal influences that impact the talent development process" (Gagné, 2009, p. 4). He made it very clear that the model "… does NOT [capitals in original] pretend to represent a person's total personal development. Consequently, only elements that have significant influence on a person's talent development should be introduced" and should "exclude any I [interpersonal catalyst] or E [environmental catalyst] characteristic judged

causally irrelevant for the emergence of the talentee's outstanding achievements" (Gagné, 2009, p. 6).

8.4.2 The role of parents' influence in the DMGT and EMTD

Parents' contributions to the development of talents, other than the original genetic contribution, appear similar to those of other individuals, as evidenced in Gagné's earlier writings. We learn that once gifts have been developed, the environmental contribution to talent development "… includes of course parents and siblings, but also the larger family, teachers and trainers, peers, mentors, and even public figures …" (Gagné, 2009, p. 4). In the EMTD, the early role of parents as catalysts involves creating family environments that "… could impact the development of related natural abilities" (p. 15). Examples include visits to "museums or concerts … family sports activities" (Gagné, 2013, p 15).

In summary, it is inferred that Gagné attributes most influences in the development of gifts and talents to biological processes, including in the environment, with the remaining influences occurring through certain behaviours that may promote such development. Socio-emotional development and psychological health do not appear to have a place among the catalysts, and therefore do not provide either "positive" or "negative" (Gagné, 2009, p. 4) influences on the development of gifts and talents.

8.5 The central argument for an inclusive gifted model

Based on the discussion presented in this thesis in relation to the effects of early experiences, I propose that a more inclusive gifted model should include components that demonstrate the recognition of socio-emotional factors that may lead to underachievement. Such a model would provide a pathway that involves the identification of gifted children through an

assessment process that includes non-educational assessments to identify any socio-emotional problems that may affect children's motivation and effort, regardless of their current level of achievement. Two specific issues in relation to Gagné's model indicate a need for a more inclusive approach based on a gifted spectrum. These are:

- The assumption that biology and behaviour are the main building blocks of gifts and talents, and are unrelated to early attachment and socio-emotional development
- The "what you see is what you get" identification built into the approach, namely that high achievement is the measure of giftedness; and, in the case of underachievers, that the "raw materials" (Gagné, 2008, p. 6) have simply "… not translated into talents" (Gagné, 2008, p. 6)—a permanent fate within Gagné's model.

8.5.1 The missing building block of gifts

Gagné (2004) maintained that there are no particular predictors of outstanding performance. More recently, he speculated that predictors commence with natural talents, but concluded that "talent … results from a complex choreography between the … causal components, a choreography that is unique to each individual" (Gagné, 2009, p. 6). While there may be no sole predictor for talent development later in childhood, evidence exists to support the importance of early experience and IQ (Perry, 2002; Van IJsendoorn & Van Vliet-Visser, 1988; West et al., 2013). Gagné's catalysts, including parents, are portrayed as being either useful or a hindrance to the development of gifts and talents. However, it is proposed here that the influence of parents may be much more fundamental to advanced development through the process of a child's early attachment and the child's subsequent socio-emotional adjustment and cognitive development (De Ruiter & Van IJzendoorn, 1993; Prior & Glaser,

2006; Van IJzendoorn et al., 1995; Van IJzendoorn & Van Vliet-Visser, 1988). Early experience and attachment may well be significant factors in relation to giftedness and achievement (West et al., 2013).

8.5.2 Foundational early years, attachment, and parental influence

Lower IQ scores have been associated with profound adverse early experiences (Perry, 2002) and there is evidence that IQ scores can later increase with improved environments. For example, a meta-analysis of 62 studies (*N* = 17,767 of adopted children) indicated that the IQ and school performance of adopted Romanian orphans were better than their non-adopted siblings or peers who remained in orphanages (Van IJzendoorn, Juffer, & Poelhuis, 2005). Additionally, findings indicate that the frequent stressful experiences of insecurely attached children are likely to affect attention, working memory, and IQ through release of the stress hormone cortisol (Blackwell, 2000; Chiappe & MacDonald, 2005; Perry, 2002; Perry & Szalavitz, 2006). Parental expectation and involvement, on the other hand, have been associated with high achievement (Bloom, 1980). Similar findings have been reported in the case of children with disabilities (Holden-Putt, 2007). It may therefore be concluded that, in the early years, attachment and parental influence are associated with children's intellectual development, motivation, and achievements, and perhaps even the development of gifts.

Over the past 30 years many educators and gifted experts have admired the simplicity and elegance of Gagné's model, have interpreted the meaning of the catalysts, and have designed talent development programs in accordance with their interpretations. In this Chapter I seek to demonstrate that as the catalysts have a purely talent development function and do not include early socio-emotional influences and pathways to address problems associated with early adverse experiences, the DMGT and EMTD effectively exclude gifted children who lack

motivation and also gifted children with disorders. Attachment style is established around three years of age (Prior & Glaser, 2006), well before a child would be considered gifted by Gagné who estimates this to occur during "late childhood or early adolescence" (2013, p. 16). If the attachment style is insecure, it can be associated with disorders—including those associated with problem behaviours—that affect motivation and achievement. As mentioned above, Gagné's interpersonal catalysts rely predominantly on biological and behavioural influences. In contrast, the authors of the *Minnesota Longitudinal Study of Parents and Children* concluded that personality itself, whether disturbed or well-functioning, is a developmental outcome and that the transaction between self and environment is a mutually transforming process (Sroufe, Egeland, Carlson, & Collins, 2005). Given these conclusions, at least some characteristics that Gagné and others consider to be biologically influenced may actually be shaped by environmental influences. These influences include parents during the early years of life, a time that is increasingly understood to be a foundation for future development, possibly including the development of gifts and the capacity for achievements. Given that adverse socio-emotional influences are associated with adverse outcomes, early identification and intervention may enable underachieving children to reach their gifted potential.

8.5.3 Underperformance or underachievement

It was Gagné (1985) who drew attention to the flaw in Renzulli's redefinition that giftedness comprises greater than average ability, creativity, and motivation. The flaw, according to Gagné, was that gifted underachievers would be unable to benefit from such a definition due to their lack of motivation. Gagné made a point of differentiating his model by including underachievers in the natural abilities component, defining them as "… gifted … without

having manifested … giftedness in any academic talent" (Gagné, 1985, p. 12). Yet, although continuing to acknowledge the phenomenon of "academic underachievement" (Gagné, 2008, p.6), Gagné has made it clear that the DMGT is a talent-development model, and not a model representing all areas of personal development.

Gagné's reference to personal development is perceived here as a reference to children with problems that may prevent achievement. This view is further supported in the 2011 article in which he distanced himself from the frequent use of the term *gifted*, and replaced it with his new term, "talentees" (p.12). This position has now been taken further: The title of his *Expanded Model of Talent Development* no longer includes the term *gifted* (Gagné, 2013).

Gagné (2009) defined the *developmental process* component of the DMGT as the systematic pursuit of activities leading to an excellence goal. This involves a structured program of activities over a significant period of time, a process that commences in either childhood or adulthood once a person is identified. However, as mentioned earlier, underachievers would not be identified if the criterion for identification was high achievement, and they would therefore be excluded from talent development programs. Thus the (talent) development component in the DMGT is available only to those gifted children or adults who are already achieving and who have been identified with "outstanding expression in gifts" (Gagné, 2013, p. 14). Where underachievement is a result of circumstances other than unmet educational needs, then, progression beyond the natural abilities component within the DMGT is not achievable due to its status as "a talent-development model" for the top 10% of gifted achievers. Underachievers, therefore, remain stationary within the gifts/natural abilities component, with no developmental strategies to assist them.

8.5.4 Need for a broader definition of gifts

It is important to keep the DMGT's strict focus of talent development in mind when considering its usefulness for gifted children who may miss out on being identified as gifted or who do not achieve as expected, perhaps because of adverse early childhood experiences. Gagné's model is very specific: To be considered gifted, a child who has not been systematically trained must be in the top 10% of those with natural abilities. In addition to this, children can also develop competencies or talents if they have undertaken systematic training and are currently achieving within the top 10% of their ability peers (Gagné, 2008). These criteria place underachieving gifted children at a disadvantage as their achievements are, by definition, below the 10% criterion. Furthermore, Gagné has recently argued that "… being bright is rarely sufficient to deserve the gifted label; students must also show high academic performance" (Gagné, 2013, p.15). He added that, if a child has been identified for talent development, and his or her pace slows, "teachers might reconsider a student's talentee status" (Gagné, 2011, p.13). Such a suggestion is reminiscent of Renzulli, Reis, and Smith's (1981) revolving door concept, whereby gifted children who no longer demonstrate achievement cease to be developed further and are taken out of gifted programs. Together with Gagné's previous observation that giftedness should be demonstrated through performance leaves underachievers little room to advance within the new EMTD. In this updated model, the only development options are measured progress, quality of effort and investment, and a talent development process—options that are available only to those who have the current capacity to achieve. Clearly, gifted underachievers need alternative enabling options.

8.5.5 Summary

The socio-emotional role of attachment, first introduced in Section 2.9 of this thesis, and discussed extensively in Chapter 3's publication as well as elsewhere, may be more far-reaching, and arguably more fundamental to the future achievement of potentially gifted babies and young children, than the catalyst role assigned to parents by the DMGT and the EMTD (Gagné, 2013). The learning and socio-emotional barriers resulting from insecure attachment, in some cases associated with maternal depression, need to be considered when creating an inclusive model of giftedness that can inform the educative process and prevent school failure of gifted underachievers.

8.6 Publication — Where are the underachievers in the DMGT's academic talent development?

In 2011, a target article written by Gagné was announced by the *Talent Development & Excellence* journal, and peer comments were sought. The target article provided Gagné with the opportunity to launch his new academic talent development (ATD) model. Gagné's proposal for talent development was that programs should be provided exclusively to high achievers, requiring no assessment other than the talentee's excellent grades. Specifically, he raised and defended the inequity issue of the inevitable underrepresentation of ethnically disadvantaged children and children from low socio-economic backgrounds in such a model. Underachieving gifted children were not mentioned.

A peer commentary in response to Gagné's proposed ATD Model (Wellisch & Brown, 2011) aimed to raise awareness of Gagné's oversight in disregarding gifted underachievers who may be neither disadvantaged nor from low income families but who may have experienced problematic early attachment. In the commentary we proposed that an alternative

pathway was required for these children. Our commentary below was published in the same volume as Gagné's target article, which also included his response to the commentary.

Chapter 8

Talent Development & Excellence
Vol. 3, No. 1, 2011, 115–117

Commentary on F. Gagné: Academic Talent Development and the Equity Issue in Gifted Education

Where Are the Underachievers in the DMTG's Academic Talent Development?

Mimi Wellisch[1*] and Jac Brown[1]

Proper assessment of the gifted has been a major issue of concern to professionals for many years, highlighted in Gagné's discussion (2011) on the inequality and under-representation of children from low socio-economic and certain ethnic backgrounds. There have always been inadequate procedures for assessing the gifted, and IQ and other achievement tests are now often used only as a last resort to provide evidence of intellectual giftedness (Callahan & Eichner, n.d.). To his credit, Gagné (1985) included underachievers within his model (DMTG), setting the model apart in comparison to other models of giftedness and talent, and defining underachievers as "gifted intellectually, but not talented academically" (p. 108).

Twenty five years on, however, Gagné seems to have reversed his position on underachievers in the target article. He still maintains that the gifted "trademarks" - presumably also found in underachievers - are "ease and speed in learning" (p. 14). However he now argues that "being bright is rarely sufficient to deserve the … gifted label; students must also show high academic performance" (p. 15). This statement seems to indicate that the inclusion of gifted underachievers in the DMTG was perhaps too difficult to adequately assess, and may now conveniently be dismissed. This is confirmed by the Academic Talent Development (ATD) model presented, which requires high achievement as the single criterion for eligibility. The real equity issue that arises from Gagné's article, therefore, is not whether disadvantaged or ethnic populations are underrepresented in gifted programs, but rather Gagné's promotion of the ATD for only high achievers. If adopted without an alternative pathway for underachievers, it would automatically exclude many gifted children with promise and potential, who have no current capacity to achieve, regardless of their socio-economic or ethnic background.

Gifted underachievers do not necessarily hail from low socio-economic or ethnic minorities, but are nevertheless disadvantaged by learning disabilities (Silverman, 2009), or socio-emotional problems which may be a result of "childhood stress and trauma" (Winner, 2000, p. 165). These socio-emotional problems, as well as a variety of learning disabilities, can create learning barriers that prevent academic high achievement in gifted children (Munro, 2002). For example, Parker, Summerfeldt, Hogan, and Majeski (2004) demonstrated the significant predictive value of socio-emotional competencies in both high and low academic performance. A recent study also found that children with separation anxiety disorder, social phobia, or generalized anxiety disorder had lower school functioning than others (Mychailyszyn, Mendez, & Kendall, 2010).

Adelman and Taylor (2000) argue for an enabling component in an educational model to target children with learning barriers, as "better achievement surely requires more than good instruction" (p. 16). This suggestion certainly seems relevant to gifted underachievers. Gagné, however, offers no pathway or model that would enable talent development for these children, despite evidence that emotion and cognition are intertwined in human mental function (Adolphs, Tranel, & Damasio, 2003; LeDoux, 1996; Phelps, 2006; Vygotsky, 1987). On the contrary, he proposes that access to talent development opportunities should now be limited to only those "candidates who

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demonstrate good chances of future success" (authors' italics) by replacing previous tests and assessments with "past performance" as these have "significantly more predictive power than any measure of future potential" (p. 12). If this suggestion is adopted, and traditional assessments such as IQ tests are abandoned and new ways of assessing natural abilities are not developed, it will be even more difficult to identify and assist gifted underachievers. Together, these suggestions will further marginalise the very gifted children who require additional support.

Gagné reminds us not to forget the role of chance in a variety of areas that affect talented performance, including in relation to "a supportive family environment" (p. 18), which is relegated to the "luck of the draw". It would be tempting to assign developmental problems and relationships with family members that affect talent achievement to chance. However, attachment (Bowlby, 1969) associated with social and emotional adjustment, can hardly be put down to mere chance, as it has been rigorously researched, shown to be highly predictable (Fonagy, Steele, & Steele, 1991), and scholars view it as life-shaping. Attachment is both an environmental factor and a developmental necessity that can shape lives and should therefore be seen as a pivotal aspect of the talent development process. As such, it should be considered in a talent development model, particularly in planning for alternative interventions to educational provision. Readers who require more information about the connection between attachment and giftedness are referred to Wellisch (2010).

In summary, Gagné has decided to ignore the problems of an appropriate assessment of the gifted, choosing instead to focus on the even more limited assessment criterion of performance. His ATD approach to the gifted shuts the door on any alternative path to talent development, and excludes many who may be gifted but have no current capacity to achieve.

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Chapter 9

An Integrated Identification and Intervention Model for Intellectually Gifted Children

9.1 Preamble

In the previous chapter Gagné's model used in Australian schools was reviewed and an alternative gifted model was argued for, a model that could accommodate a broader spectrum of gifted children and provide a pathway for gifted underachievers. It is well known that underachievement in gifted children can lead to children leaving school (Commonwealth Government Publishing Service, 2001; Dixon, Craven, & Martin, 2006; Renzulli & Park, 2002), which is particularly concerning in light of their potential. This preamble to the article, "An Integrated Identification and Intervention Model for Intellectually Gifted Children" (Wellisch & Brown, 2012) concerns the role of the school in the identification of giftedness. It is followed by a discussion about an alternative gifted model and gifted education.

The following issues are discussed in this preamble:

- The role of schools in socio-emotional development and school failure
- Are there gifted domains, and, if so, what domains of giftedness should be included in a model?
- What important factors should be included in an inclusive gifted model?
- How should the gifted be educated, differentiation of the curriculum, and models of differentiation

Chapter 9

9.2 The role of schools in socio-emotional development and early school leaving

Causes for gifted children leaving school early include failing of subjects, dislike of school, and the lack of parental involvement in a child's decision to drop out (Commonwealth Government Publishing Service, 2001; Renzulli & Park, 2002). Renzulli and Park (2002) found that gifted children who left school early had higher self-concepts, that is, they felt better about themselves than did those who were not gifted; but that their leaving was significantly related to their reduced educational aspirations. These last findings were similar to those of Dixon et al. (2006), who speculated that this may be attributed to depressed affective variables.

Zins, Bloodworth, Weissberg, and Walberg (2004) have argued that socio-emotional problems play an important role in academic outcomes. They reported that 83% of socio-emotional type techniques such as promoting cooperative learning used by teachers resulted in academic gains by participating students in the general student population. Although there is great variability within the gifted population, such gains may also apply to those children with socio-emotional and learning problems, thus clarifying why a talent development component may not be adequate in a model for gifted children who have other needs. Adelman and Taylor (2000) also argue that "… better achievement surely requires more than good instruction" (p. 16). It would appear that a non-pedagogical strategy for addressing socio-emotional problems may be essential if a gifted model is to be inclusive of all gifted children's educational needs. This may be especially the case where lack of achievement results from non-educational factors that may be otherwise successfully addressed.

