

**SWINBURNE UNIVERSITY OF TECHNOLOGY**

**Resilience in adolescents: The development and  
preliminary psychometric testing of a new measure.**

**Deirdre Gartland**

**A thesis submitted in partial fulfilment of the requirements for the award of the  
Professional Doctorate in Psychology (Health Psychology) by Swinburne  
University of Technology**

**2009**

## **Abstract**

The concept of resilience has captured the imagination of researchers and policy makers over the past two decades. However, despite the ever-growing body of resilience research, there is a paucity of relevant measurement tools. In this thesis the development of a comprehensive and theoretically driven measure of resilience in adolescents is detailed. Development of the Adolescent Resilience Questionnaire was guided by an extensive review of the resilience literature and pertinent theoretical frameworks, supplemented by focus groups with young people dealing with adversity in the form of a chronic illness. Scale development and item selection were finalised after two rounds of data collection and revision. The first revision of the conceptually developed questionnaire was conducted using data collected from a sample of adolescents living with a chronic illness and a sample of private secondary school students. The second revision was conducted using data collected from a population sample of year 7 and 9 secondary school students. Factor and scale analysis facilitated the construction of robust scales with acceptable alpha coefficients. The new scales notably reflected the conceptually proposed scales. The Adolescent Resilience Questionnaire encompasses resilience factors in the multiple domains of individual characteristics, family, peers, school and community. It is anticipated that, following further psychometric testing, this new measure of resilience will provide researchers and clinicians with a comprehensive instrument to measure a young person's capacity to achieve positive outcomes despite life stressors.

Key words: Resilience, Adolescent, Scale Development, Risk

## **Acknowledgements**

I am indebted to a number of people in the Centre for Adolescent Health, without whom I would not have begun this research, nor been able to finish it. To Craig Olsson, Lyndal Bond and Susan Sawyer who initiated this area of research, supported me in applying for a scholarship and provided immeasurable practical and theoretical assistance. In particular, I wish to thank Lyndal Bond for her excellent and understated supervision, guidance and counsel, with respect to not only the thesis but also work and life in general.

I would like to acknowledge the financial support provided by the Murdoch and Childrens Research Institute in the form of a Trainee Research Scholarship.

Simone Buzwell provided exemplarily university supervision, with heroically prompt, valuable and uncomplaining revisions of drafts, in addition to much needed encouragement and warmth when the going got tough.

Finally, I wish to thank Greg Aronson for sharing this journey with me, for our three beautiful children, and for being simply sensational through the not inconsiderable challenges of combining the two.

## **Declaration**

I declare that this thesis contains no material which has been accepted for the award to the candidate of any other degree or diploma, except where due reference is made in the text of the thesis. To the best of my knowledge, this thesis contains no material previously published or written by another person, except where due reference is made in the text. I further declare that the ethical principles of Swinburne University of Technology and the Australian Psychological Society, in relation to research, have been observed.

Signed:

Deirdre Gartland

December, 2008

## Table of contents

<b><u>CHAPTER 1.</u></b>	<b><u>INTRODUCTION</u></b>	<b><u>1</u></b>
<b><u>CHAPTER 2.</u></b>	<b><u>RESILIENCE</u></b>	<b><u>4</u></b>
2.1	Introduction	4
2.2	The origins of resilience research	4
2.3	Rationale for resilience research	7
2.4	A definition of resilience	9
2.5	What makes individuals resilient?	14
2.6	A model of resilience	21
2.7	Measurement issues in resilience research	23
<b><u>CHAPTER 3.</u></b>	<b><u>THE MEASUREMENT OF RESILIENCE</u></b>	<b><u>25</u></b>
3.1	Introduction	25
3.2	Previous approaches to the identification of risk and resilience	25
3.3	A need for measurement tools	30
3.4	An examination of published resilience measures	30
3.5	Conclusion	49
<b><u>CHAPTER 4.</u></b>	<b><u>RESILIENCE RESEARCH</u></b>	<b><u>51</u></b>
4.1	Introduction	51
4.2	Individual resilience factors	52
4.3	Family resilience factors	67
4.4	Peer resilience factors.	76
4.5	School resilience factors	81
4.6	Community resilience factors	86
4.7	Conclusion	92
<b><u>CHAPTER 5.</u></b>	<b><u>FOCUS GROUPS ON RESILIENCE</u></b>	<b><u>93</u></b>
5.1	Introduction	93
5.2	Method	95
5.3	Results	98
5.4	Discussion	107

<b>CHAPTER 6.</b>	<b>CONSTRUCTION AND PILOT TESTING OF THE MEASURE</b>	<b>111</b>
6.1	Introduction	111
6.2	The construction of a new measure of resilience in adolescents	111
6.3	Pilot testing the Adolescent Resilience Questionnaire	118
6.4	Method	121
6.5	Participants	121
6.6	Results	128
6.7	Summary	145
<b>CHAPTER 7.</b>	<b>REVISION OF THE ARQ-REV1</b>	<b>146</b>
7.1	Introduction	146
7.2	Method	146
7.3	Results	152
7.4	Discussion	163
<b>CHAPTER 8.</b>	<b>CONCLUSION</b>	<b>174</b>
8.1	Introduction	174
8.2	The development of the ARQ-Rev2	175
8.3	Summary of the ARQ-Rev2 scales	181
8.4	Limitations and further psychometric testing of the ARQ	193
8.5	Characteristics of the ARQ and potential applications	196
8.6	Conclusions	198
<b>APPENDICES</b>		<b>218</b>

## List of tables

<b>Table 1</b>	<b>Different approaches to the classification of resilient individuals using social or academic competence .....</b>	<b>28</b>
<b>Table 2</b>	<b>Summary of the background and development of resilience measures .....</b>	<b>31</b>
<b>Table 3</b>	<b>Summary of the psychometric testing reported for the Resilience Scale.....</b>	<b>37</b>
<b>Table 4</b>	<b>Summary of the psychometric testing reported for the Resiliency Scale .....</b>	<b>41</b>
<b>Table 5</b>	<b>Summary of the psychometric testing reported for the CD-Risc .....</b>	<b>44</b>
<b>Table 6</b>	<b>Summary of the psychometric testing reported for the Resilience Scale for Adults .....</b>	<b>48</b>
<b>Table 7</b>	<b>Summary count of resilience studies and the nature of the relationship reported for individual resilience factors .....</b>	<b>53</b>
<b>Table 8</b>	<b>Summary count of resilience studies and the nature of the relationship reported for family resilience factors .....</b>	<b>69</b>
<b>Table 9</b>	<b>Summary count of resilience studies and the nature of the relationship reported for peer resilience factors.....</b>	<b>77</b>
<b>Table 10</b>	<b>Summary count of resilience studies and the nature of the relationship reported for school resilience factors .....</b>	<b>83</b>
<b>Table 11</b>	<b>Summary count of resilience studies and the nature of the relationship reported for community resilience factors.....</b>	<b>89</b>
<b>Table 12</b>	<b>Demographics of focus group participants .....</b>	<b>96</b>
<b>Table 13</b>	<b>Number of statements, summed across the five focus groups, relating to each theme by domain .....</b>	<b>100</b>
<b>Table 14</b>	<b>Pilot ARQ scales and items .....</b>	<b>115</b>
<b>Table 15</b>	<b>Demographics of school sample .....</b>	<b>122</b>
<b>Table 16</b>	<b>Sample size, gender and response rates for hospital clinics and support groups</b>	<b>123</b>
<b>Table 17</b>	<b>Chronic illness sample demographics.....</b>	<b>124</b>
<b>Table 18</b>	<b>Number of items with less than 20% or greater than 80% endorsement.....</b>	<b>130</b>
<b>Table 19</b>	<b>Revision of the individual domain of ARQ-Pilot to produce ARQ-Rev1 based on the six-factor solution of combined data .....</b>	<b>132</b>
<b>Table 20</b>	<b>Revision of the family domain in ARQ-Pilot to create ARQ-Rev1 based on the two-factor solution of combined data .....</b>	<b>138</b>

<b>Table 21</b>	<b>Revision of the peer domain in ARQ-Pilot to create ARQ-Rev1 based on the two-factor solution of combined data.....</b>	<b>140</b>
<b>Table 22</b>	<b>Revision of the school domain of the ARQ-Pilot to create ARQ-Rev1 based on the two-factor solution of combined data .....</b>	<b>142</b>
<b>Table 23</b>	<b>Revision of the community domain of the ARQ-Pilot to create ARQ-Rev1 based on the two-factor solution of combined data.....</b>	<b>144</b>
<b>Table 24</b>	<b>Student response rates .....</b>	<b>147</b>
<b>Table 25</b>	<b>Participants' gender, age and parent's marital status .....</b>	<b>148</b>
<b>Table 26</b>	<b>Number of items with less than 20% or greater than 80% endorsement.....</b>	<b>153</b>
<b>Table 27</b>	<b>Revision of the ARQ-Rev1 individual domain based on the five-factor solution.....</b>	<b>155</b>
<b>Table 28</b>	<b>Revision of the ARQ-Rev1 family domain based on the two-factor solution .....</b>	<b>158</b>
<b>Table 29</b>	<b>Revision of the ARQ-Rev1 peer domain based on the two-factor solution .....</b>	<b>159</b>
<b>Table 30</b>	<b>Revision of the ARQ-Rev1 school domain based on the two-factor solution .....</b>	<b>161</b>
<b>Table 31</b>	<b>Revision of the ARQ-Rev1 community domain based on a two-factor solution..</b>	<b>162</b>
<b>Table 32</b>	<b>ARQ-Rev2 scales and Cronbach Alpha coefficients.....</b>	<b>164</b>
<b>Table 33</b>	<b>Items in the Confidence (self and future) scale .....</b>	<b>182</b>
<b>Table 34</b>	<b>Items in the social skills and empathy scales.....</b>	<b>183</b>
<b>Table 35</b>	<b>Items in the emotional insight and negative cognition scales.....</b>	<b>185</b>
<b>Table 36</b>	<b>Items in the family connectedness and availability scales.....</b>	<b>186</b>
<b>Table 37</b>	<b>Items in the peer connectedness and availability scales .....</b>	<b>188</b>
<b>Table 38</b>	<b>Items in the school connectedness and supportive environment scales .....</b>	<b>191</b>
<b>Table 39</b>	<b>Items in the community connectedness scale .....</b>	<b>193</b>



## List of figures

Figure 1.	Articles with resilient or resilience in the title as identified in PsychInfo.....	7
Figure 2.	The development of conceptual scales from themes identified in the focus groups and factors from the resilience literature review for the individual domain....	112
Figure 3.	The development of conceptual scales from themes identified in the focus groups and factors from the resilience literature review in the family, peer, school and community domains.....	114
Figure 4.	Tracking scales through the revision process.....	177

## CHAPTER 1. INTRODUCTION

*The more tests of hardship one passes, the greater he will become.*

*Chinese proverb*

The fields of psychiatry and psychology evolved from the discipline of medicine and have traditionally focused on pathology and illness (Anthony & Cohler, 1987). As with medical research, psychiatric and psychological research has generally addressed the question of *who* gets sick and *why*? Understanding why people get sick enables clinicians and policy makers to develop prevention and treatment approaches that decrease the burden of illness for individuals and communities. Thus many exposures or experiences have been identified that increase the likelihood of poor mental health outcomes. For example, having a parent with schizophrenia significantly increases the likelihood of a child experiencing psychotic episodes or developing the illness themselves (Garmezy, 1974a; Garmezy & Streitman, 1974). Having a parent with schizophrenia can be described as a ‘risk factor’, a factor that increases the risk of negative outcomes for the child.