As already discussed in the article "Communicating Love or Fear: The Role of Attachment Styles in Pathways to Giftedness" in Chapter 3, discoveries in brain research have

demonstrated the close link between emotion and cognition (Wellisch, 2010), particularly in relation to the frontal lobe of the brain (Center on the Developing Child at Harvard University, 2011). This is an area of the brain that enables learning related behaviours such as planning. According to Perry (2002), lack of emotional attachments is associated with lasting damage to cognitive capacity. Given the consequences of adverse early events, these may prevent or reduce high achievement and create learning barriers. Problems are also encountered in later school years, necessitating therapeutic interventions to prevent early school leaving (Adelman & Taylor, 2000). It is therefore important to identify underachieving gifted students who could benefit from a range of services in order to enable educational progression and help them in achieving to their potential.

This is not the focus of current identification and assessment practices, outlined in this chapter, in relation to gifted children. An argument is then made for a more inclusive identification and assessment procedure, and a model is proposed for identifying and triaging the educational, therapeutic, and interventional strategies for gifted children. The model is school-specific, and does not include a domain component for reasons discussed below.

9.3 Are there gifted domains?

Like *gifts* and *talents*, the concept of *domain* has suffered from a variety of definitions and shades of meaning. The definition for domain adopted here is an area of knowledge, skill, or ability. There is general agreement that children are gifted in at least one particular domain (Mayer, 2005). A number of experts in giftedness have listed those areas they believe include all human ability as domains, although numbers and specificity of their domains differ (sometimes as part of the evolution of a model). For example, Gagné's domains have increased from four (Gagné, 1985) to six, with four "… belonging to the mental realm"

(intellectual, creative, social, and perceptual), and the remaining two (muscular and motor control) to the physical realm. Each, he explained, have "multiple facets" (Gagné, 2013, p. 8). Lohman (2006) argued that domains are present where expertise can be defined. Subotnik and Jarvin (2005), on the other hand, speak more specifically about domains of inquiry that include facts, formulas, principles, and major ideas. Feldhusen (1996) listed academic, artistic, vocational, and interpersonal domains, and VanTassel-Baska (2005) suggested verbal, mathematical, scientific, artistic, and social domain-specific aptitudes. It appears from these varying interpretations that there are many ways to interpret and define the term domain.

The question of domains would not be complete without considering Gardner's multiple intelligences (MI) theory. The MI theory was proposed on the basis of Gardner's expectation that certain parts of the brain are correlated to each of his described separate intelligences: linguistic, musical, logical-mathematical, visual-spatial, bodily kinaesthetic, intra-personal, interpersonal, and naturalistic (Gardner, 1999). The MI theory has not been supported by research (Ferguson, 2009; Waterhouse, 2006), despite its wide intuitive appeal among school teachers. Although many scholars now call for agreement on the areas of endeavour that are important to our society, there is general agreement that giftedness is culture specific (Van Károly & Winner, 2005; VanTassel-Baska, 2005). The NSW Department of Education and Communities' (Australia) webpage succinctly stated it as "The way that giftedness is defined depends upon what is valued by society and will determine the identification procedures employed and the educational programs that are developed" (Definitions. n.d. para 1). It seems from the above that although it is clear that a person can be gifted in music or intellectual pursuits, agreement has yet to be achieved in relation to a universal conception of what would constitutes gifted domains. Given that the dominant culture is passed on to

children largely through state-determined knowledge areas and skills taught at schools, culture specific domains of giftedness may be seen as equivalent to those same knowledge areas and skills to which a child is exposed throughout his or her education.

A final commentary about domains must include the much-discussed and thoroughly researched area of creativity. In this thesis, Cohen's (2011) definition of creativity will be adopted, namely something new or rare yet appropriate to a problem that is valued and accepted in the world. A review of progress made in understanding creativity was undertaken by Simonton (2000), who concluded that creative ideas tend to arise from well-developed skills and domain-specific knowledge. Subotnik et al. (2011) speculated that it may be both domain-general arising as part of a personality disposition, and domain-specific, as judged by others in a specific field. Their suggestion seems to be exemplified amongst experts in giftedness. For example, creativity is included in some gifted models either as a domain (Gagné, 1985, 2004) or as an essential identifying characteristic of giftedness (Harrison, 2005; Renzulli, 1978; Silverman, 1986). Creativity has been intensively researched, with findings showing that it is associated with particular domain-specific activities (e.g., the scientist-inventor, the musical-composer), rather than being a separate domain (VanTassel-Baska, 2005; Weiten, 1998). Given the above, it is possible that creativity may not be a separate knowledge domain as represented in the DMGT (Gagné, 1985; 2004) as much as an identifying gifted characteristic (Harrison, 2005; Renzulli, 1978; Silverman, 1986), or that creativity may, indeed, arise once deep understanding and well-developed skills in a domain have been attained (Simonton, 2000).

9.3.1 What domains of giftedness should be included in a model?

Intellectual or *schoolhouse* giftedness (Renzulli, 2005), generally identified through cognitive assessment, is the most researched and reliably identifiable form of giftedness. Renzulli believed there are two categories of giftedness, the other being *creative-productive* giftedness. Intellectual giftedness has also been equated with intelligence (Mönks & Katzko, 2005) and with the measurement of the one general factor, or *g*, in IQ tests. Debate is, however, ongoing about the nature of intelligence, and includes competing theories of multiple intelligences (Gardner, 1999; Guilford, 1967; Sternberg, 1985; Thurstone, 1924). Additionally, contemporary school education includes not only intellectual knowledge and skills, but also creative curriculum areas such as art and music.

In this context, the purpose of the proposed model, the inclusive gifted identification and progression model, becomes relevant as a model that aims to identify giftedness and intervene to prevent barriers to learning. At an early stage in children's lives, gifts may not be specifically developed, and domains would therefore not be a useful guide to gifted identification. Instead, a young potentially gifted child may display general gifted behaviour, for example, complexity in the way he or she uses language, plays, draws, or builds with blocks (Harrison, 2005). If the model is to be used by schools, and the model requires the display of giftedness in a particular domain, then timing of the emerging gift becomes a complicating factor. Additionally, certain emerging abilities require both very early exposure and experience with a given domain, and children may not have been exposed to such domains. Then again, giftedness in a particular area may remain dormant in some individuals until a certain point in maturation, or until an opportune time (Rutter, 1998; Subotnik et al., 2011; VanTassel-Baska, 2005). This may occur decades after leaving school, as in the case of

author Colleen McCullough, who began writing at the age of 40. Therefore, waiting for a gifted domain to emerge may delay or hinder identification. The requirement of a domain in a model of giftedness may also assume some heritability in relation to a specific area of giftedness. Ericsson et al. (2007) would argue that it is the deliberate practice that creates outstanding ability.

It is argued here that an education-oriented gifted model should be practical, incorporating the notion of potential giftedness that may show itself in the characteristics and behaviours of a child or in relation to a specific knowledge area or skill taught in schools. Interest sparked in a gifted child by an inspiring parent or teacher and positive feedback and experiences associated with a particular knowledge area or skill can potentially have a multiplier effect on a child (Dickens & Flynn, 2001; Perry & Szalavitz, 2006), resulting in giftedness. The K-6 syllabus of the New South Wales Board of Studies, for example, prioritises English, Mathematics, Human Society and its Environment, and Science and Technology. Other subjects include Personal Development, Health and Physical Education, and Creative Arts and Languages. However, school subjects vary with countries and cultures, although they tend to emphasise intellectual areas of knowledge. School teachers should therefore remain vigilant to the emergence of potential giftedness during any subject they teach throughout a child's schooling, a strategy advocated by Renzulli and others (1981) in their well-known and classic revolving door identification model.

Given the above—children perhaps showing no domain specificity in their giftedness, the variable interpretations of domains, and because children will be exposed to key learning areas and skills in their schools—the inclusion of gifted domains appear to be an unnecessary

additional component in a school education-specific gifted model, whereas early gifted identification is essential. Thus, a child can be identified early through characteristics, behaviours, and assessment, and later also through knowledge areas and skills taught at school.

9.4 What important factors should be included in an inclusive gifted model?

The many attempts at arriving at a widely acceptable conception and model of giftedness demonstrate both the educational need for a road map and the difficulty in selecting the important signifiers requiring inclusion. A recent American report on all 50 states' specific policies and procedures in relation to gifted education confirmed that there "… continues to be a lack of consensus among policymakers and educators in how to define a gifted student" (McClain & Pfeiffer, 2012, p. 78). Essentially, then what must be settled on is what makes a gifted child—the membership characteristics of giftedness. We must also agree about how giftedness should be identified, and this, as Renzulli (2005) argued, is tied in with the purpose of defining giftedness, because identification and provision depend on the gifted definition. Lack of agreement of these three inherent issues—what makes giftedness, identification, and resulting educational applications—has been one reason for the fragmentation of the field, with the resulting difficulty in producing valid gifted research. Carman (2013) compared 104 empirical articles and noted the lack of consensus on the definition of giftedness, resulting in lower generalisability and an inability to compare results. A universal agreement on an accepted approach to giftedness, and on a gifted model, would help the field to progress. Additionally, if we identify in order to educate, then a model should include identification strategies ensuring the inclusion of children on a gifted spectrum and it should also provide a pathway to planning and programming that supports the different needs of such a

heterogeneous group. The model must be inclusive. That is, it must be able to include the all-round well-adjusted gifted as well as children with varying levels of giftedness, gifted children with disabilities or learning disorders, and gifted children with other diagnoses, including gifted underachievers who may have been adversely affected by insecure or disrupted attachment. These children may have a common history of unremarkable or inconsistent school achievement due to reduced motivation and learning disorders, and low-grade indicators of adjustment problems (Ruban & Reis, 2005) making their identification difficult.

The new model should also enable identification of children at different ages and at different points on a gifted spectrum, a notion supported by Nicpon and others (2010), who recommend a comprehensive assessment process including the identification of any socio-emotional problems. The model should enable the inclusion of the Western belief of the gift being within the child, legitimising both potential and achievement. The model should also build on the research on giftedness emanating from the Eastern concept, mentioned in Chapter 4, of hard work and application (Ericsson et al., 2007; Freeman, 2005; Howe et al., 1998; Sternberg, 2004; Winner, 2000). Furthermore, the model should be practical and user-friendly for teachers. It must be able to accommodate both children's demonstrated *and* potential gifted abilities that have yet to manifest on account of emotional and learning issues, lack of exposure to the domain of the child's gift, or as yet unattained maturation age for the gift. This is captured through the notion that if children with potential and gifted characteristics who have not yet achieved are excluded from gifted provisions, the aim of educating them to their full potential cannot be achieved. Finally, if we identify in order to educate, a practical gifted identification

model would not require inclusion of domains for the following reasons: A child may not yet have displayed strengths in one particular domain and this may prevent identification, and domains would always entail cultural knowledge and be culturally skill-specific, as taught in schools. Both cultural knowledge and skills are applied in educational settings, and are easily recognised by teachers within a culture-specific curriculum. To sum up, an inclusive gifted model that is practical should include strategies for the identification of both gifted achievers and those who are unable to or are not yet achieving, as well as involve programs that demand the Eastern concept of 'hard work', however, as a model used by educators, the model would not have a need to include domains, as children's gifts would be demonstrated through experience with culturally important knowledge areas taught at schools.

9.5 How should the gifted be educated?

A topic about gifted children would be incomplete without a brief discussion about their educational requirements, although this is not the primary focus of this thesis. A report on the United Kingdom's approach to gifted education (Casey & Koshy, 2013) identified no particular model, although teachers had been influenced by Matthews and Foster's (2009) mastery model, Sternberg's (2000) notion that gifted children should continually develop expertise, Gardner's (1983;1993) multiple intelligences, Renzulli's (2005) creativity and task-commitment, and VanTassel-Baska's (2005) practical classroom provisions. A comprehensive treatment of the education of gifted children in Australia, for teachers interested in advancing their skills, can be found in Vialle and Roger's (2009) recently published book.

Even as far back as the 1980s no overarching theoretical framework was available for the development of gifted and talented programs (Fetterman, 1988). Some three decades later little has changed, with Cohen (2006) referring to the failure of the field in its disconnect with both general classroom practice and teacher preparation. She identified the need for principles and strategies to be drawn from gifted education that might benefit all learners, and contended that these may be particularly helpful for impoverished and underrepresented youth. This strategy has been tested successfully by some experts in gifted education, as outlined below.

9.5.1 Differentiation of the curriculum

The idea of applying strategies that benefit all learners has also been championed by others (Munro, n.d.; VanTassel-Baska, 2008; Vialle & Rogers, 2009). Munro argued for effective strategies to implement a curriculum model that could identify gifted learners, including those with learning disorders, by identifying one of the three ways gifted learners can interpret information and by differentiating the curriculum to their "multiple types of gifted knowing and thinking" (Munro, n.d., p. 8).

Differentiation of the curriculum in its basic form involves modifying and tailoring the curriculum to the gifted learner through a variety of techniques, including acceleration and curriculum compacting. Munro (n.d.) compared the thinking of gifted learners to that of experts, arguing that gifted children are more likely to perceive and understand broad concepts, have more automated knowledge to draw upon, are more focused, and learn more rapidly, requiring less repetition. However, as they are not yet experts they lack the skills to demonstrate their advanced knowledge. This is especially the case for gifted children with disabilities. For example, gifted children with a learning disorder in writing (dysgraphia) may

be fast readers and may discuss a topic creatively and at an advanced level, but may be slow or disorganised in demonstrating their knowledge through creative written expression.

9.5.1.1 Models of differentiation

There is no shortage of both well-known and less known curricula for gifted learners. Two particular models that have become familiar in the Australian state of New South Wales are those of Maker (1982) and VanTassel-Baska (1986). Maker's is a practical model of curriculum differentiation, adjustable to the ability of gifted learners to manipulate ideas and deal with complexity. The focus of the model is higher level thinking, creative problem solving, predicting, and decision making. It emphasises engaging learners with opportunities to create products, solve real problems, and present their work.

VanTassel-Baska's integrated curriculum model (ICM; VanTassel-Baska 1986, 1995, 2002) has been widely implemented and demonstrated to be effective with both gifted and other learners. It has the additional benefit of increased learning for gifted children in comparison to their typically developing peers. VanTassel-Baska based differentiation of the curriculum on children's "precocity and complexity" (VanTassel-Baska, 2008, p. 3), two identifying differences between gifted and not-gifted children, although she also considered intensity to be a third aspect of a gifted learner. The ICM involves teaching higher order skills, for example how to reason and the nature of concepts. These are embedded in units of teaching along with attention to context. Teacher training in the delivery of the curriculum as well as training in relation to gifted children is also part of the ICM. Because the ICM appears to be a "powerful motivator for the less able, especially the scaffolding provided by the instructional models" (VanTassel-Baska, 2008, p. 19), it appears to be ideally suited to gifted children with learning disorders and unmotivated gifted underachievers.

Chapter 9

9.6 Publication — An integrated identification and intervention model for intellectually gifted children

This chapter includes a published article that makes use of Gagné's (2011) agreement that a separate pathway was needed for gifted underachievers, an agreement that further demonstrates the need for a more inclusive model of giftedness. The article is based on the issues raised thus far, and reference is made to both exploratory studies undertaken for this thesis. The results for securely attached gifted children in the study indicated that they were more likely to have higher IQ scores, while the IQs of gifted children with learning disorders did not exceed 126 (Chapter 5). They may therefore never be identified as gifted. Findings in the qualitative study indicated that gifted child participants whose mothers were depressed were more likely to have internalising problems and were more likely to be misunderstood at home, by peers, and at school (Wellisch et al., 2012). Characteristics of gifted children with internalising problems, cited from the qualitative study findings (Chapter 7; Wellisch & Brown, 2013), together with findings of basic gifted characteristics, also helped support the need for a gifted characteristics-component in a proposed model. The studies thus supported the need for a more inclusive model where gifted children with adverse early experiences or with disorders can be identified and supported. However, any proposed connections argued for between attachment, maternal depression, and giftedness have limited current support in light of the small sample sizes of the studies and the absence of significant findings. These proposed connections require additional future research.

The article adds a new voice to the call for the inclusion of early socio-emotional assessment in schools for all children as a necessary addition to the pedagogical strategies for the removal of learning barriers. An argument is made for early socio-emotional assessment of gifted children and the re-instatement of IQ testing (including recommending specific IQ

tests for culturally diverse populations) for all children in a strategy similar to government sponsored hearing checks made prior to school entry to prevent gifted children from remaining unidentified, especially those who fail to achieve at school. Our aim with this article is to demonstrate the requirement for not only appropriate gifted programs, but also other supportive socio-emotional strategies for children who would otherwise not achieve, in order to ensure their optimal development. The purpose of the practical model, the inclusive gifted identification and progression model, presented in the article is to raise the issue for schools to provide appropriate support to gifted children. The suggested model is, as its name indicates, inclusive of gifted children who are not currently, but could potentially become, high achievers.

The following journal article was published as:

Wellisch, M., & Brown, J. (2012). An integrated identification and intervention model for intellectually gifted children. *Journal of Advanced Academics, 23*, 144–167.

Due to copyright restrictions pages 245-267 have been omitted from this thesis. Please refer to the following citation for details of the article contained in these pages.

Wellisch, M., & Brown, J. (2012). An integrated identification and intervention model for intellectually gifted children. *Journal of Advanced Academics, 23*, 144–167.

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Chapter 9

9.7 Reflective postscript

In the preamble the reader may have expected to find references to the research in Chapter 5 within discussions about the contents of an inclusive model (Section 9.4) and again within a discussion in Section 9.5 on how the gifted should be educated. The research in Chapter 5 did not, however, involve any hypotheses pertaining to either a gifted model or the education of gifted children. Section 9.4 discussed in depth the contents of the proposed inclusive model, first defined in Chapter 8 (Section 8.5) of the thesis. Topics included the link between identification and education, the need to identify those children who may later become underachievers, and that identification should be on-going as children's gifts may present at any time. The first component of the model, presented in this Chapter, is the identification component, which then leads to a number of options, depending on the assessment outcome. Section 9.5 is a theoretical discussion on options that best support gifted children's educational needs, reaching the conclusion that the best options are those that caters for all children.

The reader is reminded that the article in this Chapter has included the findings of a study with a small sample. Additionally, some conclusions and suggestions were put forward based on untested suppositions, for example the association between gifted characteristics and DSM-5 disorders.

The inclusive gifted identification and progression model was proposed as an education model that aimed to accommodate all gifted children, regardless of current levels of achievement. Terminology first introduced in Chapter 2 can now be applied to the proposed model: Arrows indicate the identification and educational pathway for both authentically gifted

children, that is, children with no learning or other disorders, and other children on the gifted spectrum who have learning and other disorders. On reflection, the model may be enhanced by a connection between educational provisions and both remedial education and therapeutic intervention. Such a link indicates that children's remedial and therapeutic needs can also be approached through their gifts and strengths, indicated with the addition of black arrows on the right-hand side of the amended model shown in Figure 9.1.

The model triages the two main pathways. For gifted, well-adjusted children the path leads to the (gifted) educational provisions component following screening of characteristics, ability assessments, and assessment of learning and other disorders. The pathway for children who have learning or other disorders leads to the remedial educational and/or therapeutic intervention components. Their pathway can also lead to educational provisions, indicated by the thin arrow upward from the twice exceptional component, depending on the severity and area of problems, as explained on pages 158–160 of the article. This inclusive model now provides a two-way pathway, enabling schools to identify and help develop all gifted children.

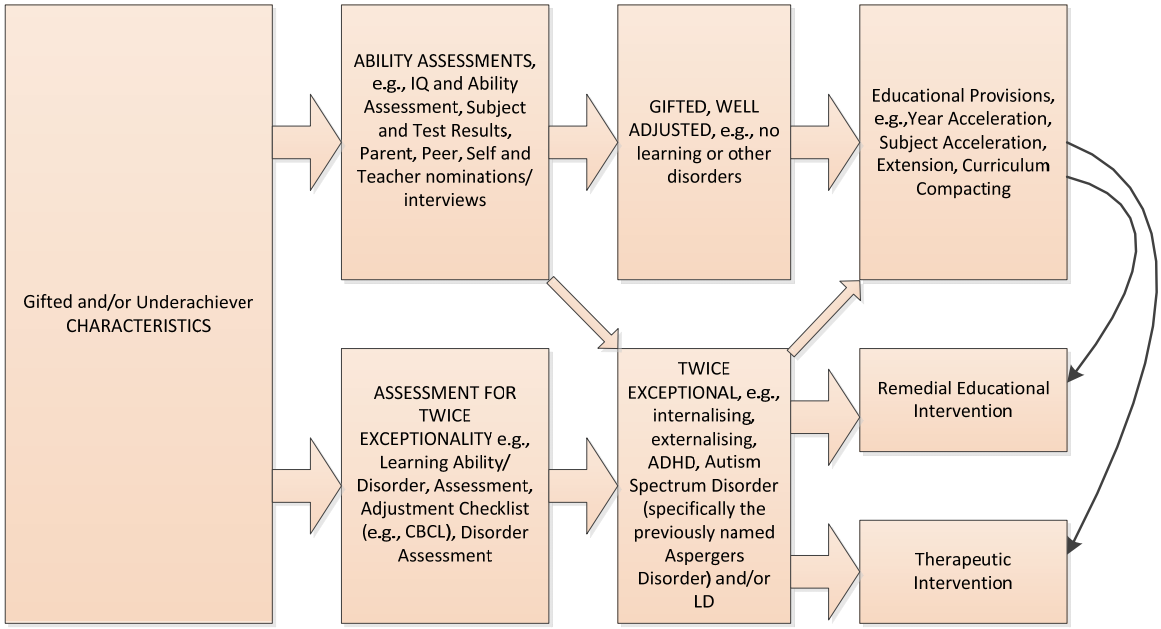

Figure 9.1. Amended inclusive gifted identification and progression model. Source: Wellisch, M., & Brown, J. (2012). An integrated identification and intervention model for intellectually gifted children. *Journal of Advanced Academics*, *23*, 144–167.

Chapter 10

Conclusions and Implications

This chapter provides a summary of the main findings of the research and the contributions made to the gifted literature in light of the research question: Is there an association between giftedness and attachment, and giftedness and maternal depression, and, if so, what educational and other strategies may be useful in addressed any resulting socio-emotional and learning problems? Some conclusions and limitations of the thesis are discussed, and implications for further research are suggested.

10.1 Gifted children: Problems and pathways

This was a part theoretical and part exploratory thesis. The theoretical Chapters were contained in Parts I and III and two exploratory studies, addressing the first three contributing research questions, were described in Part II. The exploratory studies were a direct outcome of the literature reviews and theoretical discussions preceding Chapters 5 and 6 in Part II. The fourth contributing research question was addressed in Part III. This research question addressed an already known problem within gifted education, the gifted underachiever. The link with the two other Parts of the thesis was the proposal that some gifted children may underachieve due to early attachment problems, often due to maternal depression, addressed in Chapters 2 to 6. Theoretical discussions within Parts I and II also strove to show the need for a model that could accommodate gifted children who may have had early problems and were underachieving as a result of these problems. This necessitated their identification, which was addressed in Part III, and as additional findings of the qualitative research were included, this Chapter formed a link between the exploratory aspect of Part II and the theoretical discussions in Part III. Therefore, Part III of the thesis

can be seen as a logical continuation of, but not necessarily an outcome of, the previous Parts I and II.

Chapter 1 introduced the reader to the rationale, key definitions, the theoretical approach, the aim of the thesis, the main research question and four contributing research questions, the structure of the thesis, and the publications associated with each chapter. Chapter 2 laid out the problems inherent in the implementation of the achievement-based educational model, the differentiated model of giftedness and talent (DMGT; Gagné, 2009), that currently informs the identification and education of gifted children in Australian schools. It was argued that some children who are gifted and had experienced early trauma may not be identified, and that they required extra-educational strategies in order to achieve to their potential. A new approach, the gifted spectrum, was proposed as a new way of understanding giftedness. The literature on attachment and related topics in Chapters 2 and 3 were presented as evidence of the important early role of parents, and mothers in particular, in the optimal development of children. Given these research findings, it was hypothesised that children who were gifted would be more likely to be securely attached.

Literature was analysed and research cited involving a number of disciplines on the associations found between children's psychological difficulties, reduced cognitive development, learning disabilities, limited capacity to achieve, and insecure attachment and maternal depression. It was hypothesised that similar problems may be found in a population of gifted children in association with insecure attachment and maternal depression, although the problems of gifted children had never been associated with attachment and maternal depression, and therefore not tested. The hypothesis was based on documented observations

by experts in giftedness related to these children's problems (Rogers, 2011; Silverman, 2002). This theme was pursued in Chapter 4 with particular focus on the accepted general view that problems are an integral part of being gifted. The view was challenged with the alternative proposal that problems, where they occurred, may instead be associated with early trauma associated with attachment problems and maternal depression. Part II of the thesis was dedicated to two exploratory studies. Contributing Research Questions 1, 2, and 3 were tested in a quantitative study involving 80 children and their parents, and in a qualitative study involving the mothers of 11 of the child participants from the earlier study. Findings related to the socio-emotional and behavioural problems of gifted children informed the inclusion of these aspects in one of the thesis outcomes, namely the screening of characteristics and the assessment components of the proposed inclusive gifted identification and intervention model in Part III.

10.2 Toward a gifted spectrum approach

The preamble to Chapter 3 and the article within the chapter raised the possibility that secure attachment may be the gatekeeper to heritable intellectual potential. The article, which introduced attachment theory and its many possible links to children's development, included research findings frequently associating insecurely attached children with language problems (Coster, Gersten, Beeghly, & Cicchetti, 1989; Prior & Glaser, 2006). It was also suggested that gifted children's IQ scores may be affected by a traumatic early childhood. The point was demonstrated through a desktop experiment with a WISC-IV (Australian) test involving an imaginary 7-year old insecurely attached gifted child with a normal verbal IQ. The assumption was made that the child's assumed gifted language tendencies were curbed by attachment problems, while the performance scores were maintained as very high, thus

reducing the full scale score . This verbal-performance discrepancy is the particular IQ profile identified in research related to abuse and trauma, and also observed in some gifted children with problems (see Perry, 2002; Silverman, 2002). The discussion included the point that while development and giftedness may be affected by early attachment problems, certain genetically inherited patterns of intelligence may act as a buffer, increasing the likelihood of secure attachment (Perry & Szalavitz, 2006). In ambivalently or anxiously attached children, attachment problems may show themselves in reduced self-confidence, difficulties with academic performance, behaviour problems, inflexibility, and clinical levels of mainly internalising (and less frequently, externalising) problems (Prior & Glaser, 2006). It was argued that some problems, including some learning disorders of gifted children, might therefore be associated with adverse early childhood experiences and attachment issues. Finally, it was argued that secure attachment might be a gatekeeper to the manifestation of giftedness.

In Chapter 4, this argument was compared with assumptions in the gifted literature. The intention with the published chapter was to raise awareness of the role of attachment in the shaping of particular characteristics. It was argued that such characteristics had previously been assumed to be largely the result of asynchronous development that can accompany giftedness. Characteristics associated with giftedness, such as the presence or absence of persistence and healthy and unhealthy perfectionism were discussed in the light of attachment. Chapter 4 concluded with a call for more research and an appropriate and inclusive model for gifted children. By this point in the thesis, with Chapter 4 concluding Part I, a case had been made for the possible association between attachment, maternal depression, and the problems of gifted children.

Chapter 10

The call for research was immediately followed in Chapter 5 by an account of the exploratory quantitative study undertaken as part of the PhD studies. The contents of Chapter 5 supersede two previous publications arising from initial analyses of the data (see Wellisch, Brown, Taylor, Knight, & Berresford, 2011; Wellisch, Brown, Taylor, Knight, Berresford, Campbell, & Cohen, 2011). Chapter 5 presents revised analyses following a realignment of the research questions and hypotheses to ensure consistency throughout the thesis. The aim of the research was to test the possible associations between attachment style, maternal depression, and giftedness. Associations between insecure attachment and internalising, externalising, learning disorders, and lower verbal and working memory IQ subtest index scores were tested among gifted children to address Contributing Research Questions 1; to test similar associations with maternal depression in relation to Contributing Research Question 2; and to test associations between the aforementioned IQ profile and internalising, externalising, learning disorders, and lower working memory scores to address Contributing Research Question 3. Eighty 7 to 10 year-old children with FSIQs $\geq$80 and their parents were recruited from Australia and New Zealand. Gifted children were defined for the study as having at least one subtest index score or a full scale score of $\geq$120 as explained in Section 5.5.1.1. The study included data collection on children's attachment styles, full scale and subscale index scores, and data on internalising, externalising, and learning disorders. Data were also collected on maternal depression, parents' learning disorders, and the family's socioeconomic and educational backgrounds. Generally, chi-square analyses were carried out for the categorical dependent variables and one-way ANOVAs for the numeric dependent variables. The chapter commenced with a short summary of the literature relevant to the study

and concluded with a reflection on the findings in the light of the proposed approach, the gifted spectrum.

The results indicated that 75% of gifted children were securely attached in comparison to 66% of the total child population. The latter figure conforms with consistent previous research findings that approximately two thirds of the general population is securely attached (Al-Yagon, 2003; Moss et al., 2006, Perry, 2007; Prior & Glaser, 2006; Schore, 2001), and supports the validity of the attachment measure used in the study. Although subgroup populations were small and data must therefore be interpreted cautiously, particular subgroups of gifted children were more likely to have internalising and less likely to have externalising problems. Gifted children with a 10-point higher WISC-IV perceptual reasoning index score than the verbal comprehension index score (PR-VC discrepancy score) were more likely to have at least one learning disorder compared with gifted children without the discrepancy score. This finding supports similar observations made by Silverman (2002). Interesting findings included that no child with an IQ over 126, i.e., within the mildly gifted range (Feldhusen, as cited in Gross, 2000), had a reported learning disorder, and that no association was found between gifted children's socio-economic backgrounds and their attachment styles, or between socio-economic backgrounds and learning disorders. In summary, although the findings were not significant, they trended toward supporting a spectrum of giftedness.

Chapter 6 included an account of an exploratory qualitative study that yielded some unexpected outcomes, although the outcomes were generally supportive of the gifted spectrum approach. The aim of the study was to address Contributing Research Questions 1, 2 and 3 by exploring the lived experience of parenting a gifted child and gaining insight into the

ways children were affected by their mothers' problems. The chapter commenced with a supplementary literature review on maternal depression to support the previously cited literature on its association with adverse child outcomes. Following this section, a peer reviewed journal article described the study. The study involved 11 mother participants whose children were categorised as gifted, drawn from the larger and earlier quantitative study.

The research yielded some interesting results, one of these being that gifted children in the study appeared to present differently to typically developing children and in some cases could be misunderstood even by their mothers. Mothers who were then already hampered by their own socio-emotional problems, such as depression, were less likely to understand their children or to provide adequate support when their children encountered misunderstandings outside the home. The findings also indicated that it was the serial nature of being misunderstood in a variety of contexts that was more closely associated with increase in children's socio-emotional problems. Grounds for misunderstandings included children's precocious development, sensitivities, and challenging behaviours. Interventions, for example by two understanding mothers ensuring access to appropriate therapy or moving the child to a more supportive school environment in a timely manner, prevented problems from becoming chronic for their children. Although this research was based on only a small sample and its results are therefore not generalisable, insights were gained on the genesis of internalising and externalising disorders in some of these gifted children. The study highlighted the usefulness of early gifted identification, as awareness of children's giftedness had helped some mothers adjust their expectations and to better understand their gifted children, thereby possibly preventing internalising problems (Wellisch, Brown, & Knight, 2012).

Chapter 10

Part III of the thesis was aimed at addressing the fourth contributing research question: How can an association between attachment styles, maternal depression, gifted identification and underachievement be reflected in a new approach and a novel model of giftedness? To this end, a published "bridging" journal article included in Chapter 7 documents additional findings of the qualitative study presented in the previous chapter, in part preparation of the new inclusive gifted identification and progression model proposed in Chapter 9. The concept of a gifted personality and whether it exists at all is examined in this chapter. The discussion includes previous suggestions about gifted "types", Dabrowski's (1972) theory of positive disintegration held by many scholars to best explain the gifted person, and basic gifted characteristics. A number of related research findings are also examined. Some of these include differential susceptibility in children with difficult temperaments, the impact of maternal depression and attachment styles, and observable characteristics in children associated with these experiences. The appendix to the article comprises a table of predicted gifted characteristics in children who also have common DSM-5 disorders. That table may be useful as a screening tool but should be used with caution as the predicted gifted characteristics and attachment styles are based on current literature and DSM-5 characteristics and my own personal observations over the years. There is no current research about the associations between DSM-5 disorders, attachment, maternal depression, and giftedness.

Chapter 8 contains a review and critique of key aspects of Gagné's DMGT, the model adopted by Australian education departments, and a review of its recent updated version, the expanded model of talent development (EMTD). The chapter concludes with a published commentary. The commentary was the result of a timely invitation to comment on a target article by Gagné on the subject of talent development and equity in a journal volume set aside

for the publication of the target article, the invited commentaries, and Gagné's responses to the comments. In the target article, Gagné (2011) argued that only those who can demonstrate high achievement should be offered a talent development program, a topic related to the developmental process component in his model. He directly challenged the equity issue related to accessibility to such programs for socioeconomically and ethnically disadvantaged students, arguing for merit-based access for only high achieving children. His argument, however, did not consider underachieving gifted children who may be neither socioeconomically nor ethnically disadvantaged. The published commentary in Chapter 8 therefore focused on the performance-based requirement in Gagné's talent development model for the progressing of talent, pointing out its lack of opportunities for gifted underachievers. The conclusion of the commentary is that there was a need for an alternative pathway for gifted underachievers. All commentaries received about the target article were provided to Gagné for a response. In his response Gagné agreed with Wellisch and Brown (2011) that underachievers needed an alternative pathway to his academic talent development model (Gagné, 2011). This raised the question of whether an alternative inclusive model of giftedness could be proposed.

The qualitative results regarding responsive mothers who transferred their children to schools where their children's abilities were both recognised and addressed promoted the idea of early identification in the formulation of a new inclusive model of giftedness (presented in Chapter 9). These two mothers' actions may have contributed to the prevention of chronic internalising problems, whereas a third mother, who reported internalising problems for her child, had not acted on her child's needs. The proposed inclusive gifted identification and progression model is laid out with helpful arrows to indicate the order that should be followed

for the purposes of identification that can then be progressed to educational and other programs and interventions. The model does not attempt to explain how giftedness may arise, its prevalence, factors involved in its development, or its specific manifestations. Those factors are the domain of Gagné's DMGT and his recent updated models (Gagné, 2013). Instead, the model can be used to explain the gifted identification process, a process that aims to identify and support gifted children, regardless of whether they are achievers or underachievers. It sets out an identification process through the screening of observed gifted characteristics and learning or behaviour problems and assessments such as IQ, test results, nominations, interviews, and assessment of learning- and other disorders. The purpose of the assessment is to determine whether a gifted child is well adjusted and has no learning problems and can therefore be provided with further educational opportunities, or whether the child has problems that may become learning barriers and may therefore require either therapeutic or remedial educational intervention in addition to gifted educational provisions. Thus, this model can be used to help explain some of the reasons why some gifted children are able to achieve, while others may be less able to do so; and includes pathways that can be taken in either case. The model would be best implemented at the start of a child's school education, instigated as a result of information from parents or early childhood teachers, although it can be used at any time during a child's school years, as required. The model can accommodate a spectrum of giftedness and is thus the suggested model for both gifted achievers and underachievers. It is designed to enable all gifted children in securing an appropriate education and adequate support to reach their full potential.