A less common but equally important question to ask is who *does not* get sick and *why*. Over the last two decades, there has been increasing interest in individuals who achieve positive outcomes despite being exposed to factors known to increase the risk of poor outcomes (Cicchetti, 2003; Masten & Coatsworth, 1998). Researchers have argued that many individuals commonly navigate adversity successfully, but that this has long gone unnoticed or been ignored due to a focus on pathology and illness (Garmezy, 1985; Masten, 2001). Investigation of how and why some individuals successfully ‘overcome’ adversity or significant trauma has come to be known as ‘resilience’ research. Chapter 2 provides a brief review of the historical development of the concept of resilience and the growth of research in this area. In addition, the definition and model of resilience employed in this research are outlined.

Public interest and research around the concept of resilience has expanded exponentially over the past decade. However, examination of the literature indicates that there is a need for greater uniformity and clarity in the definition, terminology

and operationalisation of resilience in order to facilitate greater scientific rigour in resilience research. An integral part of this process is the development of standard means of measurement. The expansion in resilience research has not yet translated into the development of theoretically driven, psychometrically valid measures, and there appears to be a general consensus that there is a critical need for greater consideration of measurement issues in resilience research (Cicchetti & Garmezy, 1993; Kumpfer, 1999; Luthar, Cicchetti, & Becker, 2000a; Luthar & Cushing, 1999). Examination of the measurement approaches currently utilised in resilience research and the strengths and limitations of the available measurement tools are the focus of Chapter 3. Only four resilience measures have been published to date, with investigation revealing all have significant content and psychometric limitations. Most significantly, none of the measures addressed the full range of factors identified as important for resilient outcomes. Therefore, the development of a psychometrically valid and multi dimensional measure of resilience is long overdue, and represents a serious gap in the tools required for rigorous resilience research. The aim of the current study is to develop a comprehensive and psychometrically valid resilience measure that is developmentally appropriate for the target population of adolescents.

Chapters 4 and 5 describe the processes by which the content for the new measure of resilience was established. Chapter 4 comprises a review of the resilience literature. The review was used to identify resilience factors that have been robustly supported by research in the five ecological domains relevant to adolescents - individual characteristics, family, peers, school and community. Following the review, focus groups were conducted with adolescents living with a chronic illness (see Chapter 5). The open-ended approach of focus groups was employed to highlight topics that may have otherwise been overlooked; to provide an up-to-date adolescent perspective; and to provide current adolescent language and forms of expression around this topic for use in the writing of items.

In Chapter 6, the construction and pilot testing of the new measure of resilience is elaborated. Firstly, the literature review and focus group findings were amalgamated and used to develop conceptual scales and corresponding items were written. Items were written according to the guiding principals for item development

as summarised by T. Kline (2005) and Streiner and Norman (1996). The functionality and readability of the completed pilot questionnaire was tested with two adolescent focus groups. The piloting of the questionnaire with secondary school students and adolescents living with a chronic illness and the analysis of the data is then detailed. Finally, the revision process and revised questionnaire are presented.

Chapter 7 details the administration of the revised questionnaire to a random sample of Victorian secondary school students. An identical process of data analyses to that shown in Chapter 6 was used to revise the scales and items for a second time, with the aim of creating a brief, functional measure of resilience. The conceptual and psychometric strengths and weaknesses of the twice-revised resilience measure are then explicated in Chapter 8 and a plan for further psychometric testing outlined.

In summary, while the field of resilience has grown rapidly in the previous two decades, the development of measurement tools has been limited. To facilitate greater scientific rigour in resilience research it is necessary to improve the measurement tools available. The aim of this study is to develop a theoretically driven, comprehensive and psychometrically valid measure of resilience in adolescence, encompassing the range of factors and domains identified as important in current resilience research.

## **CHAPTER 2. RESILIENCE**

*Don't measure a man's success by how high he climbs but how high he bounces when he hits bottom. General George Patton (1885 –1945)*

### **2.1 Introduction**

It has long been recognised that negative life experiences place individuals at risk of poor outcomes (Rutter, 1985c), however not all individuals succumb to adversity and this has been the focus of resilience research. The concept of resilience grew directly out of risk research (Masten, Best, & Garmezy, 1990) with the identification of positive growth and development in some individuals exposed to risk situations known to create a high likelihood of pathological development (e.g. Anthony & Cohler, 1987; Anthony & Kopernik, 1974; Garmezy, 1971, 1974b; Rutter, 1979). This development of competence in the face of adversity came to be known as ‘resilience’ (Egeland, Carlson, & Sroufe, 1993; Garmezy, 1991; Rutter, 1999) and research in this area has grown extensively over the last two decades (Cicchetti, 2003; Masten & Coatsworth, 1998).

The following chapter begins with a brief review of the historical development of the concept of resilience. Reasons for studying resilience will then be explicated and the definition and model of resilience employed in the current research will be outlined. Current issues evident in resilience research will be explored, highlighting a need for greater standardisation in measurement.

### **2.2 The origins of resilience research**

The fields of medicine, psychiatry and psychology have a long history of examining the precursors or factors that potentiate disease or mental illness, social or behavioural difficulties (e.g. American Psychological Association, 1921; Colin, 1921; Horton, 1920; Menzies, 1920). Such factors can be referred to as risk factors, where identification of such factors in an individual’s life indicates an increased risk of

negative outcomes such as a mental illness, social or behavioural difficulties (Masten et al., 1990). Risk factors identified as predictors of subsequent developmental problems are many and vary according to developmental stage, gender, historical and cultural context (Egeland et al., 1993; Werner, 1986). Risk factors can range from broad global factors such as poverty or societal constraints (eg belonging to a minority racial group that is vilified by the majority) to direct exposure, for instance having a chronic illness, being sexually abused, or experiencing physical violence. For instance, the experience of having a parent with a mental illness has been identified as a risk factor associated with a range of poor outcomes. In one study, 15% of children born to a parent with schizophrenia suffered some form of “schizophrenic disorder” by the age of 45, while a further 35% manifested some “alternative deviant, atypical behaviour” (Garmezy, 1971). Similarly, findings of a significantly increased risk of emotional and behavioural disturbances have been shown for children of parents suffering from depression or personality disorder (Rutter & Quinton, 1984b; Sameroff, Seifer, & Barocas, 1983).

In the 1970's a number of psychiatrists and psychologists began to draw attention to children who showed positive development despite being exposed to significant risk in the form of negative genetic or experiential contexts (Anthony & Kopernik, 1974; Garmezy, 1971, 1974b; Rutter, 1979). For instance in the 1970's a psychiatrist called Anthony began writing about the children of his patients with schizophrenia. These children were exposed to significant genetic risk of psychopathology, in addition to the life deprivations posed by a parent with a psychotic illness, yet a significant proportion of the children were showing positive outcomes (Anthony & Kopernik, 1974). Anthony (1987) wrote of a ‘clinical bias’, which resulted in a narrow focus on the offspring who developed illnesses while the relatively well-adjusted children were taken for granted and ignored. However when the children at the normal end of the psychopathology spectrum were examined, the authors reported that around 10% of the total sample was:

... not simply escaping whatever genetic transmission destiny had in store for them, and not merely surviving the milieu of irrationality generated by psychotic parenting; they were apparently thriving under conditions that sophisticated observers judged to be highly

detrimental to a child's psychosocial development and well-being.  
(Anthony, 1987, p. 497)

Anthony (1987) described these children as having found ways of mastering the recurrent adverse events in their lives. According to Anthony and Cohler, they showed sound defences, had a wide range of coping skills, evidenced constructive and creative capacities for dealing with frightening realities and approached life with an inherent robustness (Anthony & Cohler, 1987). Such individuals he labelled 'invincible' or 'invulnerable'.

Garmezy, also working with parents suffering schizophrenia and their offspring, similarly identified children who were developing well despite exposure to significant genetic and experiential risks (Garmezy, 1974b, 1985, 1987, 1991). He wrote "what is surprising is not the existence of such children but rather the neglect and lack of attention paid them by competent researchers and competent clinicians." (1985, p. 217). Subsequently, a number of researchers began to focus their attention on individuals who achieved despite significant adversity and this field of research began to rapidly expand.

However, the terminology used by these early researchers came to be seen as misleading. It was acknowledged that these children were not *immune* to stress, rather they were able to bounce back or recover from biological or experiential factors that carried a high likelihood of negative outcomes. Such individuals therefore came to be known as 'stress resistant' or 'resilient' (Rutter, 1979). In 1985 Garmezy wrote:

It is not presumptuous to suggest that the next decade will witness a surgent growth of interest in the study of resiliency and stress-resistant components of persons presumed to be at risk for later disorder - and that such investigations will be of importance whatever the theoretical model used to explain the origins of mental illness. (Garmezy, 1985, p. 217).

As Garmezy predicted, papers addressing resilience have increased exponentially over the last two decades (see Figure 1). The phenomenon of resilience

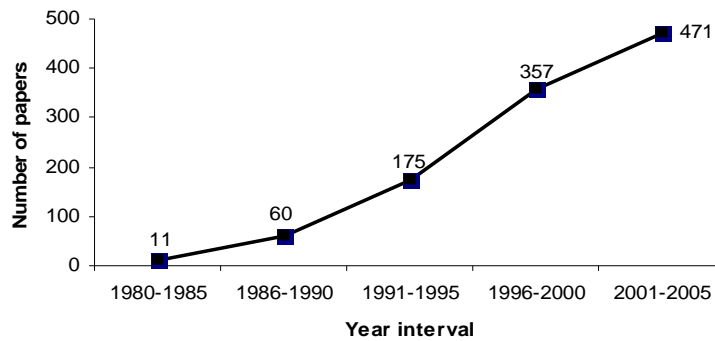


Figure 1. Articles with resilient or resilience in the title as identified in PsychInfo

has been defined in terms of: positive developmental outcomes in the face of adversity or stress (Masten, 2001; Wyman et al., 1999); being relatively resistant to psychosocial risk experiences (Rutter, 1999); and successful adaptation or development of competence despite high risk status or chronic stress (Egeland et al., 1993). Such definitions, while differing in terminology describe the two common factors necessary for defining resilience: firstly the experience of adversity or stress; and secondly the achievement of positive outcomes despite adversity.

### 2.3 Rationale for resilience research

“Surprisingly large numbers of people mature into normal, successful adults despite stressful, disadvantaged, or even abusive childhoods.” (Basic Behavioural Science Task Force, 1996, p. 22). Pioneers in resilience research argued that this important perspective has long been ignored or gone unnoticed (Anthony & Cohler, 1987; Garmezy, 1985; Rutter, 1979; Werner, 1987). "This truly fascinating phenomenon, children who reveal competence and strength despite the presence of adversities, has been inexplicably neglected" (Garmezy, 1987, p. 164). But beyond being a ‘fascinating phenomenon’, why should resilience be investigated?

Resilience research has the potential to assist researchers and clinicians in a number of ways. Firstly, the examination of why certain individuals do not succumb to adversity assists the theoretical understanding of both healthy and unhealthy development. Both society and parents have a stake in understanding how healthy



development occurs in order to facilitate and promote such development. Furthermore, many children and adults are exposed to disadvantage and hardships (Garmezy, 1993) and it becomes increasingly important to understand how healthy development occurs or is maintained in the face of adversity (Masten & Coatsworth, 1998).