10.3 Limitations

There is clearly a need to conduct additional research on the relationship of IQ with both secure and insecure attachment to clarify the extent and nature of the association. Results of such research could be useful in informing social policy and educational strategies. The quantitative study in this thesis was exploratory. Furthermore, it was limited for a number of reasons: the difficulty in recruiting that resulted in the small sample size, the lack of high IQ-scoring gifted children (the highest full scale score was 149), the lack of parental IQ data, and the parents' self-reporting of learning disorders and maternal depression. Future research would ideally also include at least one additional child attachment measure to ensure that measurement of attachment in 7- to 10-year-old children is valid. At the time of the research there was a lack of behaviourally and representationally robust measures for this age-group, although a few such measures were available (Dwyer, 2005). Since then at least one attachment style interview measure about children's relationship with their primary carer has been developed further and shows promise (Shmueli-Goetz, Target, Fonagy, & Datta, 2008). The measure used in this study addressed attachment to peers, a focus for this age-group, perceived by some experts as a period of transition from attachment with parents towards eventual adult (romantic) attachments (Hazan & Shaver, 1994). An additional tool for measuring attachment to parents may better determine the consistency of children's attachment style across relationships. The limitations related to the use of a single attachment measure also apply to the qualitative study which made use of the attachment data. The qualitative study was also limited by its retrospective approach, that is, reliance on mothers' perceptions and memories of past events.

Additionally, as gifted children may be more likely to be securely attached, it would be important to pursue the maternal depression factor with a much larger group of participants. For example, in-depth research that aimed to provide generalisable results may be conducted into the association between maternal depression and the attachment style of gifted children, and whether there are associations between giftedness, maternal depression, and children's socio-emotional and learning problems.

Finally, although a strong argument has been made for the issues raised in relation to giftedness, attachment, and maternal depression, care should be taken to avoid inferring causality from the tenuous connections described in the publications within this thesis concerning giftedness, attachment, and maternal depression. Much research is yet required to further test connections between giftedness and insecure and secure attachment; giftedness, learning and other disorders, and maternal depression; learning disorders, attachment, and maternal depression; and attachment, maternal depression, and full scale and subtest index IQ scores.

10.4 Contribution of thesis to the gifted literature

The publications associated with this thesis have invited a debate on the topics of attachment and maternal depression in the gifted literature. Findings from a variety of disciplines were presented in Chapter 3 in an attempt to point to these possible connections. Chapter 3 appears to be the first published journal article dedicated to the subject. The argument was made that maternal depression, one factor in an insecure attachment style, may affect gifted children, although intelligence may also act as a protective factor. Awareness of the possible long-term effects of maternal depression through the published work may motivate parents of potentially

gifted children to be more proactive and take preventative action by seeking professional help and address this problem in a timely manner.

In a publication titled “The adjustment of gifted children: Is asynchrony the only reason for their problems?” in Chapter 4, an argument was mounted that asynchrony, a term describing the uneven development of gifted children with associated problems, is neither a necessary part of giftedness nor necessarily caused by giftedness, as has been widely assumed. The proposal was made that asynchrony might instead be associated with early attachment problems. It is hoped that the publications in this thesis, in conjunction with the papers presented at conferences, will contribute to public awareness and acceptance of learning and other disorders that can be additional to the differentness of gifted children, and that gifted children’s problems may therefore be more easily recognised and addressed appropriately.

The studies undertaken for this thesis and their outcomes are described and reported in Chapters 5 and 6. These studies contribute to the body of existing research findings about gifted children by providing information about gifted children’s attachment styles. The quantitative study outcomes provide information about participating gifted children’s secure attachment compared with the total participant population, and small increases in the number of learning and other problems in gifted children with a PR-VC discrepancy score compared with gifted children without this discrepancy profile. Only gifted children within the mildly gifted range were reported to have learning disorders. Gifted children were also less likely to have any learning disorders than children who were not gifted. The addition of the qualitative research to the project was informative, providing another dimension to the problems of gifted children in the study, namely that they were quite regularly misunderstood due to their

differentness. This was especially the case if their mothers had reported depression. These misunderstandings could translate to other contexts (peers, preschool, and school); and the misunderstandings were associated with children's (later) internalising problems—which had apparently been prevented in a timely manner in the case of two children whose mothers intervened and obtained more appropriate educational provisions. This finding is also a new contribution to the gifted literature and demonstrates how qualitative research can benefit from quantitative data already collected, in this case particularly the Child Behavior Checklist data (Achenbach, 2001).

It is proposed that the practical contributions of the screening tool in Chapter 7 and the new suggested model in Chapter 9, joint outcomes of the theoretical considerations and the exploratory research projects, will prove to be useful to parents and teachers. The opportunity to critique the DMGT's lack in providing pathways for gifted underachieving children, and the response by Gagné to the critique, described in Chapter 8, clarifies and confirms the argument (mounted in the commentary) that a new pathway for underachievers is required: "We cannot expect that gifted underachievers will miraculously become high achievers when placed in an ATD program . . .The solution seems to be, as *Wellisch & Brown* [emphasis in original] suggest, the availability of 'an alternative pathway for underachievers'" (Gagné, 2011, p. 115). The published commentary in Chapter 8 has contributed to an emerging theory by commencing the debate about the necessary contents of such a model and pathway. The inclusive gifted identification and progression model proposed in Chapter 9 provides one example of what such a model may include and adds another voice to the many calls for change in the way education, in general terms, is conducted and provided to children (see Adelman & Taylor, 2000). In contrast to the current gifted model used in Australia, the

proposed inclusive gifted identification and progression model includes potential as well as achieving gifted children and provides a triaging pathway that addresses both their specific strengths and their potential barriers to future achievements. Published in a peer reviewed article, the model is now available for future research and further development.

10.5 Publication: The elusive search for the gifted personality

The recently published editorial, "The Elusive Search for the Gifted Personality" (Wellisch & Porath, 2013), has been added to the end of this chapter. This editorial tentatively raises the proposed gifted approach, the gifted spectrum, as a suggestion for future direction and research. The editorial, written for a special volume featuring articles that demonstrate a broad spectrum of giftedness, was published as:

Wellisch, M., & Porath, M. (2013). The elusive search for the gifted personality: Guest editorial. *Talent Development & Excellence, 5*(2), 1-3.

This editorial, the book chapter, the commentary, and the five journal articles, all published as part of the activities undertaken during the PhD studies, are in the public domain to be considered by parents and teachers of gifted children who rely on theories and research to help explain giftedness. The work may perhaps lead to educational strategies and the broadening of gifted identification, and thereby assist children in fulfilling their full potential.

Chapter 10

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The Elusive Search for the Gifted Personality

Mimi Wellisch[1] and Marion Porath[2]

Guest Editorial

Gifted literature is nothing if not replete with descriptions of the abilities and antics of geniuses, the jaw-dropping abilities of savants, and the differentness of precocious children in comparison with their developmentally average age-peers. The gifted field has given rise to a multitude of gifted characteristics, specific terminologies, definitions, and models of giftedness and educational strategies. Millions of words and pages filled with anecdotes and descriptions of gifted children and adults attest to our fascination with the phenomenon. Our intense interest has created in us a 'rage to master' the subject of giftedness (Winner, 1996) – a need to know how it arises, develops, how it leads to eminence and why it may not lead anywhere at all. This has fuelled our quest to find its essence, the core characteristics that would help define and identify giftedness. Our passionate treasure hunt, the elusive search for the gifted personality, is the subject of this special issue, an issue inspired by a keynote address, *Passion for learning: The experience of being consumed by learning*, given by Laurence Coleman at the 11th Asia Pacific Conference on Giftedness, Sydney, Australia, 2010. Through its portraits of children with exceptional gifts in domains outside those typically considered by schools, the address captured the complexity of giftedness and the many questions that arise about what giftedness "is" and how it can be nurtured.

We begin with Porath's thoughtful article, provoking us to consider just what we may be searching for when we talk of the "gifted personality." Studies on giftedness and personality are not very helpful as findings across studies are confounded by variation in definitions of both constructs and fail to take into account the contextual variables in exceptional achievement. Potential characteristics of a 'gifted personality' may be intense love of learning and powerful intuitions about the fields of endeavour to which gifted individuals are drawn. Porath argues that such characteristics must be studied in a systemic way, taking into account the complexity of both giftedness and personality, the contexts that support excellence, the developmental trajectories of giftedness and personality, and collaborative aspects of innovation and giftedness. The article concludes with questions to inform a new research agenda.

From Porath's big picture view we move to traits of gifted groups and individuals. Shani-Zinovich and Zeidner's review of Israeli research findings introduces the reader to the Israeli education system's approach to identification and education of gifted students. The system consists of a screening and an identification phase followed by special educational programs. The authors discuss how inconsistencies in the literature aimed at discerning personality differences between gifted and non-gifted individuals may involve the ways the gifted are defined, small and non-representative samples, the use of clinical measures or personality assessments not satisfactorily validated by empirical research, and the use of norm group data for comparisons. The article then moves to empirical Israeli research related to the personality and affective characteristics of gifted students. The authors discuss group differences along both broad personality factors and personal traits. They cite findings using the Five-Factor Model for gifted students indicating they are lower on Neurotisicsm (N) and higher on Openness to Experience (O) than their non-gifted counterparts. Shani-Zinovich and Zeidner examine research on the mental health and emotional competencies of gifted students, concluding the article with a number of broad observations on Israeli research conducted over the past few decades.

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Ngara's fascinating article outlines two of his qualitative studies and their findings, taking us from a Western view on gifted Israeli children's characteristics to an African perspective. The first study involves 16 Zimbabwean academics of Shona cultural background and their views on giftedness and talent, and we learn that giftedness traditionally involves a gift from God, a spirit for a particular pursuit (e.g., a spirit for academic achievement). Shona is one of the most historically distinctive and widely dispersed languages in Central-Southern Africa, involving at least 14 countries. The Shona view of giftedness therefore has wider comparability and applicability within the Sub-Saharan Africa region. The second study involves the views of 20 Shona stone sculptors, specifically in the way they conceptualize the origins and development of vision and inspiration for their art. Ngara's article includes his Dynamic and Interactive Process Model (DIPM), an outcome of his findings, and a discussion on possible applications of the model in educational contexts.

Next we return to the Western conception and measurement of giftedness that, argues Merrotsy, add to the issues and contexts that give rise to the invisibility of some gifted children due to cultural and socio-economic factors. Merrotsy argues that these children's school performance and measured intelligence are significantly below their high learning potential. He describes these children as struggling with self-identity, low self-efficacy, a fear of failure, and as lacking trust in the education system and in their teachers. The article presents examples from five projects that focus on identification of 'invisible' gifted children using a model of dynamic assessment. Subsequent interventions based on these assessments have resulted in academic and social-emotional gains. Merrotsy concludes that variation in personality types within the 'gifted population' equals the variation across the whole population, making the quest to identify the gifted personality difficult, with the invisible gifted being the most elusive of all.

The special issue closes with Wellisch and Brown's article which first traces some of the efforts made to identify gifted types and characteristics. The characteristics of the overexitabilities (OEs) from Dabrowski's (1972) Theory of Positive Disintegration (TPD) are included in the discussion as they are frequently applied in the literature to gifted behaviours and problems. Wellisch and Brown then review the literature on maternal depression and attachment difficulties early in life and cite their own research on associations between giftedness, attachment and maternal depression. They propose that early trauma may impact on gifted development, and that traumatic events rather than overexcitabilities, may shape the observable characteristics of gifted children. Wellisch and Brown point out the difficulty in identifying giftedness in children who may have associated disorders, and suggest that the elusive gifted personality may be found instead within a spectrum of giftedness. The article concludes with *The Spectrum of Gifted Characteristics*, a screening table of gifted characteristics in children without disorders, as well as projections of specific characteristics in gifted children with DSM-5 disorders such as ADHD and Specific Learning Disorders.

The search for a "gifted personality" will remain elusive unless we reframe our thinking fundamentally, starting with a critical analysis of our conceptions of giftedness and what it means to achieve excellence in the 21st century. We also need to acknowledge the complexity of giftedness in our thinking and research by considering personal, social, and cultural variables that may influence the realization and expression of giftedness. The articles in this special issue offer different perspectives on how we may recognize, honour and support potential.

10.6 Presentations related to Part III of the thesis

10.6.1 Presentation 1

Wellisch, M. (2012, July). *Young gifted children: Screening, assessing and programming*. Paper presented at the 13th national conference, Excellence and Equity for All, Adelaide, Australia.

10.6.2 Presentation 2

Wellisch, M. (2013, July). *The personality of young gifted children.* Paper presented at the GATE conference, Unleash the Gifted Potential, Sydney, Australia.

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APPENDICES

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APPENDIX A

Previous Publications about Gifted Children

The publications below represent the published work of the researcher on the topic of gifted children prior to undertaking PhD studies. Other published works include several books on early childhood topics.

Peer reviewed published articles

Wellisch, M. (1997). Pilot study on teacher attitudes to young gifted and talented children. *Australian Journal of Early Childhood*, 22(2), 22-28.

Wellisch, M. (1999). Young gifted and talented children: Early childhood teacher attitudes and practices on the North Coast of NSW. *Australian Research in Early Childhood Education*, 1, 131-140.

Other published articles on giftedness

Wellisch, M. (1994). Introducing gifted education into preschool, *Rattler*, *32*, 4-7.

Wellisch, M. (1996). A case study: Early identification of a gifted and talented child: one child's journey from preschool to school, *Gifted*, 1996, 94, 26-28.

Wellisch, M. (1998). Influences on gifted education in Australia, *Gifted*, June, 25-26.

Wellisch, M. (2003). Helping gifted children: access and equity in early childhood services for young gifted children. *Every Child, 9*(3), 18-19.

Wellisch, M. (2004).When should we consider early entry? *Gifted*, October, 11-12.

Wellisch, M. (2006). Stress and the gifted child. *Gifted,* July, 29-31.

Appendix A

Wellisch, M. (2006). The case for a strength-based early childhood program. *Every Child, 12*(4), 10-11.

Wellisch, M. (2006). Where are the gifted under fives? *Every Child, 12*(3), 30-31.

Wellisch, M. (2008). Perfectionism, attachment and giftedness. *Tall Poppies, 33*(1), 23-27.

Other related published articles

Wellisch, M. (1999). Preschool reading a matter of child's play. *The Australian*, 4 October, p. 19.

Conference papers

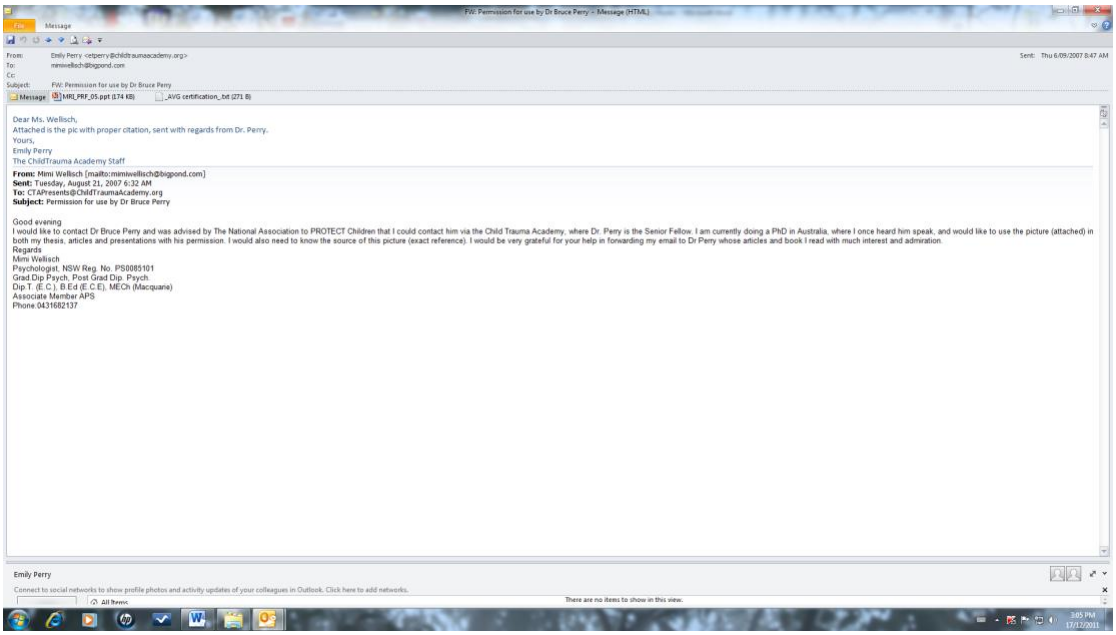
Wellisch, M. (1994). *Critical periods in early development*. Paper presented at the National Conference for the Education of Gifted and Talented Children, Potential into Performance, Perth, Australia, 1994.

Wellisch, M. (1994). *How we did it: Introducing Gifted education into an early childhood setting*. The National Conference for the Education of Gifted and Talented Children, Potential into Performance, Perth, Australia, 1994.

Wellisch, M. (1998).*Young gifted and talented children: Early childhood teacher attitudes and practices on the North Coast of N.S.W*. Paper presented at the Australian Research In Early Childhood Education Conference, Canberra, 17 January.

APPENDIX B

Permission to Use Bruce Perry's Brain Image for Chapter 3's Article



From: Emily Perry <eperry@childtraumaacademy.org>
To: mimiwellisch@bigpond.com
Cc:
Subject: FW: Permission for use by Dr Bruce Perry
Sent: Thu 6/09/2007 8:47 AM

Dear Ms. Wellisch,
Attached is the pic with proper citation, sent with regards from Dr. Perry.
Yours,
Emily Perry
The ChildTrauma Academy Staff

From: Mimi Wellisch [mailto:mimiwellisch@bigpond.com]
Sent: Tuesday, August 21, 2007 6:32 AM
To: CTAPresents@ChildTraumaAcademy.org
Subject: Permission for use by Dr Bruce Perry

Good evening
I would like to contact Dr Bruce Perry and was advised by The National Association to PROTECT Children that I could contact him via the Child Trauma Academy, where Dr. Perry is the Senior Fellow. I am currently doing a PhD in Australia, where I once heard him speak, and would like to use the picture (attached) in both my thesis, articles and presentations with his permission. I would also need to know the source of this picture (exact reference). I would be very grateful for your help in forwarding my email to Dr Perry whose articles and book I read with much interest and admiration.
Regards
Mimi Wellisch
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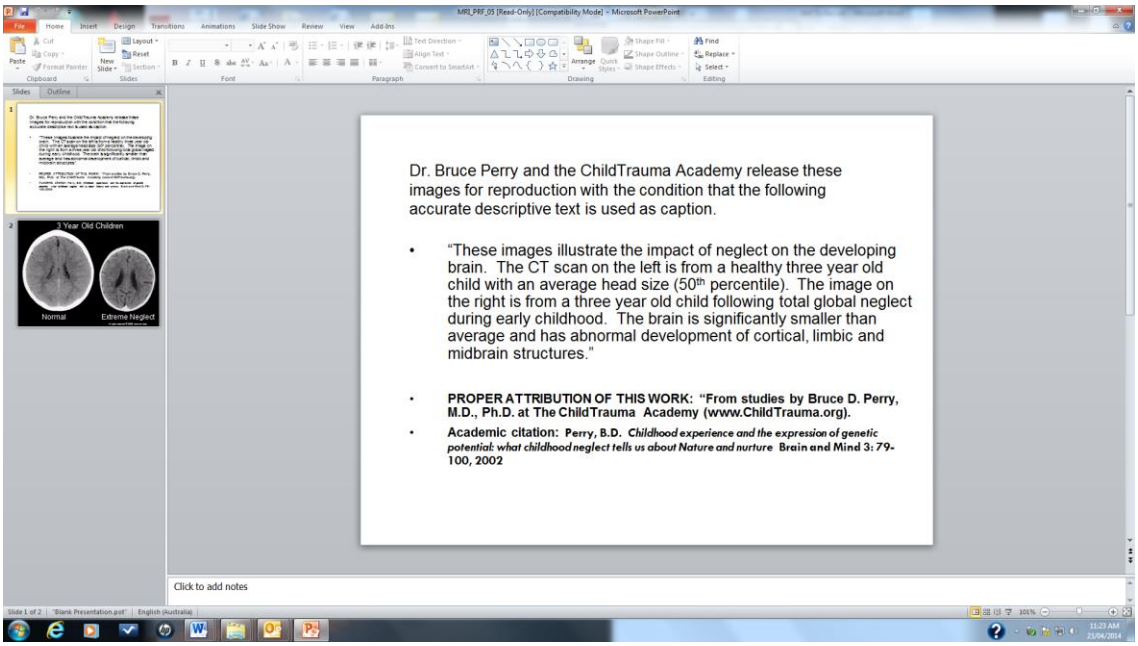

APPENDIX C

Quantitative Study: Case Summaries 1 and 2

Two sets of Case Summaries, Case Summary 1 and Case Summary 2 are contained in the following pages. They provide data collected during the quantitative research. The highlighted lines indicate the 11 mother-child dyad participants who were included in the qualitative research.

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Case Summaries 1

No of cases	Case Id	Source	Child gender	Maternal depression 1	Maternal depression 2	Mother's qualifications	Family income	Secure	Anxious	Avoidant	Secure insecure	Internal-ising	External-ising	No of IQ ≥ 120
1	2	NZ	Male	.	.	Technical college	Income 5	3.60	2.80	3.20	Secure	1	0	0
2	3	NZ	Female	.	.	Honours masters	.	1.80	2.60	2.80	Insecure	0	0	0
3	4	NZ	Male	First 3 months	Professional	BA	Income 3	3.20	3.60	3.20	Insecure	1	1	0
4	5	NZ	Female	.	.	Honours masters	Income 6	3.40	2.80	2.20	Secure	0	0	0
5	6	NZ	Male	.	.	Honours masters	Income 6	3.00	3.00	1.80	Insecure	0	0	0
6	7	NZ	Female	.	.	Honours masters	Income 6	4.20	2.60	2.80	Secure	1	0	0
7	9	NZ	Female	.	.	Honours masters	Income 6	4.60	4.00	2.00	Secure	0	0	3
8	17	NZ	Male	.	.	Completed HS	Income 5	3.40	1.80	1.80	Secure	1	1	0
9	19	NZ	Male	.	.	>Masters	Income 6	3.40	3.60	2.60	Insecure	1	0	1
10	20	NZ	Female	.	.	Technical college	Income 4	3.60	3.20	3.20	Secure	0	0	0
11	23	NZ	Male	.	.	BA	Income 5	2.80	3.00	1.60	Insecure	1	0	3
12	24	NZ	Male	.	.	Honours masters	Income 5	2.60	3.00	2.80	Insecure	0	0	0
13	25	NZ	Female	First 3 months	Professional	Completed HS	Income 6	4.20	3.20	1.20	Secure	1	0	1
14	28	NZ	Male	.	.	BA	Income 3	3.40	2.00	3.40	Insecure	0	0	0
15	29	NZ	Female	.	.	BA	Income 6	3.00	4.60	3.00	Insecure	0	0	0
16	30	NZ	Male	.	.	Honours masters	Income 6	4.40	2.20	2.40	Secure	1	0	4
17	31	NZ	Female	.	.	BA	Income 6	3.60	1.20	1.20	Secure	0	0	0
18	33	NZ	Male	.	.	Technical college	Income 6	2.20	2.00	2.60	Insecure	0	0	0

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Case Summaries 1

No of cases	Case Id	Source	Child gender	Maternal depression 1	Maternal depression 2	Mother's qualifications	Family income	Secure	Anxious	Avoidant	Secure insecure	Internal-ising	External-ising	No of IQ ≥ 120
19	35	NZ	Male	.	.	Technical college	Income 5	4.00	2.00	2.20	Secure	0	0	1
20	36	NZ	Male	.	.	Honours masters	Income 5	3.20	2.40	2.40	Secure	1	1	0
21	38	NZ	Male	.	.	Honours masters	Income 6	3.60	2.40	3.00	secure	0	0	1
22	39	NZ	Male	.	.	BA	Income 5	1.25	1.80	1.00	Insecure	0	0	0
23	42	NZ	Female	.	.	Technical college	Income 5	3.60	2.60	1.40	Secure	0	0	1
24	45	NZ	Female	First 3 months	Medication	BA	Income 5	4.00	2.80	1.60	Secure	0	0	0
25	46	NZ	Male	.	.	Completed HS	Income 6	3.20	1.20	2.00	Secure	0	0	0
26	47	NZ	Male	.	.	BA	Income 5	4.60	2.60	1.20	Secure	0	1	3
27	49	NZ	Female	.	.	BA	Income 6	3.80	1.60	1.80	Secure	0	0	0
28	54	NZ	Male	.	.	BA	Income 6	3.20	2.80	4.20	Insecure	0	0	0
29	55	NZ	Male	.	.	Honours masters	Income 5	4.60	1.80	1.80	Secure	1	1	0
30	56	NZ	Female	.	.	BA	Income 5	4.00	2.20	2.00	Secure	0	0	1
31	57	NZ	Male	.	.	Technical college	Income 6	3.00	3.20	2.40	Insecure	0	0	0
32	60	NZ	Male	.	.	Honours masters	Income 5	4.20	2.00	2.40	Secure	1	1	0
33	61	NZ	Male	.	.	BA	Income 6	2.20	2.00	2.00	Secure	1	0	1
34	62	NZ	Female	.	.	BA	Income 4	3.40	3.40	2.80	Insecure	0	0	0
35	65	NZ	Female	.	.	Technical college	Income 4	3.60	2.80	3.60	Insecure	0	0	0
36	66	NZ	Female	.	.	Completed HS	Income 5	3.60	4.00	3.40	Insecure	0	0	1
37	67	NZ	Male	First 3 months	.	Honours masters	Income 6	3.00	2.00	1.60	Secure	0	0	3

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Case Summaries 1														
No of cases	**Case Id**	**Source**	**Child gender**	**Maternal depression 1**	**Maternal depression 2**	**Mother's qualifications**	**Family income**	**Secure**	**Anxious**	**Avoidant**	**Secure insecure**	**Internal-ising**	**External-ising**	**No of IQ ≥ 120**
38	68	NZ	Male	After 12 months	Medication	Honours masters	Income 4	3.80	2.00	1.60	Secure	1	0	0
39	70	NZ	Male	.	.	Technical college	Income 5	3.20	4.20	4.40	Insecure	0	1	0
40	71	NZ	Male	.	.	Honours masters	Income 6	4.00	2.00	1.80	Secure	1	1	3
41	73	NZ	Female	.	.	BA	Income 5	2.80	2.20	1.60	Secure	0	0	5
42	77	NZ	Male	.	.	BA	Income 5	3.00	1.80	2.40	Secure	1	0	3
43	78	NZ	Female	First 3 months	Medication	BA	income2	4.20	2.60	1.60	Secure	1	1	1
44	80	NZ	Male	.	.	<Completed HS	Income 5	3.60	2.60	2.60	Secure	1	1	0
45	81	NZ	Male	.	.	BA	Income 5	3.40	3.00	4.00	Insecure	1	1	4
46	83	NZ	Female	.	.	BA	Income 4	4.40	1.60	1.40	Secure	0	0	1
47	84	NZ	Male	.	.	Honours masters	Income 5	3.80	2.20	1.80	Secure	0	0	0
48	85	NZ	Male	.	.	BA	Income 5	2.60	4.20	2.40	Insecure	0	0	1
49	86	NZ	Female	.	.	Technical college	Income 6	3.20	2.60	3.20	Insecure	0	0	0
50	88	NZ	Female	.	.	BA	Income 3	2.80	2.40	1.60	Secure	0	0	0
51	89	NZ	Male	.	.	Technical college	Income 6	2.80	1.00	1.80	Secure	0	0	1
52	90	NZ	Female	.	.	<Completed HS	Income 6	3.00	2.20	2.20	Secure	0	1	0
53	92	NZ	Male	.	.	BA	Income 6	3.40	2.60	1.60	Secure	0	0	1
54	95	NZ	Male	.	.	BA	Income 6	3.20	3.60	2.60	Insecure	0	1	0
55	97	NZ	Male	.	.	Honours masters	Income 5	3.80	2.60	3.20	Secure	1	0	3
56	99	NZ	Male	.	.	Honours masters	Income 5	2.80	2.60	2.40	Secure	0	0	4

Case Summaries 1

No of cases	Case Id	Source	Child gender	Maternal depression 1	Maternal depression 2	Mother's qualifications	Family income	Secure	Anxious	Avoidant	Secure insecure	Internal-ising	External-ising	No of IQ ≥ 120
57	101	NZ	Male	.	.	Honours masters	Income 5	2.20	2.40	3.20	Insecure	1	1	1
58	102	NZ	Female	.	.	Honours masters	Income 6	3.40	2.00	2.00	Secure	0	0	3
59	2	MQ	Male	.	.	BA	Income 5	4.80	3.40	1.20	Secure	1	0	1
60	3	MQ	Female	.	.	BA	Income 4	3.00	1.20	3.40	Insecure	0	0	0
61	4	MQ	Male	.	.	Honours masters	Income 6	4.80	1.60	2.00	Secure	0	0	2
62	7	MQ	Male	.	.	Technical college	Income 6	4.40	1.40	1.40	Secure	1	1	2
63	8	MQ	Female	.	.	<Completed HS	Income 6	4.00	1.80	1.80	Secure	0	1	0
64	1	AG	Male	.	.	>Masters	Income 5	4.40	1.60	1.40	Secure	0	0	3
65	3	AG	Female	.	.	BA	Income 6	2.20	1.20	2.20	Insecure	0	0	4
66	4	AG	Male	.	.	BA	.	3.20	2.80	1.80	Secure	0	0	5
67	5	AG	Male	.	.	BA	Income 5	3.80	3.00	3.00	Secure	0	0	3
68	7	AG	Male	.	.	Honours masters	Income 5	3.80	1.80	2.00	Secure	1	1	3
69	8	AG	Male	.	.	Technical college	.	4.20	1.40	1.80	Secure	0	0	3
70	9	AG	Male	First 3 months	.	BA	Income 6	3.20	2.40	2.80	Secure	1	0	3
71	10	AG	Female	.	.	BA	Income 5	4.00	2.20	2.60	Secure	1	1	3
72	11	AG	Male	First 3 months	Professional	Honours masters	Income 5	3.00	2.60	4.20	Insecure	1	0	3
73	12	AG	Female	.	.	BA	Income 6	4.80	3.20	2.00	Secure	0	0	2
74	13	AG	Female	.	.	Honours masters	Income 6	4.00	1.60	2.80	Secure	1	0	2
75	1	LC	Female	.	.	Completed HS	Income 5	2.40	2.60	2.40	Insecure	0	0	2

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Case Summaries 1														
No of cases	**Case Id**	**Source**	**Child gender**	**Maternal depression 1**	**Maternal depression 2**	**Mother's qualifications**	**Family income**	**Secure**	**Anxious**	**Avoidant**	**Secure insecure**	**Internal-ising**	**External-ising**	**No of IQ ≥ 120**
76	4	LC	Female	.	.	BA	Income 5	3.40	3.60	2.80	Insecure	0	1	3
77	9	LC	Male	.	.	BA	Income 6	2.80	3.40	3.00	Insecure	0	0	3
78	11	KC	Male	.	.	BA	.	2.80	2.60	1.60	Secure	1	0	0
79	12	KC	Male	.	.	BA	Income 5	3.00	2.40	2.40	Secure	1	1	5
80	13	KC	Male	.	.	Honours masters	Income 6	3.00	2.00	1.60	Secure	1	0	0
Total	80	80	80	8	6	80	76	80	80	80	80	80	80	80

KEY:

Case ID: Identifying case number of individual mother-child dyads

Source (of participants): NZ = New Zealand psychology clinic, AG = NSW Association for Gifted and Talented Children, KC, LC, MQ = Australian psychology clinics

Maternal depression 1: Diagnosed with postnatal depression during the first 3 or 6 months, diagnosed after 6 or 12 months

Maternal depression 2: Seen a professional, or received counseling or received medication or had sought informal advice

Secure-anxious-avoidant attachment: criterion of category = the highest score of the three attachment styles

Secure-Insecure: Category as determined for analyses purposes (see also Analyses section of Chapter 5 for information on how these categories were determined)

Internalising, externalising: In borderline or clinical range on Children's Behavior Checklist (CBCL): 1 = yes, 0 = no.