Secondly, resilience research is aimed at identifying factors that protect or ameliorate the risk of mental illness. Investigation of *who does not get sick* and *why* has a vital role to play in assisting clinicians and policy makers to develop prevention and treatment approaches aimed at decreasing the burden of illness on individuals and communities. Greater understanding of why positive or negative outcomes occur facilitates effective intervention and prevention. Rutter writes: “The potential for prevention surely lies in increasing our knowledge and understanding of the reasons why some children are not damaged by deprivation.” (1979, p. 49). This knowledge then provides a springboard from which to develop preventative interventions for children and families at risk of poor outcomes due to exposure to adversity (Kumpfer, 1999; Luthar, 1997; Masten & Coatsworth, 1998; Wyman et al., 1999). Greater understanding of risk and protective factors and how they operate in individual lives will assist health workers, policy makers and parents to better support the positive growth and development of children. Masten and Powell argue that the great achievement of the pioneers of resilience research was in:

... realising and then convincing others, that understanding what would come to be called *resilience* in individual development had the potential to inform policy, prevention programs, and interventions. Their work and ideas inspired others to undertake studies of competence and mental health in the lives of children threatened by significant risk or adversity, with the ultimate goal of improving the chances and development of future generations of children faced with such risks. (Masten & Powell, 2003, p. 2)

A resilience framework has multiple implications for the development and implementation of intervention programs. Promoting competence is an appealing way of describing interventions to both stakeholders and participants, for example fostering academic success rather than prevention of unplanned pregnancy,

delinquency or school dropout (Masten & Powell, 2003). Furthermore, promoting competence in one area can impact more broadly than acting to prevent a single negative outcome. To use the previous example, fostering academic success is likely to impact positively on all three negative outcomes (prevention of unplanned pregnancy, delinquency and school dropout), while promoting contraceptive use may not. Programs that foster competence have been shown to be more successful than those singularly focused on prevention (Cicchetti, Rappaport, Sandler, & Weissberg, 2000; Masten, 2001). Thus investigation of resilience and the identification of factors that protect individuals from negative outcomes have wide ranging implications and benefits.

## **2.4 A definition of resilience**

One of the criticisms levelled at resilience research is a perceived lack of a unified understanding or definition of the construct. Resilience has been defined in numerous ways and much confusion has arisen from different approaches to the operationalisation and measurement of key constructs (Cicchetti & Garmezy, 1993; Glantz & Sloboda, 1999; Kumpfer, 1999; Luthar et al., 2000a). Many investigators fail to identify the definition of resilience underpinning their research. As Kaplan (1999) reports, when definitions have been stated: “Frequently the defining language is so imprecise that it is easy to misinterpret the intent of the investigator regarding which meaning is applicable” (p. 19). Variation and lack of specificity in the definition of resilience has serious implications as to the research methodology used and the reporting of findings. In the absence of any universal definition of resilience, researchers must clearly explicate the definition underlying their research. Cicchetti and Garmezy (1993) write “while it may still be premature to agree on the definition of resilience, this may well be a future goal of investigators. In the interim, specifics on the operationalisation of resilience need to be included in all research reports.” (p. 499). Fourteen years later, it no longer seems premature to agree on a definition of resilience. To this end, two central issues underlying differences in the definition of resilience are explored below, and the definition of resilience underpinning the current research detailed.

### ***2.4.1 Resilience as an individual characteristic versus process***

In early resilience research, resilience was identified as a characteristic of the individual (e.g. Anthony, 1987) and resilient children were attributed as exceptional people, unique in their ability to prevail against the odds. Individuals were labelled resilient if they faced adversity but were identified as maintaining functioning in a particular area of interest such as social or academic competence (e.g. Egeland et al., 1993; Spaccarelli & Kim, 1995). A criticism levelled at this approach is that as a result “resilience has been equated with virtually any direct or indirect variable correlated or predictive of positive outcomes in high-risk children” (Kumpfer, 1999, p. 182, 2004). Such project driven specificity in the operationalisation of resilience can lead to a confusing plethora of findings and render it difficult to compare results and develop unified knowledge in the field.

Subsequently, longitudinal studies revealed that resilience was not a fixed characteristic that individuals were born with, but one that develops over time and fluctuates contextually. In the face of severe, ongoing adversity, resilience has not been found to be stable. For example, Egeland and colleagues conducted an 18-year longitudinal study of 267 women recruited during pregnancy and their offspring, considered high-risk due to poverty (Egeland, 1997; Egeland & Farber, 1984; Egeland, Jacobvitz, & Sroufe, 1988; Egeland & Kreutzer, 1991; Egeland, Yates, Appleyard, & van Dulmen, 2002). The authors found “poverty and factors associated with poverty to have had a pervasively negative effect on child adaptation.” (Egeland et al., 1993, p. 519). All of the infants exposed to more extreme risk (i.e. emotionally withdrawn caregiving and maltreatment) showed poor functioning but a small number of infants exposed to less severe adversity were functioning well. However, the authors reported that the negative effects of poverty increased cumulatively as the children got older, and fewer and fewer children functioned well at each subsequent assessment. Exposure to pervasive, ongoing adversity significantly decreases the likelihood of resilient outcomes<sup>1</sup>. It appears that resilience is not a fixed trait of an individual, but rather a process of adaptation and ongoing development.

---

<sup>1</sup> Interestingly, the results of the Rochester Longitudinal Study (Sameroff, Bartko, Baldwin, Baldwin, & Seifer, 1998) showed a high level of stability not in resilient outcomes, but in risk

Resilience therefore fluctuates over time and context - “resilience cannot be seen as a fixed attribute of the individual. Those people who cope successfully with difficulties at one point in their life may react adversely to other stressors when their situation is different. If circumstances change, resilience alters.” (Rutter, 1987, p. 317). Resilience has therefore come to be defined as a *process* and with researchers attempting to identify and examine “the mechanisms or processes that act to modify the impact of risk settings” (Olsson, Bond, Burns, Vella-Broderick, & Sawyer, 2003, p. 4). This entails examining factors that act to intensify risk (risk factors) and those that act to ameliorate risk (protective factors) and how these factors interact with individual and environmental factors to facilitate resilient or vulnerable outcomes. Individuals are not labelled ‘resilient’ rather they show resilient outcomes in the particular setting described. This more complex definition is becoming the prevailing approach in the field (Luthar et al., 2000a; Luthar & Zigler, 1991; Masten, 1994; Sameroff & Mackenzie, 2003) and is adopted in this research.

As a process, resilience needs to be considered within the context of life span development. As individuals grow, different developmental tasks gain salience. Developmental tasks are the skills, knowledge and functions that a person must attain before they can successfully move onto the next stage (Heaven, 1994). For example, during adolescence, salient developmental tasks include developing greater autonomy from parents, positive relationships with peers of the same and opposite sex, preparing for a career and adopting a masculine or feminine social role (Havighurst, 1972). “New vulnerabilities and/or strengths may emerge during developmental transitions throughout the life course as well as during periods of acute stress” (Cicchetti & Garnezy, 1993, p. 499). Rutter sees such times of developmental change and growth as “possible turning points whereby success in the form of personal relationships or task accomplishment may change the life course onto a more adaptive trajectory” (Rutter, 1987). Turning points are times when risk or protective processes become vitally important and may represent key times for effective

---

exposure. The authors classified children as high-risk (four or more risk factors) and low-risk (zero or one factor). Only 2 of the 212 children changed categories between 4 and 13 years of age. Thus in a natural setting the lives of these high-risk children showed little significant change in terms of the difficulties they faced.

interventions aimed at facilitating resilient outcomes. Thus resilience has both a temporal and a developmental component.

In summary, "resilience is not a trait of an individual, though individuals manifest resilience in their behaviour and life patterns" (Masten & Powell, 2003). Resilience is not a goal that can be 'achieved' by individuals. It follows that children and adolescents who show positive outcomes despite a particular adversity are not 'immune' to further adversity, nor will children who are vulnerable at one point necessarily remain vulnerable. Changes in developmental demands, exposure to different risk and protective factors, or ongoing, unrelenting exposure to risk will impact on resilience at any time point. Thus, in keeping with current research (Bartelt, 1994; Masten et al., 1990; Rutter, 1987; Werner, 1986; Wolfe, 1995), a definition of resilience as an ongoing process set within the context of individual development is adopted in the current study.

#### ***2.4.2 Resilience as unidimensional versus multidimensional***

A second important aspect of resilience is that it is not an *all or nothing* phenomenon. While many individuals can be identified that show competence in one area despite exposure to adversity, it appears that few individuals can be identified who show universal competence without deficits. Luther, Doernberger and Zigler (1993) in a six month prospective study examined 138 high and low stress inner city adolescents across a number of academic domains, internalising and externalising behaviour problems and depression. The authors report that of the highly stressed adolescents classified as resilient (based on scores in the top third of one or more domains of school competence) 60% were in the lowest third on one or more of the other academic domains. Similarly, 85% of these highly stressed adolescents reported significant difficulties in social competence and/or emotional distress. The authors report that the resilient adolescents reported elevated levels of emotional distress compared to low-stress and high-stress, low competence adolescents. Thus individuals highly competent in one domain of adjustment may be suffering deficits in other areas and, particularly concerning, be experiencing high levels of emotional distress.

An alternative mode of exploring the specificity of resilience is exhibited by Tolan (1996). Tolan examined the effect of widening resilience criteria in two samples of poor inner city youth, a general sample (n = 786) and males identified as high-risk (n = 342). Employing the single criterion of absence of psychopathology, he classified the majority of the general sample and high-risk youths as resilient (82% and 79% respectively). However adding academic competence decreased the proportions significantly (38% and 9% respectively). Adding a third criteria of being 'at-risk' and requiring stability of competence over two years meant that very few youth retained a resilient classification (2% and 0% respectively). Thus while most youths showed positive outcomes in terms of mental health, few youths showed stable competence across multiple domains. Similarly, Kaufman and colleagues (1994) examined the academic and social competence and clinical symptomatology in a sample of 56 maltreated primary school children. Forty-five percent of the children received scores in the non-resilient range in all three areas, 37% were classified as resilient in one domain, 13% in two domains and only three children (5%) were classified as resilient in all three domains. Whilst such results have been used to question the validity of the concept of resilience (Glantz & Sloboda, 1999; Tolan, 1996), conceptualising resilience as a multidimensional process allows for variation in outcome across different domains (Cicchetti & Garmezy, 1993; Luthar et al., 1993). Examining resilience across different domains of functioning is therefore required to provide a comprehensive and realistic picture of individuals functioning.

It is important to note that Luthar and colleagues' observation of the variability in competence across domains was not limited to *resilient* adolescents. At all levels of stress the majority of adolescents who excelled in one domain showed significant problems in another sphere (Luthar, 1997). This highlights how resilience sits within normal developmental constraints. Thus, while Luthar, Doernberger and Zigler's (1993) report that resilient individuals may be vulnerable to emotional distress seems antithetical, placed in the context of normal development, the finding simply reinforces that resilient individuals are not invulnerable or invincible. As summarised by Cicchetti and Garmezy (1993):

We believe that some individuals can maintain competent functioning despite an interfering emotionality. This

conceptualisation is important in its emphasis on the dialectic that exists between successful adaptation and the struggles associated with this process. By recognising that even 'resilient' children need support and may be vulnerable throughout their lives, we will be helping to ensure the provision of adequate and necessary services for these children. In fact, the very availability of support may be a critical component in the continued expression of resilience. (p. 500).

Being multi dimensional, resilience can not be examined without acknowledging the range of domains relevant to an individual. Resilience in one domain may not confer resilience in another. It is important therefore to examine resilience broadly across domains or to clearly explicate the limits within which resilience has been investigated. Within the current study, the range of domains relevant to the target population of adolescents was investigated.

Thus, the definition underlying the current research identifies resilience as positive developmental outcomes in the face of adversity or stress; an ongoing process set within the context of individual development; and multi-dimensional with resilience in one domain not necessarily associated with resilience in another. Current understanding of what makes individuals resilient and how protective and risk factors interact to produce resilient outcomes will be addressed in the next section

## **2.5 What makes individuals resilient?**

What enables some children exposed to risk factors such as a parent with a mental illness to escape the negative impact of parental and family disorder and distress? Researchers have endeavoured to isolate and identify the individual characteristics or environmental factors that 'protect' such individuals from the negative outcomes exhibited by others in the same situation.