No of IQ ≥120 : number of subtests or full scale IQ scores of at least 120 on the WISC-IV (5 possible scores, Verbal Comprehension, Perceptual Reasoning, Working Memory, Processing Speed and full scale IQ)

= participants who were also included in the qualitative study (N = 11)

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Case Summaries 2

No of cases	Case Id	VC	PR	WM	PS	FSIQ	Gender	LD speech	LD spelling	LD reading	LD maths	LD writing	Number of LDs	Mother's Qualification	Family Income	PR–VC 10
1	2	93	88	83	83	84	Male	No LD	No LD	No LD	No LD	No LD	0	Technical college	Income 5	No discrepancy
2	3	102	112	91	100	104	Female	No LD	LD	LD	No LD	No LD	2	Honours masHonours masters	.	PR 10 > VC
3	4	96	100	94	88	93	Male	No LD	LD	LD	LD	No LD	3	BA	Income 3	No discrepancy
4	5	104	96	104	94	101	Female	No LD	No LD	LD	No LD	No LD	1	Honours masters	Income 6	No discrepancy
5	6	119	115	86	85	105	Male	No LD	No LD	LD	No LD	No LD	1	Honours masters	Income 6	No discrepancy
6	7	106	115	110	97	110	Female	LD	LD	LD	No LD	No LD	3	Honours masters	Income 6	No discrepancy
7	9	116	125	107	121	123	Female	No LD	No LD	No LD	No LD	No LD	0	Honours masters	Income 6	No discrepancy
8	17	108	92	91	83	93	Male	No LD	No LD	No LD	No LD	No LD	0	Completed HS	Income 5	No discrepancy
9	19	110	128	105	107	117	Male	No LD	LD	LD	No LD	LD	3	>Masters	Income 6	PR 10 > VC
10	20	102	100	88	109	101	Female	No LD	LD	LD	No LD	LD	3	Technical college	Income 4	No discrepancy
11	23	99	143	126	103	123	Male	No LD	No LD	No LD	No LD	No LD	0	BA	Income 5	PR 10 > VC
12	24	112	110	99	91	107	Male	No LD	No LD	No LD	No LD	No LD	0	Honours masters	Income 5	No discrepancy
13	25	119	121	91	94	111	Female	No LD	LD	LD	No LD	No LD	2	Completed HS	Income 6	No discrepancy

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Case Summaries 2																
No of cases	Case Id	VC	PR	WM	PS	FSIQ	Gender	LD speech	LD spelling	LD reading	LD maths	LD writing	Number of LDs	Mother's Qualification	Family Income	PR–VC 10
1	2	93	88	83	83	84	Male	No LD	No LD	No LD	No LD	No LD	0	Technical college	Income 5	No discrepancy
2	3	102	112	91	100	104	Female	No LD	LD	LD	No LD	No LD	2	Honours masHonours masters	.	PR 10 > VC
3	4	96	100	94	88	93	Male	No LD	LD	LD	LD	No LD	3	BA	Income 3	No discrepancy
4	5	104	96	104	94	101	Female	No LD	No LD	LD	No LD	No LD	1	Honours masters	Income 6	No discrepancy
5	6	119	115	86	85	105	Male	No LD	No LD	LD	No LD	No LD	1	Honours masters	Income 6	No discrepancy
6	7	106	115	110	97	110	Female	LD	LD	LD	No LD	No LD	3	Honours masters	Income 6	No discrepancy
7	9	116	125	107	121	123	Female	No LD	No LD	No LD	No LD	No LD	0	Honours masters	Income 6	No discrepancy
8	17	108	92	91	83	93	Male	No LD	No LD	No LD	No LD	No LD	0	Completed HS	Income 5	No discrepancy
9	19	110	128	105	107	117	Male	No LD	LD	LD	No LD	LD	3	>Masters	Income 6	PR 10 > VC
10	20	102	100	88	109	101	Female	No LD	LD	LD	No LD	LD	3	Technical college	Income 4	No discrepancy
11	23	99	143	126	103	123	Male	No LD	No LD	No LD	No LD	No LD	0	BA	Income 5	PR 10 > VC
12	24	112	110	99	91	107	Male	No LD	No LD	No LD	No LD	No LD	0	Honours masters	Income 5	No discrepancy
13	25	119	121	91	94	111	Female	No LD	LD	LD	No LD	No LD	2	Completed HS	Income 6	No discrepancy

Case Summaries 2

No of cases	Case Id	VC	PR	WM	PS	FSIQ	Gender	LD speech	LD spelling	LD reading	LD maths	LD writing	Number of LDs	Mother's Qualification	Family Income	PR–VC 10
14	28	93	100	71	97	88	Male	No LD	No LD	No LD	No LD	No LD	0	BA	Income 3	No discrepancy
15	29	98	100	104	97	100	Female	No LD	No LD	No LD	No LD	No LD	0	BA	Income 6	No discrepancy
16	30	138	135	126	112	137	Male	No LD	No LD	No LD	No LD	No LD	0	Honours masters	Income 6	No discrepancy
17	31	93	104	91	94	94	Female	No LD	No LD	No LD	No LD	No LD	0	BA	Income 6	PR 10 > VC
18	33	83	90	80	106	86	Male	No LD	LD	LD	No LD	LD	3	Technical college	Income 6	No discrepancy
19	35	110	121	91	118	114	Male	No LD	LD	No LD	No LD	No LD	1	Technical college	Income 5	PR 10 > VC
20	36	116	110	104	103	113	Male	No LD	No LD	No LD	No LD	No LD	0	Honours masters	Income 5	No discrepancy
21	38	100	123	107	97	110	Male	No LD	No LD	No LD	No LD	No LD	0	Honours masters	Income 6	PR 10 > VC
22	39	104	102	97	62	91	Male	No LD	No LD	No LD	LD	LD	2	BA	Income 5	No discrepancy
23	42	112	123	107	109	119	Female	No LD	LD	LD	No LD	No LD	2	Technical college	Income 5	PR 10 > VC
24	45	99	119	88	103	105	Female	No LD	LD	LD	No LD	LD	3	BA	Income 5	PR 10 > VC
25	46	116	102	80	94	101	Male	No LD	No LD	No LD	No LD	No LD	0	Completed HS	Income 6	No discrepancy
26	47	136	112	120	103	124	Male	No LD	No LD	No LD	No LD	No LD	0	BA	Income 5	No discrepancy
27	49	102	112	91	100	104	Female	No LD	LD	No LD	LD	LD	3	BA	Income 6	PR 10 > VC

Case Summaries 2

No of cases	Case Id	VC	PR	WM	PS	FSIQ	Gender	LD speech	LD spelling	LD reading	LD maths	LD writing	Number of LDs	Mother's Qualification	Family Income	PR–VC 10
28	54	106	110	77	78	94	Male	No LD	No LD	No LD	No LD	No LD	0	BA	Income 6	No discrepancy
29	55	93	98	88	85	89	Male	No LD	No LD	No LD	No LD	No LD	0	Honours masters	Income 5	No discrepancy
30	56	121	102	80	100	104	Female	No LD	No LD	No LD	No LD	No LD	0	BA	Income 5	No discrepancy
31	57	110	102	99	91	103	Male	No LD	No LD	No LD	No LD	No LD	0	Technical college	Income 6	No discrepancy
32	60	91	110	102	94	99	Male	No LD	LD	LD	No LD	No LD	2	Honours masters	Income 5	PR 10 > VC
33	61	104	127	88	91	107	Male	No LD	LD	No LD	No LD	LD	2	BA	Income 6	PR 10 > VC
34	62	114	108	91	103	108	Female	No LD	LD	LD	No LD	No LD	2	BA	Income 4	No discrepancy
35	65	116	110	113	109	117	Female	No LD	No LD	No LD	LD	LD	2	Technical college	Income 4	No discrepancy
36	66	130	98	86	106	108	Female	No LD	No LD	No LD	No LD	No LD	0	Completed HS	Income 5	No discrepancy
37	67	130	131	102	100	123	Male	No LD	No LD	No LD	No LD	LD	1	Honours masters	Income 6	No discrepancy
38	68	100	117	91	88	102	Male	LD	No LD	No LD	LD	LD	3	Honours masters	Income 4	PR 10 > VC
39	70	98	110	91	80	95	Male	No LD	No LD	No LD	No LD	No LD	0	Technical college	Income 5	PR 10 > VC
40	71	136	139	104	88	126	Male	No LD	No LD	No LD	No LD	LD	1	Honours masters	Income 6	No discrepancy

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Case Summaries 2

No of cases	Case Id	VC	PR	WM	PS	FSIQ	Gender	LD speech	LD spelling	LD reading	LD maths	LD writing	Number of LDs	Mother's Qualification	Family Income	PR–VC 10
41	73	126	131	120	121	132	Female	No LD	No LD	No LD	No LD	No LD	0	BA	Income 5	No discrepancy
42	77	128	133	94	97	120	Male	No LD	LD	LD	LD	No LD	3	BA	Income 5	No discrepancy
43	78	119	127	99	100	118	Female	No LD	No LD	No LD	No LD	No LD	0	BA	income2	No discrepancy
44	80	85	96	83	94	87	Male	No LD	LD	LD	LD	No LD	3	<Completed HS	Income 5	PR 10 > VC
45	81	128	131	120	118	132	Male	No LD	No LD	No LD	No LD	No LD	0	BA	Income 5	No discrepancy
46	83	126	102	68	97	102	Female	No LD	LD	LD	No LD	LD	3	BA	Income 4	No discrepancy
47	84	104	115	88	94	102	Male	No LD	LD	No LD	No LD	LD	2	Honours masters	Income 5	PR 10 > VC
48	85	114	125	113	91	117	Male	No LD	No LD	LD	No LD	No LD	1	BA	Income 5	PR 10 > VC
49	86	99	108	86	109	102	Female	No LD	LD	No LD	No LD	LD	2	Technical college	Income 6	No discrepancy
50	88	110	117	97	103	110	Female	No LD	No LD	No LD	No LD	No LD	0	BA	Income 3	No discrepancy
51	89	106	135	107	103	119	Male	No LD	No LD	No LD	No LD	No LD	0	Technical college	Income 6	PR 10 > VC
52	90	112	106	88	100	105	Female	No LD	No LD	No LD	No LD	No LD	0	<Completed HS	Income 6	No discrepancy
53	92	114	115	113	118	120	Male	No LD	No LD	No LD	No LD	No LD	0	BA	Income 6	No discrepancy

Case Summaries 2

No of cases	Case Id	VC	PR	WM	PS	FSIQ	Gender	LD speech	LD spelling	LD reading	LD maths	LD writing	Number of LDs	Mother's Qualification	Family Income	PR–VC 10
54	95	83	90	102	80	85	Male	LD	LD	LD	LD	LD	5	BA	Income 6	No discrepancy
55	97	130	131	113	103	127	Male	No LD	No LD	No LD	No LD	No LD	0	Honours masters	Income 5	No discrepancy
56	99	134	139	126	103	132	Male	No LD	No LD	No LD	No LD	No LD	0	Honours masters	Income 5	No discrepancy
57	101	106	129	97	85	109	Male	No LD	No LD	No LD	No LD	No LD	0	Honours masters	Income 5	PR 10 > VC
58	102	132	127	107	100	124	Female	No LD	No LD	No LD	No LD	No LD	0	Honours masters	Income 6	No discrepancy
59	2	112	127	99	103	116	Male	No LD	No LD	No LD	No LD	No LD	0	BA	Income 5	PR 10 > VC
60	3	89	90	86	85	84	Female	No LD	No LD	No LD	No LD	No LD	0	BA	Income 4	No discrepancy
61	4	130	119	99	109	120	Male	No LD	No LD	No LD	No LD	No LD	0	Honours masters	Income 6	No discrepancy
62	7	124	129	107	85	119	Male	No LD	No LD	No LD	No LD	No LD	0	Technical college	Income 6	No discrepancy
63	8	98	104	102	118	106	Female	No LD	LD	LD	No LD	No LD	2	<Completed HS	Income 6	No discrepancy
64	1	121	121	116	97	120	Male	No LD	No LD	No LD	No LD	No LD	0	>Masters	Income 5	No discrepancy
65	3	150	139	110	150	149	Female	No LD	No LD	No LD	No LD	No LD	0	BA	Income 6	No discrepancy
66	4	140	145	126	121	144	Male	No LD	No LD	No LD	No LD	No LD	0	BA	.	No discrepancy

Appendix C

Case Summaries 2

No of cases	Case Id	VC	PR	WM	PS	FSIQ	Gender	LD speech	LD spelling	LD reading	LD maths	LD writing	Number of LDs	Mother's Qualification	Family Income	PR–VC 10
67	5	142	121	104	112	128	Male	No LD	No LD	No LD	No LD	No LD	0	BA	Income 5	No discrepancy
68	7	119	125	113	126	127	Male	No LD	No LD	No LD	No LD	No LD	0	Honours masters	Income 5	No discrepancy
69	8	114	129	110	133	129	Male	No LD	No LD	No LD	No LD	No LD	0	Technical college	.	PR 10 > VC
70	9	128	131	116	91	124	Male	No LD	No LD	No LD	No LD	LD	1	BA	Income 6	No discrepancy
71	10	119	125	113	126	127	Female	No LD	No LD	No LD	No LD	No LD	0	BA	Income 5	No discrepancy
72	11	136	137	113	112	134	Male	No LD	No LD	No LD	No LD	No LD	0	Honours masters	Income 5	No discrepancy
73	12	119	110	126	106	120	Female	No LD	No LD	No LD	No LD	No LD	0	BA	Income 6	No discrepancy
74	13	121	92	126	109	114	Female	No LD	No LD	No LD	No LD	No LD	0	Honours masters	Income 6	No discrepancy
75	1	114	117	110	133	124	Female	No LD	No LD	No LD	No LD	No LD	0	<Completed HS	Income 5	No discrepancy
76	4	124	117	99	128	123	Female	No LD	No LD	No LD	No LD	No LD	0	BA	Income 5	No discrepancy
77	9	114	131	146	115	133	Male	No LD	No LD	No LD	No LD	No LD	0	BA	Income 6	PR 10 > VC
78	11	96	110	91	112	103	Male	No LD	No LD	No LD	No LD	No LD	0	BA	.	PR 10 > VC
79	12	126	141	123	141	142	Male	No LD	No LD	No LD	No LD	No LD	0	BA	Income 5	PR 10 > VC
80	13	95	94	88	97	91	Male	No LD	LD	LD	LD	LD	4	Honours masters	Income 6	No discrepancy

Appendix C

KEY:

Case ID = Identifying case number of individual mother-child dyads
Gender = M=Male, F=Female
VC, PR, WM, PS = WISC-IV subtests Verbal Comprehension, Perceptual Reasoning, Working Memory, Processing Speed
FSIQ = WISC-IV full scale IQ scores
No LD = no learning disorder reported**, LD =** learning disorder reported
Number of LDs = number of different forms of LDs reported by mother with maximum number of 5 (speech, spelling, reading, maths, writing)
Mother's Qualification = highest qualification achieved
Six categories of annual family income: income 1 **=** less than 27,664 income 2 = 27,665- 44,262, income 3 = 44,263-66,394, income 4 = 66,395-88,345, income 5= 88,346-157,000, income 6 = more than 157,000
pr-vc10 = child scored at least 10 points higher in the Perceptual Reasoning score in comparison with the Verbal Comprehension score in the WISC-IV. **No discrepancy** = child did not score at least 10 points higher in the Perceptual Reasoning score in comparison with the Verbal Comprehension score
= participants who were also included in the qualitative study (N = 11)

APPENDIX D

Research Documents and Measures

This appendix contains nine documents. Documents 1 to 7 represent a sample of those used during the quantitative research. Document 1 is the agreement between the researcher and a Sydney-based clinic. Similar agreements were made with other sources. Document 2 was handed to current psychology clinic clients with 7–10 year old children. Documents 3, 4, and 5 were sent to all participants who agreed to participate in the research, except in the case of one clinic where participants had already completed the CBCL during their assessment, and were therefore collected by the researcher with the IQ data. Document 6 is the attachment questionnaire administered to children by psychologists. Document 7 is the letter to psychologists used in association with the NSW Association for Gifted Children participants. Documents 8 and 9 were used in connection with the qualitative research. Document 8 is the information and consent form, and Document 9 contains final qualitative research questions.

Contents

1. Agreement between researcher and associate researcher .....
2. Invitation to participate in research .....
3. Mother information and consent form .....
4. Form for mother .....
5. Child behaviour checklist (CBCL) .....
6. The Attachment Style Classification Questionnaire for Latency Age Children (ASCQ) - Australian Adaptation .....
7. Letter to psychologists .....
8. Information and consent form for participating in a recorded interview .....
9. Qualitative research questions .....

Note that Documents 3 and 8 were printed on a Macquarie University letterhead.

Appendix D

Kids & Co.
CLINICAL PSYCHOLOGY

INNER WEST

Research Agreement Between Mimi Wellisch and Kids & Co. Clinical Psychology Inner West, Department of Psychology, Macquarie University

Research Procedure for Associate Researcher

This is an agreement to jointly undertake research between Mimi Wellisch, PhD student and Lead Researcher, and Kids & Co. Clinical Psychology Clinic referred to hereafter as The Clinic, represented by Director of the Clinic Anna Cohen, Associate Researcher. The research, involving the investigation of the connection between attachment, behaviour and IQ, will commence at the receipt of written ethics approval from Macquarie University and candidature within the Department of Psychology, supervised by Dr Jac Brown.

Phase 1 of the research will involve past clients

- data/file search for children aged **between 7 and 10 years of age** at the time they undertook a **WISC IV assessment during the past 18 months** at The Clinic.
- Unaddressed, sealed and stamped envelopes containing two letters – an introductory letter from The Clinic, and an invitation to participate in research along with the return paid envelope, supplied to The Clinic by the Lead Researcher.
- The invitation will include the incentive prize of a dinner for two, and information about the outcome of the study. The prize will be drawn at the conclusion of the recruitment for the study. The prize will be drawn by the Lead Researcher in the office of supervisor Dr Jac Brown during the next 12 months.
- Potential participants will be identified by The Clinic, and envelopes will be addressed by Clinic staff and posted in order to maintain confidentiality. Parents of the children can then choose to participate by posting off the agreement (which has been given a participant number) to the Lead Researcher, in the return envelopes provided.
- Participant numbers will be maintained at the clinic with child's matching name.
- The Lead Researcher will then send the parent Information and Consent Forms and the questionnaires, and negotiate a mutually convenient time to administer the child questionnaire to the child (approximately 5 minutes) at their home, and collect all the completed paper work.
- After the Information and Consent Form has been collected, the Lead Researcher will advise The Clinic and request the IQ results, quoting the participant number. (VC, PR, WM, PS and FSIQ scores are required)
- All documents will be kept in a locked filing cabinet at 11 Marguerite Avenue, Mt Riverview 2774.

APS Psychologists: 'Good Thinking'
The Australian Psychological Society Ltd

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Senior Clinical Psychologist
Clinical Director, MAPS
Registration PS52890

Michelle Ingram
Senior Clinical Psychologist
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And Associates

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Phone: 02 9555 1168 Fax: 02 9555 9181
ABN 33 094 270 149

Appendix D

Kids & Co.
CLINICAL PSYCHOLOGY

INNER WEST

Phase 2 of the research will involve current clients:

- Letters of offer to potential participants will be delivered to The Clinic.
- Staff will hand out envelopes containing a cover letter from The Clinic and an invitation to participate in research from the Lead Researcher. The letters will be handed to every current client whose child is **between 7 and 10 years of age** and attends the clinic **for a WISC IV assessment**. If parents are interested in participating, they will send a response directly to the Lead Researcher.
- The invitation includes the incentive prize of dinner for two, and information about the outcome of the study. The prize will be drawn at the conclusion of the recruitment for the study. The prize will be drawn by the Lead Researcher in the office of Macquarie University Supervisor Dr Jac Brown during the next 12 months.
- The Lead Researcher will then send the parent Information and Consent Forms and the questionnaires, and negotiate a mutually convenient time to administer the child questionnaire to the child (approximately 10 minutes) at their home, and collect all the completed paper work.
- After the Information and Consent Form has been collected, the Lead Researcher will advise The Clinic and request the IQ results, quoting the participant number. (VC, PR, WM, PS and FSIQ scores are required)
- All documents will be kept in a locked filing cabinet at 11 Marguerite Avenue, Mt Riverview 2774.

The total target number of participants is 80 participants and participating children's FSIQ should be $\geq$80.

Should either children or their parents require counselling as a direct result of distress caused by participation in this research, they can seek counselling through the Australian Psychological Association, www.psychology.org.au, phone 1800 333497. This information will be included in the Parent Information and Consent Form.

The Research involves parent questionnaires posted to participating parents containing:
One mother and 1 father copy of the following
-an Information and Consent Form.
- a background questionnaire
-pages 3 and 4 of the Child Behaviour Checklist
All filled documents are to be completed within 14 days of receipt.

The Lead Researcher will visit the family at an agreed time sometime after 14 days have elapsed and administer
-an ASCQ (attachment) child questionnaire to the child
The Lead Researcher will collect the filled in parent forms.

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Appendix D

I, Dr. Anna Cohen, agree to be Associate Researcher in this study. I understand that I will be co-author in any future publication about the results of this research.

Signed.....Dated 19/10/10

Mimi Wellisch, Researcher

Signed.....Dated 21/10/10

Appendix D

Invitation to Participate in Research

Research indicates that attachment and children's socio-emotional adjustment are related, as is also often the case with children's and parent's attachment styles. The Indigo Assessment & Counselling Centre and researcher Mimi Wellisch, PhD student from Macquarie University are now jointly investigating the connection between children's attachment styles, their problems and behaviours and their IQ. Approximately 150 participants will take part in this study.

You and your child are invited to participate in this study.

Your child's involvement will be to respond to a brief questionnaire during the assessment session about friendships.

Your involvement is to respond to a general questionnaire about you and your child, a Child Behaviour Checklist questionnaire, and an adult attachment questionnaire. It should take no longer than 30 minutes to complete the questionnaires.

If you and your child agree to participate, please fill in the form below and hand it to the Receptionist when you arrive for your appointment.

The Receptionist will then hand you two envelopes:
-A large parent envelope for you to keep
-A small child envelope for you to hand to the psychologist

If you agree to participate you will automatically be in the draw to win a **dinner and theatre for two** in Auckland. The draw will take place at Macquarie University, Sydney, once all data is collected, within the next 12 months. The winner will be notified by the email address, if provided above.

Please note that participation in this study is voluntary and you have the right to withdraw from further participation at any time without having to give a reason, and with no adverse consequence.

Dear Indigo Assessment and Counselling Centre

The undersigned (name)…..…….. and my

child……

would like to participate in the research on attachment and IQ.

Appendix D

Case ID

MOTHER

Information and Consent Form

Research indicates that attachment and children's socio-emotional adjustment are related, as is also often the case with children's and parent's attachment styles. The Indigo Assessment & Counselling Centre and researcher Mimi Wellisch, PhD student from Macquarie University are jointly investigating the connection between children's attachment styles, their problems and behaviours and their IQ. Approximately 150 participants will take part in this study.

You are invited to participate in this study by responding to a general questionnaire about you and your child, a Child Behaviour Checklist questionnaire, and the highly personal aspects of your attachments through an adult attachment questionnaire. It should take about 15 minutes to complete the attached questionnaires.

If you agree to participate in this study, you should

- Agree for page 1 of the WISC IV assessment proforma (IQ test) together with the child questionnaire to be released to the researcher. Page 1 will contain your child's IQ score results, date of assessment and date of birth, but the child's name will be removed to protect privacy
- Complete both copies of this consent form. One is for you to keep
- Complete the questions on the Cover Page
- Complete the Child Behavior Checklist
- **During the next 2 weeks** post your completed questionnaires and the Information and Consent form in the postage paid envelope provided.

Although this would be rare, it is possible that either you or your child may experience discomfort or stress as a result of responding to questions in the questionnaires. If this is the case, one session of free counselling will be available through the Indigo Assessment and Counselling Centre, Phone: 524-7727. Alternatively, arrangements for counselling at a different venue can be found through the New Zealand Psychological Society, www.psychology .org.nz, phone 6444734884. Up to NZ$130 of the counselling session will be paid for by the researcher. The chief investigator will be informed if any distress of a child is observed by the Associate Researcher.

Any information provided to the researchers will remain confidential. Your questionnaires will have a number, and only numbers will be used as identifiers during the study. The collected data will be stored in a locked filing cabinet, and only the researcher, the researcher's Supervisor and the Indigo Assessment & Counselling Centre will have access to data provided. The Centre will retain all psychological assessment data, and the researcher will hold page 1 of the WISC, the Child Behaviour Checklists, The Experience in Close Relations data and your child's friendships questionnaire. Your data will be analysed and compared to those of other participants in the study. It is expected that the findings will be published in a research article in an appropriate journal. It is also possible that other journal articles and a book(s) may be published that will mention or describe the research. You can choose to be sent information about the research findings.

If you agree to participate you will automatically be in the draw to win a **dinner and theatre for two** in Auckland. The draw will take place at Macquarie University, Sydney, once all data is collected, within the next 12 months. The winner will be notified by the email address, if provided above.

Appendix D

Tick if you would like to receive information about the research findings ☐
Tick if you would you like to be in the draw to win a dinner and theatre for two ☐

Please provide your email address if you ticked a box:

Email……..

Please note that participation in this study is voluntary and you have the right to withdraw from further participation at any time without having to give a reason, and with no adverse consequence.

Please tick below:

I agree to participate in this research ☐
My child agrees to participate in this research ☐
I permit my child's p. 1 of the WISC IV proforma to be released to the researcher ☐
I have kept a signed copy of this form ☐

Name (capitals):…….Signed…….Dated……

The ethical aspects of this study have been approved by the Macquarie University Human Research Ethics Committee. If you have any complaints or reservations about any ethical aspect of your participation in this research, you may contact the Committee through the Director, Research Ethics (telephone (02) 9850 7854; email ethics@mq.edu.au). Any complaint you make will be treated in confidence and investigated, and you will be informed of the outcome.

Short Title of Project:	An investigation into attachment and IQ
Aim of Project:	To investigate the link between children's attachment style and high IQ.
Researcher:	Mimi Wellisch, PhD student, Macquarie University Phone: 61247390040 email: mimiwellisch@bigpond.com
Associate Researcher:	Lynn Berresford, Indigo Assessment and Counselling Centre Ph: 5247727 email: lynnberresford@indigo.org.nz

The research is being conducted to meet the requirements for the degree of Doctor of Philosophy at the Department of Psychology under the supervision of Dr Jac Brown, Macquarie University, Ph: 612-9850 8094 email: jbrown@psy.mq.edu.au

Appendix D

FORM FOR MOTHER

Case ID

Thank you for participating in this research

You will find enclosed
Mother and father copies of the following
- two Information and Consent Forms (one is for you to keep).
- the Child Behavior Checklist.
- an adult attachment questionnaire

Child's Gender (please circle): Female Male

Did you find it easy to attach to your child: Yes No

Does your child have a diagnosed learning disability(ies)? If yes, please circle:

Speech Spelling Reading Mathematics Handwriting

Do you yourself have a learning disability? If yes, please describe:

_____

If you had maternal depression please respond to the following:

Were you diagnosed with post natal depression during the first 3 months?	Yes	No
Were you diagnosed with post natal depression during the first 6 months?	Yes	No
Were you diagnosed with post natal depression after the first 6 months?	Yes	No
Were you diagnosed with post natal depression after the first 12 months?	Yes	No

If you answered "Yes" to any of the above:

Did you see a professional?	Yes	No
Did you receive counselling?	Yes	No
Did you receive medication for the depression?	Yes	No
Did you seek informal advice for the depression?	Yes	No

What is your highest completed qualification_____

What is your occupation title (give full title)_____

Describe your main tasks and duties at work_____

How would you describe your health (please circle) good average poor

Annual **family** income from all sources (please circle):

less than 27,664 27,665-44,262 44,263-66394

66,395-88,345 88,346-157,000 more than 157,000

PLEASE **ANSWER ALL ITEMS** AS WELL AS YOU CAN.
PLEASE DO NOT COMPARE RESPONSES WITH YOUR PARTNER.

Appendix D

Child Behavior Checklist

Please print. Be sure to answer all items.

Below is a list of items that describe children and youths. For each item that describes your child ***now or within the past 6 months***, please circle the ***2*** if the item is ***very true or often true*** of your child. Circle the ***1*** if the item is ***somewhat or sometimes true*** of your child. If the item is ***not true*** of your child, circle the ***0***. Please answer all items as well as you can, even if some do not seem to apply to your child.

0 = Not True (as far as you know) **1 = Somewhat or Sometimes True** **2 = Very True or Often True**

0 1 2 1. Acts too young for his/her age
0 1 2 2. Drinks alcohol without parents' approval (describe):_____
0 1 2 3. Argues a lot
0 1 2 4. Fails to finish things he/she starts
0 1 2 5. There is very little he/she enjoys
0 1 2 6. Bowel movements outside toilet
0 1 2 7. Bragging, boasting
0 1 2 8. Can't concentrate, can't pay attention for long
0 1 2 9. Can't get his/her mind off certain thoughts; obsessions (describe): _____
0 1 2 10. Can't sit still, restless, or hyperactive
0 1 2 11. Clings to adults or too dependent
0 1 2 12. Complains of loneliness
0 1 2 13. Confused or seems to be in a fog
0 1 2 14. Cries a lot
0 1 2 15. Cruel to animals
0 1 2 16. Cruelty, bullying, or meanness to others
0 1 2 17. Daydreams or gets lost in his/her thoughts
0 1 2 18. Deliberately harms self or attempts suicide
0 1 2 19. Demands a lot of attention
0 1 2 20. Destroys his/her own things
0 1 2 21. Destroys things belonging to his/her family or others
0 1 2 22. Disobedient at home
0 1 2 23. Disobedient at school
0 1 2 24. Doesn't eat well
0 1 2 25. Doesn't get along with other kids
0 1 2 26. Doesn't seem to feel guilty after misbehaving
0 1 2 27. Easily jealous
0 1 2 28. Breaks rules at home, school, or elsewhere
0 1 2 29. Fears certain animals, situations, or places, other than school (describe): _____
0 1 2 30. Fears going to school
0 1 2 31. Fears he/she might think or do something bad
0 1 2 32. Feels he/she has to be perfect
0 1 2 33. Feels or complains that no one loves him/her
0 1 2 34. Feels others are out to get him/her
0 1 2 35. Feels worthless or inferior
0 1 2 36. Gets hurt a lot, accident-prone
0 1 2 37. Gets in many fights
0 1 2 38. Gets teased a lot
0 1 2 39. Hangs around with others who get in trouble
0 1 2 40. Hears sound or voices that aren't there (describe): _____
0 1 2 41. Impulsive or acts without thinking
0 1 2 42. Would rather be alone than with others
0 1 2 43. Lying or cheating
0 1 2 44. Bites fingernails
0 1 2 45. Nervous, highstrung, or tense
0 1 2 46. Nervous movements or twitching (describe): _____
0 1 2 47. Nightmares
0 1 2 48. Not liked by other kids
0 1 2 49. Constipated, doesn't move bowels
0 1 2 50. Too fearful or anxious
0 1 2 51. Feels dizzy or lightheaded
0 1 2 52. Feels too guilty
0 1 2 53. Overeating
0 1 2 54. Overtired without good reason
0 1 2 55. Overweight
56. Physical problems ***without known medical cause:***
0 1 2 a. Aches or pains (***not*** stomach or headaches)
0 1 2 b. Headaches
0 1 2 c. Nausea, feels sick
0 1 2 d. Problems with eyes (***not*** if corrected by glasses) (describe): _____
0 1 2 e. Rashes or other skin problems
0 1 2 f. Stomachaches
0 1 2 g. Vomiting, throwing up
0 1 2 h. Other (describe): _____

PAGE 3 ***Be sure you answered all items. Then see other side.***

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Appendix D

Please print. Be sure to answer all items.

0 = Not True (as far as you know) **1 = Somewhat or Sometimes True** **2 = Very True or Often True**

0 1 2 57. Physically attacks people
0 1 2 58. Picks nose, skin, or other parts of body (describe): _____

0 1 2 59. Plays with own sex parts in public
0 1 2 60. Plays with own sex parts too much

0 1 2 61. Poor school work
0 1 2 62. Poorly coordinated or clumsy

0 1 2 63. Prefers being with older kids
0 1 2 64. Prefers being with younger kids

0 1 2 65. Refuses to talk
0 1 2 66. Repeats certain acts over and over; compulsions (describe): _____

0 1 2 67. Runs away from home
0 1 2 68. Screams a lot

0 1 2 69. Secretive, keeps things to self
0 1 2 70. Sees things that aren't there (describe): _____

0 1 2 71. Self-conscious or easily embarrassed
0 1 2 72. Sets fires

0 1 2 73. Sexual problems (describe): _____

0 1 2 74. Showing off or clowning

0 1 2 75. Too shy or timid
0 1 2 76. Sleeps less than most kids

0 1 2 77. Sleeps more than most kids during day and/or night (describe): _____

0 1 2 78. Inattentive or easily distracted

0 1 2 79. Speech problem (describe): _____

0 1 2 80. Stares blankly

0 1 2 81. Steals at home
0 1 2 82. Steals outside the home

0 1 2 83. Stores up too many things he/she doesn't need (describe): _____

0 1 2 84. Strange behavior (describe): _____

0 1 2 85. Strange ideas (describe): _____

0 1 2 86. Stubborn, sullen, or irritable
0 1 2 87. Sudden changes in mood or feelings

0 1 2 88. Sulks a lot
0 1 2 89. Suspicious

0 1 2 90. Swearing or obscene language
0 1 2 91. Talks about killing self

0 1 2 92. Talks or walks in sleep (describe): _____

0 1 2 93. Talks too much

0 1 2 94. Teases a lot
0 1 2 95. Temper tantrums or hot temper

0 1 2 96. Thinks about sex too much
0 1 2 97. Threatens people

0 1 2 98. Thumb-sucking
0 1 2 99. Smokes, chews, or sniffs tobacco

0 1 2 100. Trouble sleeping (describe): _____

0 1 2 101. Truancy, skips school

0 1 2 102. Underactive, slow moving, or lacks energy
0 1 2 103. Unhappy, sad, or depressed

0 1 2 104. Unusually loud
0 1 2 105. Uses drugs for nonmedical purposes (***don't*** include alcohol or tobacco) (describe): _____

0 1 2 106. Vandalism
0 1 2 107. Wets self during the day

0 1 2 108. Wets the bed
0 1 2 109. Whining

0 1 2 110. Wishes to be of opposite sex
0 1 2 111. Withdrawn, doesn't get involved with others

0 1 2 112. Worries

113. Please write in any problems your child has that were not listed above:

0 1 2 _____
0 1 2 _____
0 1 2 _____

PAGE 4

Please be sure you answered all items.

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Appendix D

The Attachment Style Classification Questionnaire for Latency Age Children (ASCQ) — Australian Adaptation

Here are 15 sentences. How true is each of the sentences for you? Everyone has his or her own answer. Try to answer only what you feel. This is not a test, and there are no right or wrong answers. Read each sentence carefully. Then choose one of the five answers in the box below. Every answer has a number. Circle the number of the answer that best describes you.

1	2	3	4	5
Never true of me	Sometimes true of me	Often true of me	Mostly true of me	Always true of me

1.	I make friends with other children easily	1 2 3 4 5
2.	I don't feel comfortable trying to make friends	1 2 3 4 5
3.	It is easy for me to depend on my good friends	1 2 3 4 5
4.	Sometimes others get too friendly and too close to me	1 2 3 4 5
5.	Sometimes I'm afraid that other kids won't want to be with me	1 2 3 4 5
6.	I'd like to be really close to some kids and always be with them	1 2 3 4 5
7.	It's all right with me if good friends trust and depend on me	1 2 3 4 5
8.	It's hard for me to trust others completely	1 2 3 4 5
9.	Sometimes I feel that other kids don't want to be my good friends as much as I want to be theirs	1 2 3 4 5
10.	I usually believe that others who are close to me will not leave me	1 2 3 4 5
11.	I'm sometimes afraid that no one really loves me	1 2 3 4 5
12.	I find it uncomfortable and get annoyed when someone tries to get too close to me	1 2 3 4 5
13.	It's hard for me to really trust others, even if they're good friends of mine	1 2 3 4 5
14.	Sometimes kids avoid me when I want to get close and be their good friend	1 2 3 4 5
15.	Usually, when anyone tries to get too close to me it does not bother me	1 2 3 4 5

Appendix D

Letter to Psychologists

Dear Psychologist

A research is currently being undertaken by Mimi Wellisch, PhD student at Macquarie University. The research is investigating the connection between children's attachment styles, their problems and behaviours and their IQ. Participants from New Zealand and Australia are taking part in this study.