The identification of protective factors that operate to improve the likelihood of positive outcomes in the face of adversity has been a major focus of resilience research. For instance, Egeland, Jacobivtiz and Sroufe (1988) investigated mothers

who had been physically, sexually or emotionally abused as children. The authors found that 40% of these mothers had abused their own children; 30% provided borderline care; while the remaining 30% provided *good* quality mothering. Further examination of the mothers who were able to break the cycle of abuse revealed a common experience. These mothers reported that a foster parent, relative or other adult provided them with emotional support as children or adolescents, and some mothers had also engaged in long term therapy. Thus the experience of a positive, emotionally supportive relationship with an adult appeared to provide *protection* against the negative trajectory played out by the other mothers who had also experienced abuse. Many other studies have identified an emotionally supportive relationship with a caregiver or other adult as an important factor in resilient outcomes (Clark, 1983; Fergusson & Lynskey, 1996; Garmezy, 1987; Smith & Prior, 1995; Spaccarelli & Kim, 1995; Werner & Smith, 1992). Factors that promote positive outcomes in at-risk populations have been labelled protective factors.

### ***2.5.1 Protective factors and resilience***

Resilience research has varied greatly in methodology, as well as the at-risk populations and outcomes examined, yet many of the same protective factors have been identified as contributing to resilient outcomes. Garmezy categorises these protective factors as “a triad of factors: dispositional attributes, family cohesion and warmth, and support figures available in the environment” (1985, p. 220). However, researchers have not been able to identify a single protective factor or combination of factors that consistently confers resilience for all individuals. While certain factors have been found to have consistent and clear-cut protective functions, exposure to such factors does not inoculate an individual against all challenges across their life span. To illustrate, the evidence supports positive early caregiving as an essential component for positive development and resilient outcomes in the face of adversity (Kim, Conger, Elder, & Lorenz, 2003; Scaramella, Conger, Spoth, & Simons, 2002; Wyman et al., 1999). Conversely, individuals exposed to poor or interrupted early caregiving consistently show vulnerability to a range of poor outcomes (Egeland et al., 1988; Rutter, Quinton, & Hill, 1990; Werner & Smith, 1992; Wyman et al., 1992). While positive parenting has been consistently identified as being protective for children exposed to adversity, individuals experiencing positive parenting can



(and do) demonstrate negative outcomes in the face of ongoing, significant adversity. No single factor, or combination of factors, has been identified that protects all individuals from the negative impact of adversity. Single protective factors alone cannot explain why certain individuals are resilient.

### ***2.5.2 Risk and protective environments***

It appears that the *level* of exposure to risk and protective factors is a vital component in the development of resilience. The evidence strongly suggests that there is an incremental likelihood of poor outcomes with increasing level of risk and/or a decreasing level of protective factors (Dubow & Luster, 1990; Fergusson & Lynskey, 1996; Rutter, 1979; Sameroff & Seifer, 1995; Werner, 1995). For instance, in a longitudinal study of almost 100 families, Rutter (1979) examined a range of risk factors including marital discord, low socio-economic status (SES), large family size, paternal criminality or maternal psychiatric disorder. He found that being exposed to 0-4 risk factors did not increase the likelihood of psychopathology in children; however children exposed to more than four risk factors were seven times more likely to have psychiatric problems.

Similarly, Fergusson and Lynskey (1996) conducted a large-scale longitudinal birth cohort study (n = 1265) in which they developed an adversity index based on 39 aspects of family life including economic disadvantage, maladaptive parent-child interaction, marital discord and parental separation. Adolescent outcomes were assessed in terms of antisocial behaviours and drug and/or alcohol abuse. For the large sub-sample with adversity scores of less than 7, the range of multiple problems was very low (0.2 %). However for the 51 families with scores over 19, more than one in five adolescents reported multiple problems - a hundredfold difference. Thus increased exposure to risk factors, lead to a significant decrease in resilient outcomes.

Again, the same pattern was observed in the Rochester Longitudinal Study of parents with schizophrenia, depression or borderline personality disorder and controls (Sameroff & Seifer, 1995; Sameroff, Seifer, Zax, & Barocas, 1987; Seifer & Sameroff, 1987). Offspring were examined on a wide range of outcomes such as intelligence and behavioural measures from birth to 13 years of age. The authors found that children exposed to one or no risk factors (low-risk) had significantly

better social-emotional outcomes and higher Intelligence Quotients (IQ) than children exposed to four or more risk factors (high-risk). These authors also grouped the high-risk children according to the nature of the risk factors experienced but found no significant differences between the groups - the negative outcomes could not be related to a particular risk factor or combination of risk factors. The authors concluded "it is not any single risk factor but the total number that reduces the child's social-emotional competence" (Sameroff et al., 1987, p. 391). Studies of all manner of risks, both mild and severe, have been consistent in their demonstration of the heterogeneity of outcome and in concluding that it was the number of serious risks, rather than the nature of any one that was critical (Sameroff, 2000). Thus, as exposure to risk increases, the likelihood of a resilient outcome decreases significantly and this effect is not specific to the particular threat involved.

Conversely, Werner in her landmark prospective longitudinal study found that individuals exposed to greater risk required more protective factors for resilient outcomes. Werner studied a birth cohort of 698 Hawaiian infants and their families over 32 years. She identified a high-risk group of infants with four or more risk factors by age two including poverty, limited parental education, family instability and in some cases parental mental illness (Werner & Smith, 1992). She found that two thirds of these individuals developed serious learning or behavioural difficulties by the age of ten, or had delinquency records, mental health problems or teenage pregnancies by age 18. However, the remaining third developed into "competent caring young adults" (Werner, 1990, p. 182). The resilient group was differentiated from the non-resilient group by a range of factors including temperament; non-separation from care-giver in infancy; better relationships with a parental figure or substitute and a network of friends and adults who provided support in times of crisis. Werner (1990) noted "as disadvantage and the number of stressful life events accumulated, more such protective factors were needed as counterbalance in the lives of these high-risk individuals, to ensure positive developmental outcomes." (p183). Does resilience occur then simply as a product of the number of risk and protective factors experienced by an individual? The reality appears to be more complex for the following three reasons.

Firstly, many risk and protective factors are not separate entities. For instance Rutter (1993) identified six core factors when examining the family variables associated with heightened prevalence of psychiatric disorders for children: severe marital discord, low social status of the family, overcrowding or large family size, paternal criminality, maternal psychiatric disorder and admission of the child into the care of the local authority. Almost all of these factors can be conceptualised as a continuous index. One end signifies risk and is associated with poor outcomes (e.g. marital discord, poverty, large family size, poor parenting and mental illness) while the opposite end signifies protection and is associated with positive outcomes (marital harmony, high SES, smaller families, good parenting and mental health). Therefore, individuals are not either *exposed* or *not exposed* to such factors, but rather experience degrees of exposure. For such variables, high exposure to risk also implies low exposure to protection - experience of significant marital discord implies low exposure to marital harmony.

Secondly, it appears that it is not the number of risk or protective factors but the interaction between them that is vital in resilient outcomes. Werner writes:

It was the combination of high adversity and low resources that resulted in competence problems rather than either high adversity or low resources alone. In a benign rearing environment, low resource children developed competence much like the high resource children. In a threatening environment high resource children also developed competence much like the low adversity children. (Werner, 1988, p. 161).

Thus, if unchallenged, even children with very low levels of protective factors can achieve positive outcomes. However, if exposed to risk, these children would be vulnerable to deterioration in their competence.

Thirdly, the contribution of risk and protective factors to resilient outcomes can be influenced on a number of levels. For example, it has been suggested that genetic factors can play a role in sensitising children to particular risk factors. In an adoption study, Bohman (1996) found that in the absence of antisocial behaviour or drug taking behaviour in the biological or adoptive parents the likelihood of petty

criminality in adult life was very low (3%). However the rate of criminality doubled when there was rearing risk alone (adoptive parents engaged in antisocial behaviours), went up fourfold if there was biological risk alone, but when there was both rearing and biological risk almost 40% of young adults engaged in petty criminality. The author concluded that the biological risk sensitised young people to the rearing risk thus greatly increasing the likelihood of a negative outcome. Similarly, studies have shown that particular contexts can potentiate risk or protective factors. For instance, a significant positive association between harsh-inconsistent parenting with conduct disorder symptoms in the target child was strongest for families residing in the most disadvantaged neighbourhoods in a sample of 296 African American families (Brody et al., 2003).

In summary, it is not the nature of specific risk or protective factors alone that determines resilient outcomes. The number of risk and protective factors an individual is exposed to and the interaction between them will have a bearing on resilience. Similarly, the individual's genetic or experiential context may increase the impact of particular risk or protective factors.

### ***2.5.3 The individual's impact on exposure to risk and protective factors***

The individual can contribute to risk and protective environments on two levels. Firstly individual characteristics and experiences influence their ongoing exposure to risk and protective factors. Secondly, the impact of those risk and protective factors is shaped by how individuals process them. These will be addressed in turn.

An individual's characteristics and experiences can influence their exposure to risk and protective factors over time. Longitudinal studies have shown that positive and negative experiences are not randomly distributed. For example, Champion et al (1995) found that children with conduct problems at 10 years of age were twice as likely as children without behaviour problems to experience severe acute negative life events and severe negative life experiences in adult life. Rutter describes this phenomenon in terms of positive and negative chain reactions which impact on resilient outcomes. "By their actions, people do much to shape and select

their experiences.” (Rutter, 1999, p. 128). Thus an individual’s character and skills (or lack thereof) may increase their exposure to protective or risk factors.

The individual’s experience of risk or protective factors will also be dependent on their developmental stage and cognitive interpretation and processing of the event. Thus the timing of exposure can greatly change the meaning of an experience. Separation of an infant or an adolescent from parents due to hospitalisation may be a less traumatic experience than for a pre-school child. The infant is protected as she does not yet have the capacity for selective attachment, while the adolescent is protected because of their cognitive ability to understand that they can maintain attachment relationships over a period of absence, while the pre-school child remains vulnerable to considerable distress (Rutter, 1985c).

Thus resilience emerges as the result of the interaction between risk and protective factors influencing positive outcomes in the face of adversity. The points discussed above that are central to understanding resilience can be summarised as follows:

- Resilience is the result of the interaction between risk and protective factors producing positive outcomes.
- Resilience develops from basic developmental processes occurring in all individuals.
- Personal and experiential factors influence the impact and occurrence of risk and protective factors.
- Specific risk or protective factors do not in themselves confer resilience or vulnerability; rather the level of exposure and interaction between factors is more influential.
- Irrespective of the particular threat, as exposure to risk increases, the likelihood of resilient outcomes decreases significantly.

In the next section, a model of resilience will be provided that attempts to draw together these various aspects of resilience into a more coherent whole.

## 2.6 A model of resilience

Resilience occurs in the context of risk and protective factors both within the individual and in their environment “... it remains a challenge to integrate these data into a theoretical framework capable of structuring and explaining the central features of the extant literature” (Yates, Egeland, & Sroufe, 2003, p. 246). Many authors have explicated possible pathways and models of how risk, environment and individual factors may interact to increase or decrease the likelihood of resilient outcomes (e.g. Cowan, Cowan, & Schulz, 1996; Gore & Eckenrode, 1996; Kumpfer, 2004; Masten et al., 1995; Richardson, Neiger, Jensen, & Kumpfer, 1990; Rutter, 1985c; Sandler, Wolchik, Davis, Haine, & Ayers, 2003). These frameworks or models vary in breadth, detail and supporting evidence. To structure and explain ‘extant knowledge’ of resilience, an effective model must accommodate a range of individual and environmental factors, bi-directional interaction between an individual and their environment and have a chronological and developmental element allowing for change over time. The ecological-transactional model developed by Cicchetti and Lynch (1993; Lynch & Cicchetti, 1998) appeared to be the only model to fit all of these requirements. The ecological-transactional model was therefore selected for the current study as the most comprehensive and effective model available to guide the development of a new measure of resilience.

The ecological-transactional model draws on ecology and developmental psychopathology in relation to a risk and protective framework. The model derives from the work of Belsky (1980), Bronfenbrenner (1977) and Cicchetti and Rizley (1981) and presents a robust conceptual framework for explaining the diverse array of individual and environmental factors identified in resilience research. The individual's environment is framed as nested levels of decreasing proximity – from the individual to their family environment, their neighbourhood and community settings and finally to societal cultural beliefs and values (Cicchetti & Lynch, 1993). Factors in these environments “interact and transact with each other over time in shaping individual development and adaptation. In this model, context and children's functioning are conceptualised as mutually influencing each other” (Lynch & Cicchetti, 1998, p. 236). Each level of the environment contains risk and protective factors for the individual and these factors can be transient or enduring. Factors that

are enduring and proximal to the individual have the strongest long-term effects on children's development. Factors within a particular level can influence outcomes and processes in the surrounding levels and these “ongoing transactions determine the amount of risk, both biological and psychological, that the child faces” (Cicchetti, Toth, & Rogosch, 2000, p. 397). Applications of this model have included: maltreatment and community violence (Lynch & Cicchetti, 1998); failure to thrive, Downs Syndrome, parents with a mental illness (Cicchetti, Toth, Bush, & Gillespie, 1988); marital transitions (Hetherington, Bridges, & Insabella, 1998); chronic conduct problems (Dodge & Pettit, 2003); substance abuse (Cicchetti & Rogosch, 1999).

The bidirectional interplay between environmental and individual factors and how they influence resilient or vulnerable outcomes is complex. Cowen and colleagues succinctly illustrate this as follows:

... the same factor in the same child (e.g. shyness) may function as a risk with respect to one outcome (depression), may be neutral with respect to another outcome (perhaps academic achievement) and may function as a protective factor with respect to a third outcome, in the sense that shy children are much less likely to become highly aggressive or delinquent. (Cowan et al., 1996, p. 10)

Accordingly, many pathways of direct and indirect effects have been elaborated for risk and protective factors. For example, good parenting has been shown to directly impact on academic achievement, wellbeing and pro-social behaviours (Brody, Dorsey, Forehand, & Armistead, 2002; Masten et al., 1999; Miliotis, Sesma, & Masten, 1999), indirectly impact by decreasing the number of negative life events children are exposed to (Dubow, Edwards, & Ippolito, 1997) and mediate the impact of factors such as divorce (Hetherington et al., 1998) and economic hardship (Conger et al., 1991; Dubow & Ippolito, 1994). However, examination of the transactional dynamics of individual and environmental factors has been limited (Masten, 2001), with such analysis adding a significant (and sometimes undesirable) layer of complexity to research (Sameroff & Mackenzie, 2003). “Person-environment interplay is characterised by complex chains. .... Their understanding provides an unavoidable tension between the need to seek simplification (the hallmark of good science) and the need to note complexity”

(Rutter & Sroufe, 2000, p. 271). Unravelling the complexity of interactions between individuals and their environment and the processes that are involved in resilient or vulnerable outcomes will be an ongoing priority in resilience research. However, it is not the focus of this thesis. Preceding the investigation of such complexities is the need to *reliably* identify and measure resilience. As with any area of research, particularly in a relatively new area, issues have been highlighted in the identification and measurement of resilience.

## **2.7 Measurement issues in resilience research**

With the growing interest in resilience, risk and protective factors and the explosion of research in the area, a number of issues and concerns have been raised. The concept of resilience has been criticised from a number of sources, including leading proponents in the field. Cicchetti and Garnezy comment that resilience research “risks losing credibility within the scientific community”(1993, p. 497) unless there is greater scientific rigour in measurement and increased focus on developing working models of resilience. Critics have noted that resilience research evidences ambiguity in definition, inconsistencies in the use of terminology and many different approaches to the operationalisation of concepts such as risk and positive outcomes or competence (Glantz & Sloboda, 1999; Harvey & Delfabbro, 2004; Luthar, Cicchetti, & Becker, 2000b; Tolan, 1996; Windle, 1999). As a result, some researchers and commentators have questioned the theoretical and practical value of resilience as a scientific concept. For example, Glantz and Sloboda (1999) comment:

We find that there is great diversity in the use of the concept (of resilience): it is used variously as a quality, a trait, a process or an outcome. We have identified few attempts to assess resilience in which measurement problems do not cloud or eclipse the findings. There is no consensus on the referent of the term, standards for its application, or agreement on its role in explanations, models and theories. In sum, the problems and inconsistencies in measurements, findings and interpretations in the published literature raise serious questions about the utility and heuristic value of the concept of resilience. (p. 111)



However, a certain level of diversity is a vital part of any theoretical field, particularly in newer areas of investigation. Luthar and Cushing (1999) write:

While the breadth of approaches spawned within recent resilience research may suggest a bewildering lack of consensus within the field, this very breadth is critical for the future refinements in the search for protective forces. For the maturation of any scientific discipline, juxtaposed with the stipulation of consensual agreement across researchers, is the requirement that central tenets be examined across a variety of research circumstances. Such diversity of application is critical for the identification of what Lakatos (1978) has termed the ‘hard core’ of a theory, that is a set of central principals that are impervious to challenge. (p. 152)

While diversity in research approaches can be valuable, the result of variation in defining resilience (or failing to) and the measurement of risk and positive outcomes has been conflicted findings and, in some cases, an inability to compare results due to irreconcilable methodological and definitional differences. There is an obvious need for greater uniformity and clarity in the definition, terminology and operationalisation of resilience to capitalise on current knowledge and to facilitate greater scientific rigour in this area of investigation (Cicchetti & Garmezy, 1993; Kumpfer, 1999; Luthar et al., 2000a). As there have now been many ‘pertinent observations’ (Cronbach, 1990) as to the factors associated with resilient outcomes, ongoing development of the concept of resilience will depend in part on greater standardisation of definition and research approaches. An integral part of this process is the development of standard means of measurement. Rutter (2000) in exploring the challenges for future resilience research, highlighted the need “... to develop reliable, valid, discriminating measures of environmental risk and protective factors that can be applied to very large samples” (p. 394). Examination of the measurement approaches currently utilised in resilience research and the strengths and limitations of published resilience measures are the focus of Chapter 3.

## **CHAPTER 3. THE MEASUREMENT OF RESILIENCE**

*Character cannot be developed in ease and quiet. Only through experience of trial and suffering can the soul be strengthened, ambition inspired, and success achieved. (Helen Keller, 1880 - 1968)*

### **3.1 Introduction**

The development of the concept of resilience, a definition and model of resilience were explicated in the previous chapter. Criticisms and issues within resilience research highlighted the need for greater scientific rigour in the operationalisation and measurement of the concept.

While literature pertaining to resilience has grown exponentially in the last 10 years, there have been few attempts to integrate the findings into theoretically driven measures. Past and present attempts to identify and measure resilience, and the issues arising from a lack of common measurement approaches, will be examined in this chapter. A description of the resilience measures published to date is provided followed by an examination of their strengths and weaknesses. The desirability of developing a new measure of resilience in adolescents is established and the desirable characteristics of a comprehensive and effective measure elaborated.

### **3.2 Previous approaches to the identification of risk and resilience**

In the past, and indeed the present, the measurement of resilience has centred on identifying at-risk populations or individuals dealing with adversity and using some measure of competence to identify individuals who are achieving despite adversity. This approach to identifying resilience has some evident difficulties, primarily the variability in the identification and measurement of both risk and competence. Some issues in each of these areas will be briefly described.

### ***3.2.1 The identification and measurement of risk***

The identification or measurement of risk varies greatly but can be broadly divided into three approaches varying in proximity to the individual (Luthar & Cushing, 1999). A global approach to measuring risk relies on identifying general demographic indicators of risk, such as poverty or geographic location. An illustration of this method would be specifying family income below a preset level as indicating low income and exposure to the risks associated with poverty and therefore an increased likelihood of poor outcomes in the area of interest. Secondly, a more proximal measure of risk exposure can be achieved by nominating a stressor or negative life experience such as child abuse, parental divorce or having a parent with a mental illness and selecting individuals exposed to that factor. Individuals have either directly experienced or not experienced the risk factor. A third approach uses a measure of negative life events or daily hassles to derive a self-report of exposure to a range of negative events. The stressful events may include experiences such as divorce, family conflict, unemployment, and moving house. This method produces a continuum of risk exposure and allows categorisation of exposure levels such as none, low and high risk.

There are many sources of variation within each approach to risk measurement and the approach chosen has a bearing on the outcome. For example, use of global indicators of risk such as socio-economic status means that the exact nature and extent of stress for the individual is unknown. That is, within any group of at-risk individuals there “will be variability in their exposure to stressors that are the more proximal causes of disorder” (Gore & Eckenrode, 1996, p. 22). It could be convincingly argued that individuals who achieve positive outcomes despite being at risk did not actually experience negative impact or experienced less severe or sustained adversity. Thus clearly identifying or exploring the factors that contribute to resilience in this undifferentiated or nonspecific risk environment can be difficult. Masten, Best and Garmezy (1990) conclude, "when risk is defined by an unrefined status variable, such as premature birth or low income or marital status, it is difficult to study resilience because the exact nature of the risk is unclear." (p. 427). Thus examination of distal measures of risk can lead to difficulties in interpreting results and may not facilitate a clear understanding of the processes by which positive outcomes occur.

Some authors identify similar issues even for more proximal indicators of risk. For example, in relation to children with a schizophrenic parent, Luthar (1993) writes:

In summary, risk status in itself conveys nothing about the non-genetic proximal processes to which children may be exposed and researchers need to focus on specific aspects of being the offspring of a schizophrenic parent (such as inconstant or erratic parenting) that affect adjustment. (p. 443)

The overarching conclusion that can be drawn from the variability in risk identification and measurement is that progress in resilience research depends on risk factors being clearly identified and defined. There also needs to be clear delineation and examination of how distal risk factors are proposed to impact at an individual level. Only with such specificity and detail will greater understanding of resilience processes be gained.

### ***3.2.2 The identification and measurement of competence***

Once exposure to risk has been established, indicators of competence or adaptive outcomes are then used to infer resilience. Traditionally, researchers have selected an area of interest (e.g. academic performance) and individuals who perform at an acceptable level despite high-risk status are labelled resilient. Numerous sources of variation and the potential for unwarranted complexity stem from this approach. Issues abound not only in the measurement of competence but also in the classification of individuals as resilient or not resilient. Consider two studies examining the same risk factor: researchers can vary in the domains of competence they are interested in, how they measure competence, the criterion used to qualify individuals as competent (e.g. average or better than average) and hence the individuals identified as resilient.