A participating parent has given permission for their child's psychologist to release information about his/her WISC-IV results. It would therefore be much appreciated if you (or your employer, if relevant) would approve the release of a copy of page 1 of the child's WISC-IV proforma and forward it in the return envelope provided.

Additionally, although this would be rare, it is possible that the child may experience discomfort or stress as a result of responding to questions in a child questionnaire about friendship. It has been suggested to parents to see a psychologist in such a situation, and you may therefore be contacted for counselling. However, please be reassured that provision of such counselling is entirely at your discretion.

Kind regards,

Mimi Wellisch, Lead Researcher
Psychologist, NSW Reg. No. PS0085101
Grad.Dip Psych, Post Grad Dip. Psych.
Dip.T. (E.C.), B.Ed (E.C.E), MECh (Macquarie)
Associate Member APS
Phone:0431682137

Appendix D

INFORMATION AND CONSENT FORM FOR PARTICIPATING IN A RECORDED INTERVIEW

Thank you for your continued interest and participation in research carried out by Mimi Wellisch, PhD student at Macquarie University. The research investigates the connection between children's attachment styles, their problems and behaviours and their IQ.

This stage of the research involves a recorded interview about your child, your relationship with the child and any issues the child may have, as well as any problems experienced in pregnancy and parenting. The interview will take place at your home and is expected to take approximately 30 minutes. The recording of your interview will be stored in a locked cabinet at the home of the researcher. Your identity will be assigned a number and will remain confidential.

At the end of the interview your child will be asked one question. It would be appreciated if you would ask his or her permission for this one-question interview, however if the child does not wish to participate, no interview with the child will take place. If the child agrees, verbal consent of the child will be sought again on the day of the interview by the researcher.

Although this would be rare, it is possible that you may experience discomfort or stress as a result of responding to questions in the questionnaires. If this is the case, you can seek counselling through The Rod Power Psychology Clinic, Ph: 98508000 or make alternately arrangements for counselling at a different venue through the Australian Psychological Association, www.psychology.org.au, phone 1800 333497. Up to $130 of one counselling session will be paid for by the researcher, if this becomes necessary.

When the interview has been transcribed, you will be sent a copy of the transcript within 3 months. You should read the transcript and make any corrections, if necessary within 2 weeks of receipt. Corrections can be sent to mimiwellisch@bigpond.com. You are free to withdraw from the study at any time.

Appendix D

It is expected that the findings will be published in a research article in an appropriate journal. It is also possible that other journal articles and a book(s) may be published that will mention or describe the research. You can choose to be sent information about the research findings.

The ethical aspects of this study have been approved by the Macquarie University Ethics Review Committee (Human Research). If you have any complaints or reservations about any ethical aspect of your participation in this research, you may contact the Ethics Review Committee through the Director, Research Ethics (telephone 9850 7854; email ethics@mq.edu.au). Any complaint you make will be treated in confidence and investigated, and you will be informed of the outcome.

Please tick below:

I have read and understood the information and agree to participate in this research. ☐

My child agrees to participate in this research ☐

I understand that I can withdraw at any time, and have kept a signed copy of this form ☐

Participant's Name

(capitals):…….Signed…….Dated……

Investigator's Name

……

Signed……Dated……..

Appendix D

QUALITATIVE RESEARCH QUESTIONS

1. How long have you been living in Sydney? How do you like it?
2. Where does your family live? What sort of contact do you have with them?
3. Tell me about your friends
4. What sort of work do you do
5. When you look back over the history of your experience with this child what stands out for you?
6. What is it like having a child at his (her) intellectual level?
7. how do you balance the level of independence and direction with your child and how does your child respond
8. How has it been for you getting services you wanted for your child?
9. How has it been for you to get information about gifted children?
10. How did this child compare to the other children in the family (if more than one child)

Prompts: "Can you tell me more about that?"

If participant does not cover these areas, the following may be asked:

11. What was your experience with pregnancy like? When a person is going to have a child it is common for them to have highs and lows as they plan for the baby. What sort of highs and lows did you experience?
12. How did things change after the birth? It is common for mothers to go through periods of positive and negative thoughts and feelings as they get used to having a child and as the child grows up. What sort of experience with such feelings and thoughts did you have?
13. How would you describe the characteristics of this child?
14. Where do you see your child 10 years from now?
15. Looking back, what do you think you did well and what would you have liked to do differently in relation to your experience of your baby/child?

Finally:

16. What do you think s/he will do as a grown up?

FOR COMPARISON, CHILD WILL BE ASKED SEPARATELY: What would you like to be when you grow up?

APPENDIX E

Ethics Approvals

There are two ethics approvals included in this appendix. The first is the Macquarie University ethics approval to carry out the research, and the second is an ethics approval from one of the participant sources, the NSW Association for Gifted and Talented Children.

Appendix E

31 October 2008

Ms Mimi Wellisch
11 Marguerite Avenue
Mt Riverview
NSW 2774

Reference: HE30MAY2008-D05868

Dear Ms Wellisch

FINAL APPROVAL

Title of project: "An investigation into the link between children's attachment style and high IQ"

Thank you for your recent correspondence. Your response has addressed the issues raised by the Ethics Review Committee (Human Research) and you may commence your research.

Please note the following standard requirements of approval:

1. Approval will be for a period of twelve (12) months. At the end of this period, if the project has been completed, abandoned, discontinued or not commenced for any reason, you are required to submit a Final Report on the project. If you complete the work earlier than you had planned you must submit a Final Report as soon as the work is completed. The Final Report is available at: http://www.research.mq.edu.au/researchers/ethics/human_ethics/forms
2. However, at the end of the 12 month period if the project is still current you should instead submit an application for renewal of the approval if the project has run for less than five (5) years. This form is available at http://www.research.mq.edu.au/researchers/ethics/human_ethics/forms If the project has run for more than five (5) years you cannot renew approval for the project. You will need to complete and submit a Final Report (see Point 1 above) and submit a new application for the project. (The five year limit on renewal of approvals allows the Committee to fully re-review research in an environment where legislation, guidelines and requirements are continually changing, for example, new child protection and privacy laws).
3. Please remember the Committee must be notified of any alteration to the project.
4. You must notify the Committee immediately in the event of any adverse effects on participants or of any unforeseen events that might affect continued ethical acceptability of the project.
5. At all times you are responsible for the ethical conduct of your research in accordance with the guidelines established by the University http://www.research.mq.edu.au/researchers/ethics/human_ethics/policy

If you will be applying for or have applied for internal or external funding for the above project **it is your responsibility** to provide Macquarie University's Research Grants Officer with a copy of this letter as soon as possible. The Research Grants Officer will not inform external funding agencies that you have final approval for your project and funds will not be released until the Research Grants Officer has received a copy of this final approval letter.

Yours sincerely

ETHICS REVIEW COMMITTEE (HUMAN RESEARCH)
LEVEL 3, RESEARCH HUB, BUILDING C5C
MACQUARIE UNIVERSITY
NSW, 2109 AUSTRALIA
Ethics Secretariat: Ph: (02) 9850 6848 Fax: (02) 9850 4465 E-mail: ethics.secretariat@vc.mq.edu.au
http://www.research.mq.edu.au/researchers/ethics/human_ethics

Appendix E

Dr Margaret Stuart
Director of Research Ethics
Chair, Ethics Review Committee (Human Research)

Cc: Dr Jac Brown, Department of Psychology
Professor Alan Rice, Australian Centre for Educational Studies

ETHICS REVIEW COMMITTEE (HUMAN RESEARCH)
LEVEL 3, RESEARCH HUB, BUILDING C5C
MACQUARIE UNIVERSITY
NSW, 2109 AUSTRALIA
Ethics Secretariat: Ph: (02) 9850 6848 Fax: (02) 9850 4465 E-mail: ethics.secretariat@vc.mq.edu.au
http://www.research.mq.edu.au/researchers/ethics/human_ethics
2

Appendix E

NSW ASSOCIATION FOR GIFTED AND TALENTED CHILDREN INC.

TO WHOM IT MAY CONCERN.

The NSW Association for Gifted and Talented Children Inc. supports research into giftedness and its impact on children and their families as part of its core aims. We recognise that this research will help improve community understanding of giftedness and gifted children.

As president of the Association (2008/2009) I am happy for Mimi Wellisch to advertise for participants on our website, and in our journal, *Gifted*. Her advertisement will clearly explain her aims, describe appropriate participants and allow for interested persons to make further enquiries before committing to the project.

Denise Wood

President,

NSWAGTC

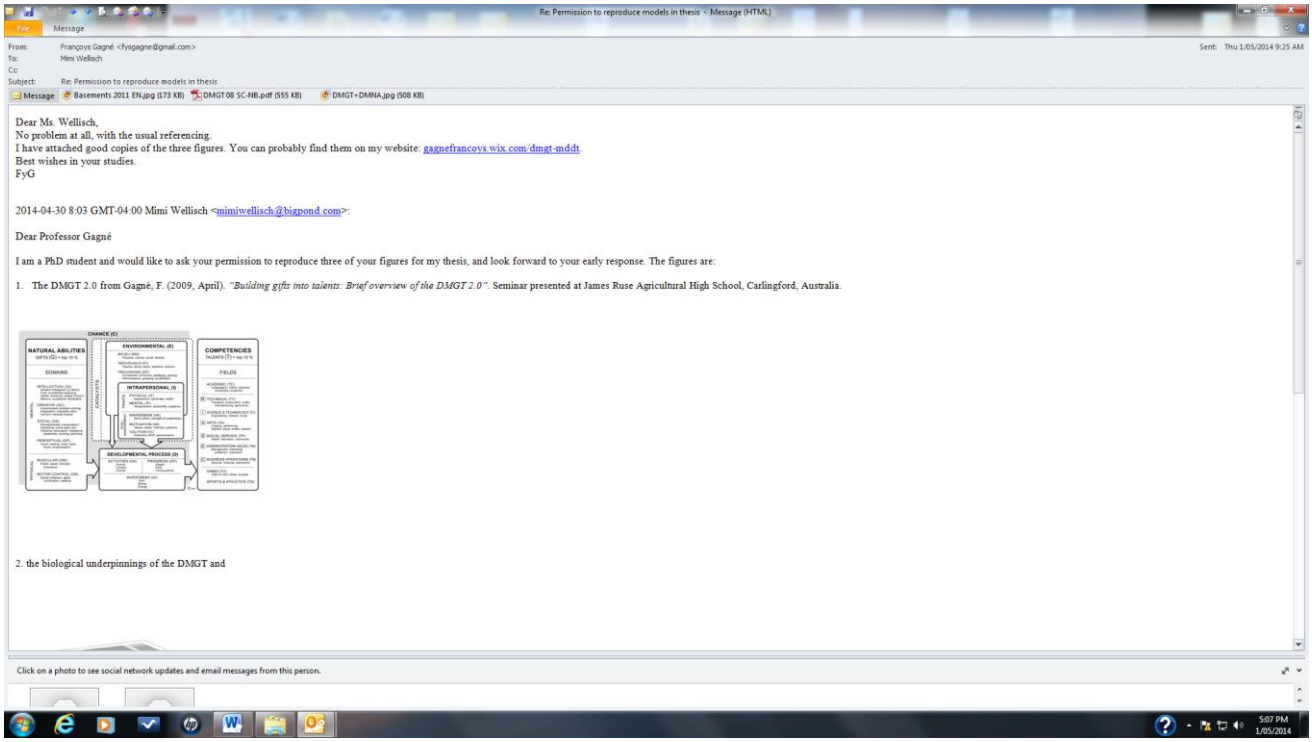
dwood@csu.edu.au

0263384698

0449252093

APPENDIX F

Permission to Reproduce Gagné's Models



Re: Permission to reproduce models in thesis - Message (HTML)

From: François Gagné <fysgagne@gmail.com>
To: Mimi Wellisch
Cc:
Subject: Re: Permission to reproduce models in thesis
Sent: Thu 1/05/2014 9:25 AM

Message | Basements 2011 EN.jpg (173 KB) | DMGT 08 SC-NB.pdf (555 KB) | DMGT+DMNA.jpg (508 KB)

Dear Ms. Wellisch,
No problem at all, with the usual referencing.
I have attached good copies of the three figures. You can probably find them on my website: gagnefrancoys.wix.com/dmgt-mddt.
Best wishes in your studies.
FyG

2014-04-30 8:03 GMT-04:00 Mimi Wellisch <mimiwellisch@bigpond.com>:

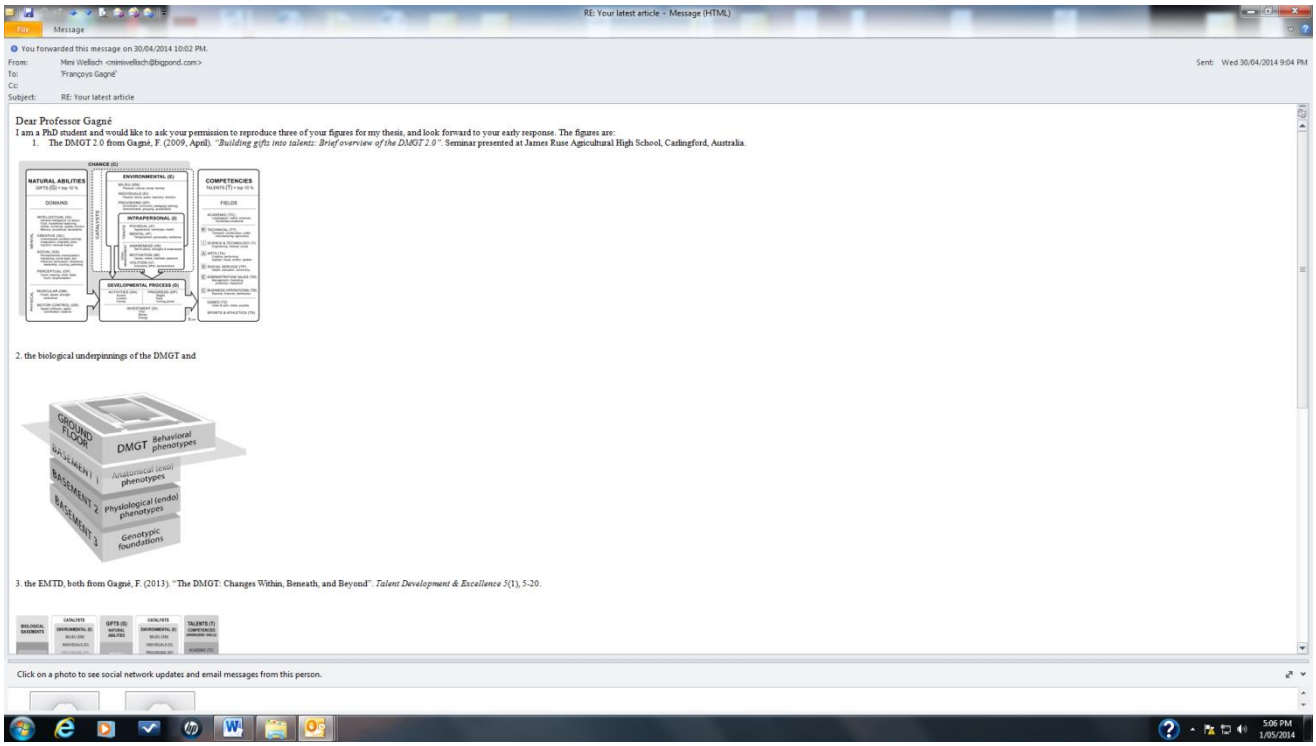
Dear Professor Gagné

I am a PhD student and would like to ask your permission to reproduce three of your figures for my thesis, and look forward to your early response. The figures are:

1. The DMGT 2.0 from Gagné, F. (2009, April). *"Building gifts into talents: Brief overview of the DMGT 2.0"*. Seminar presented at James Ruse Agricultural High School, Carlingford, Australia.

2. the biological underpinnings of the DMGT and

Click on a photo to see social network updates and email messages from this person.



RE: Your latest article - Message (HTML)

You forwarded this message on 30/04/2014 10:02 PM.
From: Mimi Wellisch <mimiwellisch@bigpond.com>
To: 'François Gagné'
Cc:
Subject: RE: Your latest article
Sent: Wed 30/04/2014 9:04 PM

Dear Professor Gagné
I am a PhD student and would like to ask your permission to reproduce three of your figures for my thesis, and look forward to your early response. The figures are:
1. The DMGT 2.0 from Gagné, F. (2009, April). *"Building gifts into talents: Brief overview of the DMGT 2.0"*. Seminar presented at James Ruse Agricultural High School, Carlingford, Australia.

2. the biological underpinnings of the DMGT and

3. the EMTD, both from Gagné, F. (2013). "The DMGT: Changes Within, Beneath, and Beyond". *Talent Development & Excellence 5*(1), 5-20.

Click on a photo to see social network updates and email messages from this person.