To illustrate this point, a subset of resilience studies was selected with a view to illustrating the bewildering range of methods currently employed in the measurement and identification of resilience. The various measures of competence and classification criteria for resilience are presented in Table 1, with studies are ordered from least to most proximal risk factors. Although all the studies presented

Table 1

## Different approaches to the classification of resilient individuals using social or academic competence

Author	Risk Factor	Sample	Measure(s) of competence/adaptation	Classification criterion
Floyd, 1996	Low SES	African-American secondary students	<u>Academic competence</u> : Qualified for College entrance	Resilient: High school senior, minimum one college preparatory class and qualified for college entrance
Flores, Cicchetti & Rogosch, 2005	Low SES and minority status Maltreated children	Latino children at summer camp Maltreated versus not maltreated	<u>Social competence</u> : Pro-social behaviour, aggressiveness, withdrawal, cooperative, disruptive, shy, fighter Internalising & externalising behaviour problems	Most adaptive third of each of nine indicators dichotomised (0=no or 1=yes) score range= 0 to 9 Resilient = score of 6-8 Non resilient = score of 0-1
Cowen et al., 1992	Checklist of negative life events (parent report) At risk: $\geq 4$ stressful life events	Students in Grades 4, 5 and 6	<u>Social competence</u> : Parent and teacher global rating of child adjustment Teacher-Child Rating Scale: Problems (acting out, shy-anxious, learning difficulties) Adjustment (frustration tolerance, social skills, task orientation)	Stress resistant: top third on 2 out of 3 adjustment screens, and no worse than middle third on other. Stress affected: Bottom third on two out of three adjustment screens, and no better than middle third on other.
Luthar, 1991	Checklist of Negative Life Events At risk: 1SD above mean	Inner city students in Grade 9	<u>Social competence</u> : The Teacher-Child Rating Scale of Problems and Adjustment Peer ratings: Revised Class Play (aggressive-disruptive, sensitive-isolated, sociability-leadership) Academic competence: School grades	One SD above or below mean => four groups/cells High versus low stress / high versus low competence Resilient: high stress and high competence (in at least one competence measure and not lower extreme of others)
Spaccarelli & Kim, 1995	Sexual abuse	Females referred to therapy clinic. Age 10-17 years	<u>Social competence</u> : Child Behaviour Checklist <u>Mental health</u> : Children's Depression Inventory, Revised Children's Manifest Anxiety Scale	Resilient 1: sub-clinical levels of depression/anxiety. Resilient 2: age normative CBC social competence scores (NB. Low level of agreement b/n approaches)
Losel & Bliesner, 2000	Institutionalisation	Adolescents living in residential homes	<u>Social competence</u> : Child Behaviour Checklist (Teacher) Youth self-report	Naturalistic approach - social workers suggested cases that fit definition, discuss & nominate as resilient/nonresilient. Resilient: no serious behavioural or emotional problems. Nonresilient: manifest disorders. NB. Group diagnosis supported by later data gathered.

in Table 1 measure social or academic competence in order to classify individuals as resilient, few employ the same measurement tools. Furthermore, even with identical measurement tools, the criterion used for classifying resilient individuals differ. The data in this table highlights the variation evident in the identification and measurement of resilience which contributes to “the problems and inconsistencies in measurements, findings and interpretations in the published literature” as raised by Glantz and Sloboda (1999, p. 111) and discussed in the previous chapter.

Adding to the complexity of attempting to determine positive outcomes or ‘competence’ is the culturally specific nature of such judgements. Judgements of competence will differ greatly depending on the source and the context, reflecting personal and cultural perceptions of desirable and undesirable outcomes. “Resilience implies a qualitative evaluation of functioning based substantially on normative expectations for adaptation that vary according to age and environmental context. The markers of good psychosocial development, developmental tasks, change as a function of age and vary across culture.” (Masten, 1994, p. 19). What may be considered socially competent for one cultural group may represent incompetent behaviour in another cultural group. Thus the identification and measurement of competence is fraught with complexity and variation. Such diversity in measurement has negatively impacted on the reporting of resilience findings, contributing to varying conclusions on risk and protective processes and disparity in estimates of the rates of resilience in specific risk populations (see Glantz & Sloboda, 1999; Luthar et al., 2000a).

As discussed in the Section 2.7, some diversity in measurement and conceptualisation is a natural, and indeed essential, part of the development of a new field of inquiry. “In short then it is only with accumulated empirical evidence employing varying research strategies that we can seek out generalisations and exceptions to these in the processes associated with resilient functioning.” (Luthar & Cushing, 1999, p. 152). However, for the field of resilience to expand in terms of knowledge and complexity, the development of reliable, comprehensive and standardised approaches to measurement is essential.

### **3.3 A need for measurement tools**

Drawing on researchers such as Eysenck and Cattell, Kline (2003) argues that for psychology to progress it must follow scientific method and an intrinsic part of that method is quantification and measurement. He writes, “Psychologists have been slow to realise that to ... formulate general laws and principals, precise measurement is essential.” (p. 25). Limited consideration and inadequate development of precise measurement approaches certainly holds true for resilience research. There appears to be a general consensus that there is a critical need for greater consideration of measurement issues in resilience research (see Cicchetti & Garnezy, 1993; Kumpfer, 1999; Luthar et al., 2000a; Luthar & Cushing, 1999). Greater scientific rigour and consistency in measurement tools and approaches will improve understanding of the complex processes involved in resilient responses to adversity and will facilitate comparison across studies and risk groups (Cicchetti & Garnezy, 1993; Glantz & Sloboda, 1999; Luthar, 1993; Luthar et al., 2000a; Windle, 1999). Windle (1999) concludes, “it would be beneficial to the field if greater effort were directed toward some empirically-based taxonomy of risk and protective factors and resiliency processes that would serve as an organisational tool for existing (and ongoing) research findings across disciplines and specialty areas” (p. 173). However, the development of psychometrically tested and validated measures of resilience has been limited at best. In over two decades of research, only four resilience measures have been published, with generally limited utilisation and uptake by other researchers. The development and functionality of these resilience measures will be examined below.

### **3.4 An examination of published resilience measures**

Four resilience scales have been published - three adult and one adolescent scale. A summary of the scales is detailed in Table 2. As shown in Table 2, the scales were developed from quite different backgrounds and theoretical perspectives (i.e. nursing, psychiatry, education and psychology). Searching for references to the scales in the literature (excluding scale authors) resulted in very few papers, suggesting that the scales have not been widely used in resilience research. The Resilience Scale (Wagnild & Young, 1993) was an exception with a number of

Table 2

## Summary of the background and development of resilience measures

<u>SCALE</u> : Authors	Development	Target population	#Factors (VE)	Factor structure and Subscales	# Items
Background, definition, theoretical underpinning					
<u>RESILIENCE SCALE</u> : Wagnild & Young, 1993	Brief literature review, 24 interviews with 'resilient' elderly women=>5 themes x 5 items	Adolescent to elderly	2 (44%)	n = 810 elderly women	25
Nursing	Equanimity, Self-reliance, Perseverance, Meaningfulness, Existential aloneness			Subscales: Personal competence, Acceptance of self / life	17
Resilience = personal characteristic					8
<u>RESILIENCY SCALE</u> : Jew, Green & Kroger, 1999	12 characteristics, e.g. relationships, precocious maturity, disassociation of affect, cognitive restructuring of painful events, risk taking	Adolescent	4 (34%)	n = 408 9 <sup>th</sup> grade students	37
Education	12 characteristics x 5 items = 60 items			Subscales: Optimism , Future Orientation , Belief in Others, Independence	
Resilience= individual belief system influenced by personality, environment & developmental factors to shape coping					
12 characteristics facilitate resilience (Mrazek & Mrazek, 1987)					
Revised:			3 (45%)	n = 392 year 7-12 students	35
				Subscales: Active skills acquisition, Future Orientation, Independence/Risk Taking	
<u>CD-RISC</u> : Connor & Davidson (2003)	Personal characteristics: Kobasa (Hardiness), Rutter (e.g. self-esteem, bonds); Lyons (patience, endurance); Shackleton's experiences (faith, belief in good luck)	Adult	5 (NR)	n = 577 random sample	25
Psychiatry				Subscales:	
Resilience=personal qualities allow one to thrive despite adversity				Not developed	
Richardson (2002) resiliency model	17 characteristics, 25 items				
<u>RESILIENCE SCALE FOR ADULTS</u> : Friborg et al, 2003	Extensive literature review => 5 dimensions & 66 items:	Adult	5 (41%)	183 random sample, 59 outpatients	37
Psychology	Subscales: Personal & social competence, Personal structure, Social support, Family coherence			Subscales: Personal & Social Competence, Personal Structure, Social Resources, Family Cohesion	
Resilience = normal development despite long-term stress, adversity or maltreatment					
Personal characteristics and social support					
<u>Revised</u> : Friborg et al., 2005	Semantic differential response scale		6 (NR)	n = 482 military sample	
				Subscales: Added Structured style	33

Note. VE = Variance explained by factor solution; NR = Not reported



references identified within the field of nursing and gerontology (e.g. Aroian, Schappler-Morris, Neary, Spitzer, & Tran, 1997; Christopher, 2000; Garity, 1997; Humphreys, 2003; Nygren et al., 2005). Most striking is the lack of any resilience scales reported in current publications of psychological measures (e.g. Cohen, 2005; Lopez & Snyder, 2003). This may reflect that the resilience measures currently available have a number of flaws that limit their usefulness as measurement tools.

According to Kline (2003) a good psychometric test meets all the following criteria:

Tests must be of high reliability, with respect both to internal consistency reliability and stability over time. Tests must be highly discriminating, yielding as much variance as possible. Tests must be valid, that is, measuring what they claim to measure. Validity is defined in terms of correlations with other similar tests, predictive power and the test ability to fit hypothesised patterns of scores (construct validity). (p. 92).

The existing resilience measures will be examined in the light of these requirements, also addressing their theoretical background and process of development. In order of date of publication, each measure will be examined with regard to:

- Theoretical underpinning or assumptions underlying development: Has resilience been defined? Has resilience research been reviewed and appropriately utilised in the development of the measure?
- Scale development, face and content validity: Has the operationalisation of the resilience definition been described and is it appropriate? Have resilience factors been adequately addressed?
- Target population: Has the target population been defined and is the measure appropriate? Is it possible to generalise from the sample used for the development of the measure to the target population?
- Reliability: Has the reliability of subscales and/or the measure been tested? Are Cronbach alpha coefficients between 0.70 and 0.90 (P.

Kline, 2003; Streiner & Norman, 1996)? Are test-retest correlations above 0.50 (Streiner & Norman, 1996) or 0.70 (P. Kline, 2003)?

- Construct validity: Were associations with other measures predicted correctly, appropriately tested and significant?

The four measures will now be considered in turn according to these criteria.

### **3.4.1 *The Resilience Scale (Wagnild & Young, 1993)***

The Resilience Scale (RS) is a 25 item measure developed by Wagnild and Young (1993) and a summary of the scale development is presented in Table 2. The authors based the measure on five resilience components identified in interviews with elderly women who “characterised resilience” (p. 168). Items were scored on a 7-point scale labelled 1 *disagree* and 7 *agree*. All items are worded positively and higher scores indicate greater resilience.

#### **3.4.1.1 *Theoretical background and development of the RS***

The authors based the RS on five resilience components extracted from interviews with 24 elderly women who “characterised resilience” (p. 168). The women had been pre screened to identify resilience, which was operationalised as successful adjustment to a major loss. Successful adjustment was categorised as: “(a) social involvement as evidenced by active participation in a senior centre, and (b) a mid level to high level of morale and (c) self-report of successful adjustment” (Wagnild & Young, 1990, p. 252). The women were asked to describe how they had responded to the event and managed their loss and difficult times in general. The interview transcripts were analysed using a grounded theory approach and five components of resilience were identified as equanimity, perseverance, self-reliance, meaningfulness and existential aloneness. These themes were “validated and clarified by reviewing the literature” (Wagnild & Young, 1993, p. 167) and items developed based on verbatim statements from the interviews. The scale contained 25 items; five per theme.

No theory or model of resilience was explicated by the authors in describing the development of the RS. The authors describe resilience as a personal characteristic, as discussed in Section 2.4.1 this is an increasingly uncommon

definition in resilience research, where the prevailing approach is to examine resilience as a *process* (Garmezy & Masten, 1986; Luthar & Zigler, 1991; Masten, Garmezy, Tellegen, Pellegrini, & et al., 1988; Rutter, 1985c). The development of the RS drew on a limited exploration of resilience factors. Firstly, the sample providing the content of the measure was small and homogenous - 24 elderly Caucasian women - providing limited scope in which to identify resilience factors and thus limiting the potential to generalise findings to populations other than this sample. Secondly, the review of the resilience literature was limited, referencing few resilience studies and omitting major contributors to the field including authors such as Luther, Cicchetti and Garmezy, again providing limited scope to identify resilience factors. As a result of this small and homogenous sample and limited investigation of relevant resilience research, the scale addresses only a few internal characteristics, some of which have not been identified in the resilience literature (e.g. equanimity and existential aloneness).

Irrespective of whether the factors identified in the sample represent resilience, the resilience literature highlights the importance of a wide range of individual factors that are not addressed in the RS such as social skills (Farber & Egeland, 1987; Werner & Smith, 1992) and optimism (Cicchetti, Rogosch, Lynch, & Holt, 1993; Hoyt-Meyers et al., 1995). Moreover, research available prior (and subsequent) to the development of the RS indicates that factors such as social support and family relationships have a vital role to play in resilience (e.g. Cowen & Work, 1988; Masten et al., 1990; Seifer, Sameroff, Baldwin, & Baldwin, 1992; Stewart & Sun, 2004; Wyman et al., 1999). Therefore, the scale appears to inadequately cover the range of resilience factors shown to impact on resilient outcomes and therefore can only provide an incomplete assessment of resilience.

The RS did not appear to derive from a strong theoretical or methodological underpinning: the definition did not reflect the dominant research 'knowledge' of the time and development of the scale using a small homogenous sample to derive content resulted in limited breadth and inability to generalise beyond this sample to other populations.

#### 3.4.1.2 *Face and content validity*

The RS has poor face and content validity due to the limited breadth of the scale, as discussed above. Furthermore, the five conceptual components of the RS were not supported by the data. Factor analysis identified a two-factor structure, which the authors labelled *self-competence* and *acceptance of self and life* (see Table 2). These results further challenge the adequacy of the initial scale development. The authors do not address the implications of this significant reduction in the breadth of the scale. It may be that further development was required in order to adequately cover the five themes the RS is purported to measure or, alternatively, the five themes may not have represented unique aspects of resilience.

Measures of resilience that do not examine a broad range of resilience factors can only offer limited insight as to the process of resilience. Furthermore, resilience has been identified as multidimensional and identifying resilience based on individual characteristics alone may be misleading as the impact of family and environmental factors are ignored (Farber, Vaughn, & Egeland, 1981; Glantz & Sloboda, 1999; Kaufman et al., 1994; Luthar et al., 1993).

#### 3.4.1.3 *Target population*

The content of the RS was gathered from a small, non-random sample of elderly women. However, the authors state the RS is “intended for use with a male population as well as a broad range of ages” (p. 167). The probable limitations of using this measure in populations such as young males, or indeed any other population, are not addressed. For example, the importance of social and cognitive skills (Farber & Egeland, 1987; Werner & Smith, 1992), family (Furstenberg & Hughes, 1995) and peer factors (Werner, 1990) in adolescent resilience has been well established. None of these factors are included in the RS - therefore assessing young male resilience using the RS may be misleading. Despite a lack of evidence to support the applicability of the RS to the wider population, this scale is one of the few resilience scales that has been utilised by researchers other than the authors. The RS has been used in studies of battered women, elderly men, homeless adolescents and secondary school students (Humphreys, 2003; Hunter & Chandler, 1999; Nygren et al., 2005; Rew, Taylor-Seehafer, Thomas, & Yockey). Only one of these studies (Hunter & Chandler, 1999) employed methodology that allowed examination of the

performance of the scale with uninspiring results. Hunter and Chandler (1999) used a triangulated research design to examine resilience in a small pilot study of 10<sup>th</sup> and 11<sup>th</sup> grade students (n = 51). While the adolescents reported high RS scores, qualitative analysis of focus groups and field observations suggested that these scores related to the adolescents being “insular, disconnected, self-reliant, self-protective with no one to depend on or trust but themselves” (p. 245). Therefore, high RS scores do not appear to reflect what is generally understood to characterise resilience in the adolescent population. At this stage it appears that the applicability of the scale to populations other than older women has not been established, but the scale is unlikely to be appropriate for adolescents.

#### *3.4.1.4 Reliability*

Table 3 provides a summary of psychometric results reported for the RS. The authors reported good internal consistency for the RS with Cronbach alpha scores ranging from 0.76 to 0.91 across a number of predominantly small female samples (Wagnild & Young, 1993). The replication across samples supports the scale reliability despite the small samples (only one sample of more than 100 participants). The scale appeared to have good test-retest reliability with correlations ranging from 0.67-0.84 reported, commensurate with the 0.7 recommended by Kline (2003).

Reliabilities were reported for overall RS scores and as no subscale figures were provided, the adequacy of the two subscales remains questionable. For example, Aroian and colleagues (1997) were unable to replicate the two factor solution, albeit in a Russian sample. Furthermore, the very high overall internal consistency ( $\alpha = 0.91 - 0.94$ ) reported in a number of studies (Rew et al., 2001; Wagnild & Young, 1993) suggests that the RS items may be measuring a single construct (Streiner & Norman, 1996), rather than the two factors identified by the authors.

#### *3.4.1.5 Construct Validity*

Construct validity was examined using a large sample of elderly women. As predicted by the authors, RS scores were significantly positively correlated with life satisfaction and physical health, providing supporting evidence for construct validity (Humphreys, 2003; Wagnild & Young, 1993). Correlations with the Philadelphia Geriatric Centre Morale Scale and the Beck Depression Inventory were also

Table 3

Summary of the psychometric testing reported for the Resilience Scale

Samples	Psychometric testing reported
Summary of 5 studies provided:	<u>Internal consistency</u> : Total scale Cronbach $\alpha$ ranged from 0.76 - 0.90 across samples
a) Caregivers (n = 39)	<u>Test-retest reliability (n = 130)</u> : Women at 1, 4, 8, 12 months post partum. Correlation 0.67 - 0.84, $p < 0.01$
b) Female graduate students (n = 58)	<u>Construct validity</u> : (see previous column for description of samples a, b, c, d, e)
c) Female graduate students (n = 43)	Beck Depression Inventory scores: Significant negative correlation (a)
d) First time mothers (n = 130)	Life satisfaction index: Significant positive correlation (e)
e) Public housing residents (n = 43)	Philadelphia Geriatric Centre Morale Scale: Significant positive correlation (a, e)
	Physical Health scores: Significant positive correlation (a)
	Perceived Stress and Symptoms of stress: Significant negative correlation (b, c, d)
	Depression: Significant negative correlation (d)
	Self-esteem: Significant positive correlation (d)
	Health: Significant positive correlation (b, c)
n = 810 community dwelling older adults	<u>Internal consistency</u> : Total scale Cronbach $\alpha=0.91$
	<u>Construct validity</u> : Beck Depression Inventory scores: Significant negative correlation
	Life satisfaction index: Significant positive correlation
	Philadelphia Geriatric Centre Morale Scale: Significant positive correlation
	Physical Health scores: Significant positive correlation

described as evidence of construct validity (Wagnild & Young, 1993). Both scales were problematic choices for different reasons. Firstly, the Philadelphia Geriatric Centre Morale Scale should not be used to establish construct validity as the scale was originally used to identify and select resilient elderly women to interview for scale content. Given that women with high scores on the morale scale provided the content for the RS, it is not unexpected that the two measures were positively correlated.

Secondly, using the Beck Depression inventory to establish construct validity is inappropriate due to the conflicted findings reported with respect to resilience and emotional well being. While some researchers have reported high levels of depression and anxiety in adolescents identified as resilient (Luthar et al., 1993), other authors identified similar levels of depression and anxiety in resilient and non resilient adolescents (Masten & Curtis, 2000), and lower levels of depression have been reported for resilient adults compared to non resilient adults (e.g. Campbell-Sills, Cohan, & Stein, 2006). Thus the associations reported in this study do not necessarily provide evidence of construct validity.

The conclusion from examination of the development and psychometric testing of the RS is that the scale shows a number of limitations with respect to providing a comprehensive, psychometrically valid measure of resilience. The measure has also been shown to be inappropriate for use with adolescents, the target population of the current research.

#### **3.4.2 *The Resiliency Scale (1999)***

Jew, Green, and Kroger (1999) developed a 37 item resiliency scale (see Table 2). The authors clearly state the definition of resilience underlying their research, as an individual's belief system being influenced by personality, environment and developmental factors to shape coping. While the definition included environmental factors, the Resiliency Scale solely addresses individual characteristics. Extensive revision resulted in a final measure that comprises three subscales labelled Future Orientation, Active Skill Acquisition and Independence/risk taking. Items were scored on 5-point Likert scales labelled 1 *strongly disagree* and 5

*strongly agree*, with higher scores indicating greater resilience. The development and psychometric testing of the Resiliency Scale are examined below.

#### *3.4.2.1 Theoretical background and development*

The content for the Resiliency Scale was drawn from the 12 personal characteristics and skills proposed by Mrazek and Mrazek (1987) to foster resilience in maltreated children. The reason for using this particular research was not provided by the authors. The 12 dimensions included characteristics such as precocious maturity, disassociation of affect, cognitive restructuring of painful events and decisive risk taking. Jew et al describes the dimensions proposed by Mrazek and Mrazek as a “cognitive appraisal theory of resiliency” (p. 76). However, Mrazek and Mrazek (1987) do not mention 'cognitive appraisal' or 'theory' in the cited paper. Rather, as the title “A conceptual exploration” suggests, the paper is a compilation of ideas gleaned from the clinical experience of the authors and some illustrations from literature to explore resilience in maltreated children (e.g. *A Fortunate Life* by A.B. Facey). Therefore, like the RS, the Resiliency Scale was not based on a clearly elucidated theoretical model or broader resilience research. As a result, the Resiliency Scale also fails to provide a comprehensive examination of the personal or environmental factors that may contribute to resilient outcomes.

The development of the Resiliency Scale was clearly described, with five items written for each of the 12 dimensions, resulting in a 60-item scale (see Table 2).

#### *3.4.2.2 Face and content validity*

Some of the original 12 themes for the Resiliency Scale appeared to have good face validity, reflecting factors clearly identified in resilience research such as optimism/hope, altruism, cognitive restructuring, information seeking and formation of relationships for survival. However others appeared less consistent, such as disassociation of affect and idealisation of an aggressor’s competence, factors not readily apparent in the resilience literature and that do not appear to suggest positive adaptation.

Irrespective of subjective face validity, the 12 themes were not supported by statistical analyses of the data. The initial factor analyses identified four factors and explained 34% of the variance. The four scales (Optimism, Future Orientation, Belief



in Others and Independence) were not replicated in following studies and were revised into three scales: Future Orientation, Active Skill Acquisition and Independence/ Risk taking (see Table 2). The three final scales were reported to cover the original 12 dimensions with the exception of ‘conviction of being loved’ (deleted due to cross loading on all three scales). The collapsing of the 12 theoretically proposed themes into three scales may reflect inadequate theoretical underpinning.

The final Resiliency Scale did not observably address the 12 areas originally proposed and the three subscales did not permit examination of the individual themes it purported to measure. Furthermore, like the RS, this scale assesses a limited number of individual characteristics. While ‘use of relationships for survival’ could be considered a measure of social support, it was incorporated into the Active Skill Acquisition scale and was thus impossible to examine as a unique aspect of resilience. The scale fails to assess the full range of individual, environmental and social factors that have been shown to be important in resilient outcomes and thus appears an incomplete measure of resilience.

#### *3.4.2.3 Target population*

The target population for the Resiliency Scale is not directly stated but is presumed to be adolescents: items were written at a seventh-grade level and the psychometric data collected from adolescent samples. The scale was developed with data from two substantial but non-random samples of students: the first sample came from a single school; and the second from the wider school district. The sample appears likely to broadly reflect adolescents in the wider population, with males and females from a range of ages (12-18 years) and both low and middle socio economic groups included.

#### *3.4.2.4 Reliability*

The psychometric properties of the Resiliency Scale are shown in Table 4. Four studies reporting psychometric testing were described (Jew et al., 1999). Two of the final three scales had good internal consistency ( $\alpha = 0.80$  or higher) however at 0.68, the independence/risk taking scale fell just below the benchmark of 0.70 (P. Kline, 2003; Streiner & Norman, 1996). The subscales showed poor to adequate stability over time, with correlations ranging from 0.36 to 0.57 over 23 weeks.

Table 4

Summary of the psychometric testing reported for the Resiliency Scale

Samples	Psychometric testing reported
n = 408 9 <sup>th</sup> grade students	<p><u>Internal consistency (n=408)</u>: Cronbach <math>\alpha</math> for subscales 0.66-0.82</p> <p><u>Test-retest 23 weeks (n=50)</u>: Subscale correlations ranged from 0.57 to 0.70.</p> <p><u>Construct Validity (n=47)</u>: Few significant correlations (<i>Independence</i> subscale zero significant correlations)</p> <p>Self-Perception Profile for Adolescents: RS subscale <i>Optimism</i> significant positive correlation with athletic &amp; job competence, global self-worth. <i>Future Orientation</i> significant positive correlation with athletic &amp; job competence and close friendship. <i>Belief in Others</i> significantly correlated with global self-worth.</p> <p>Rotter Internal-External Locus of Control Scale: <i>Optimism</i> scale significant negative correlation.</p> <p>Normative Behaviour Checklist: No significant correlations</p>
n = 30 students in adolescent psychiatric facility	<p><u>Clinical groups</u>: Original student sample (n=408), adolescent patients attending psychiatric treatment facility (n=30). Control group significantly higher RSA subscales scores than clinic group except on <i>Belief in others</i>. Students rated Adequate versus Poor in social, academic or psychological functioning did not differ significantly in RS scale scores.</p>
Revised Resiliency Scale n = 392 7-12 <sup>th</sup> grade students	<p><u>Internal consistency (n=392)</u>: Cronbach <math>\alpha</math> for subscales 0.68-0.95.</p> <p><u>Test-retest 4 months (n=50)</u>: Subscale correlations ranged from 0.36 to 0.57.</p> <p><u>Construct Validity (n=335)</u>: ACOPE: All subscales significant positive correlations.</p> <p><u>Clinical groups</u>: Students categorised as high/low risk on 5 variables (parent death, divorce, abuse, drug/alcohol abuse, trouble with law). Significant effects for all except parent death, low risk had higher RS scores than high risk.</p>

3.4.2.5 Construct validity

Construct validity was tested with only 47 adolescents, providing limited power to detect significant associations. Psychometric testing of construct validity of the Resiliency Scale generally returned modest correlations with measures of related constructs in the expected directions (see Table 4). The authors' use and interpretation of a number of comparison measures was cause for concern for this

author. The authors report that the lower resilience scores of students who experienced risk factors such as divorce or abuse indicated construct validity. While all definitions of resilience posit a relationship between resilience and risk, it is not a unilateral one. Individuals experiencing risk situations may exhibit either resilient or vulnerable responses. Therefore it is unexpected to find a positive correlation between the experience of risk and scores on a resilience measure. This finding does not provide evidence for the utility of this measure.

Again, limitations in the theoretical underpinning and development of the Resiliency Scale have resulted in a measure that fails to comprehensively assess the range of both individual and social factors identified as contributing to resilient outcomes. In addition, psychometric results for the scale did not satisfy the criteria for a *good test* (P. Kline, 2003). Thus the Resiliency Scale does not fulfil the criteria for a comprehensive, psychometrically valid measure of resilience in adolescents.

### ***3.4.3 The Connor-Davidson Resilience Scale (2003)***

Connor and Davidson published the 25 item Connor-Davidson Resilience Scale (CD-Risc) in 2003. The measure was developed with the goals of producing a valid and reliable measure of resilience, establishing norms for resilience in normal and clinical samples and of assessing the extent to which resilience scores change in response to treatment (Connor & Davidson, 2003). The authors cite the resilience model proposed by Richardson (2002) and resilience literature as the source of sixteen ‘characteristics of resilient people’. The 25-item scale was built on these characteristics. Items were rated in relation to the previous month, using a 4-point Likert scale labelled 1 ‘rarely true’ and 4 ‘true nearly all of the time’, with higher scores indicating greater resilience. The development and psychometric testing of the CD-Risc will be explored below.

#### ***3.4.3.1 Theoretical background and development***

The CD-Risc was developed using a resilience model proposed by Richardson and colleagues (2002; 1990), in addition to studies by Kobasa, Rutter and Lyon, and reports of Shackleton's expedition experiences (Connor & Davidson, 2003). From these sources, the authors identified sixteen “characteristics of resilient people”, for example “Rutter (1985) - Close, secure attachment to others” (p. 77).

There was no explanation as to how the 25 items of the scale were developed in relation to the stated 16 characteristics, nor whether specific subscales were developed.

The authors reported a factor analysis identifying five factors that were “broadly interpreted” (p. 80). The variance explained by the solution was not reported and the factors were not labelled or used in analysis. Further, the relationship of these factors to the original 16 characteristics of resilient people was not explained. Therefore the capacity of the factors or the scale as a whole to address the theoretical underpinning of the CD-Risc remains unclear. Thus the CD-Risc provides an overall assessment of individual resilience, without recourse to examination of specific characteristics.

#### *3.4.3.2 Face and Content Validity*

The 16 characteristics of resilient people reported by the authors were derived from an elucidated model of resilience and relevant resilience research and therefore appeared to be appropriate factors. However, the inclusion of one or two items for each characteristic may be insufficient to assess the presence of the characteristic (T. Kline, 2005; Streiner & Norman, 1996). Thus, while a range of individual characteristics was included, the lack of sub scales limits the research applications of the measure. For example, there is no potential to assess the impact of particular resilience factors in different contexts or developmental stages.

As with the previous two resilience scales, the CD-Risc assesses only personal characteristics (see Table 2). The CD-Risc is therefore limited to an incomplete (and potentially misleading) assessment of resilience due to the failure to address the broader social factors that have been shown to be impact on resilient outcomes (e.g. Kleiber, 2004; Masten et al., 1990; Seifer et al., 1992; Wyman et al., 1999).

#### *3.4.3.3 Target Population*

The CD-Risc does not have a specifically stated target population but appears to be designed for adults. Adult data was used for psychometric testing (shown in Table 5) with an average respondent age of 43.8 years and standard deviation of 15.3 years. Campbell-Sills (2006) found no significant differences between male and

female CD-Risc scores, providing some evidence that the test performed similarly for both genders.

### 3.4.3.4 Reliability

The authors reported good internal consistency for the CD-Risc using a large random population sample (see Table 5), with a Cronbach alpha of 0.89 exceeding the minimum recommended by Streiner and Norman (1996). However if the CD-Risc did have five sub scales as suggested by the factor analysis, Cronbach alpha's should have been reported for the subscales separately, to provide a more valid indication of internal consistency. Streiner and Norman (1996) state that there is little benefit to reporting overall internal consistency scores for multidimensional inventories as while various subscales measure different attributes, the increase in the number of items artificially makes the scale look more homogenous.

Table 5

Summary of the psychometric testing reported for the CD-Risc

Samples	Psychometric testing reported
a) Random population sample (n=577)	<u>Internal consistency</u> (n = 577): Total scale Cronbach $\alpha=0.89$
b) Primary care outpatients (n = 139)	<u>Test-retest</u> (n = 46): Intra-class correlation coefficient 0.87 over "two consecutive visits" (c, d)
c) Psychiatric outpatients (n = 43)	
d) Anxiety Disorder (GAD) (n = 25)	<u>Construct Validity</u> (overall CD-Risc score)
e) Post Traumatic Stress Disorder (n=22 & n=22)	Kobasa hardiness measure (n = 30): Significant positive correlation (c) Perceived Stress Scale (n = 24): Significant negative correlation (c) Sheehan Stress Vulnerability (n = 591): Significant negative correlation (a) Disability Scales (n = 40): Significant negative correlation (c, d) <u>Discriminant Validity</u> (n = 23): Not significantly correlated with Arizona Sexual Experience Scale (d) <u>Clinical groups</u> : CD-Risc scores calculated for full sample and clinic groups. Population sample significantly higher mean CD-Risc score than clinical groups, primary care (b) significantly higher than PTSD (e) and GAD (d). <u>Sensitivity to treatment effects</u> (n = 30): CD-Risc scores increased significantly with overall clinical improvement of patients with PTSD (e). Greater improvement associated with greater increase in CD-Risc scores.

CD-Risc scores showed stability over time with a correlation of 0.87 over 'two consecutive visits' in a small sample of 47 adult outpatients who were attending a treatment centre for psychological disorders (Connor & Davidson, 2003). Assessing the stability of test scores during treatment adds a potentially confounding factor in that treatment could be expected to impact on CD-Risc scores and this result may not be true reflection of test stability.

#### *3.4.3.5 Construct Validity*

Connor and Davidson primarily assessed the CD-Risc for construct validity against stress measures. In accordance with the authors' predictions, CD-Risc scores were positively associated with measures of hardiness and social support and negatively associated with measures of stress and symptoms of disability (see Table 5). The lack of correlation between CD-Risc scores and sexual experience was reported to indicate discriminant validity. However with a sample size of only 24 this lack of correlation may reflect a lack of statistical power rather than a lack of relationship between the two scales. These results provide some support for the construct validity of the CD-Risc, however small sample sizes mean that findings should be treated cautiously until confirmed by further testing.

Psychometric testing of the CD-Risc included clinic samples (see Table 5). The general population sample had significantly higher CD-Risc scores than the clinic outpatient sample. Pre and post treatment assessments were made and significant differences in CD-Risc scores were found in the appropriate directions. Changes in CD-Risc scores also largely followed clinic outcomes. Thus where improvement was noted post treatment via clinical measures, CD-Risc scores had improved. Where no change was recorded, CD-Risc scores remained largely the same. Thus clinically, the CD-Risc scale appeared to perform well, but again these findings relate to small samples (see Table 5) and replication with larger numbers would be desirable.

In summary, the CD-Risc provides an overall summary of resilience only, and the lack of subscales prohibits examination of particular individual characteristics. Psychometric test results were promising in terms of clinical sensitivity but require confirmation with larger sample sizes. As with the previous measures, none of the

wider social or environmental resilience factors were addressed in this scale, thus providing a truncated, and potentially misleading, assessment of resilience.

### ***3.4.4 The Resilience Scale for Adults (2003)***

Friborg, Hjemdal, Rosenvinge and Martinussen (2003) developed the Resilience Scale for Adults (RSA). Whilst a theoretical model of resilience was not provided, the authors broadly cite relevant resilience research to verify the choice of protective factors included in the measure. Friborg et al (2003) aimed to “develop a valid scale for measuring the presence of such protective resources and to examine whether these resources differentiated between patients and nonpatients” (p. 65). The RSA was created with 66 items across the five dimensions of resilience. The response scale was a 7-point Likert scale labelled 1 'strongly disagree' to 7 'strongly agree', with higher scores indicating greater resilience. The RSA was revised in 2005, replacing the Likert scale with a semantic differential response scale (see Table 2). The development and psychometric testing of the scale will be examined.

#### *3.4.4.1 Theoretical background and development*

The development of the RSA was more comprehensive than that of the previous scales described. While a model of resilience is not identified as part of the development process, the literature review guiding the development of the scale was more comprehensive than the previous scales, resulting in the inclusion of social as well as individual factors. Five dimensions of resilience were identified in the literature review: personal competence, social competence, personal structure, family coherence and social support. Sixty-six items were written across the five dimensions. The five dimensions were supported by factor analysis (see Table 2) and at least five items retained for each scale. However a later study resulted in personal competence being divided into personal strength and structured style (Friborg, Barlaug, Martinussen, Rosenvinge, & Hjemdal, 2005) resulting in six scales, four individual and two social (see Table 2).

#### *3.4.4.2 Face and content validity*

The five dimensions of resilience covered by the RSA accord with those highlighted in the resilience literature and therefore show good face validity. The themes covered by each of the scales were detailed and reflect current understanding

of factors that contribute to resilient outcomes, supporting content validity. However four subscales in the individual domain do not seem sufficient to capture the diversity of individual characteristics identified as important in resilient outcomes, nor the factors named in the development of the RSA scales. Thus each RSA scale appears to cover a number of individual characteristics. For example, in 12 items, *personal competence* reputedly “measured level of self-esteem, self-efficacy, self-liking, hope, determination and a realistic orientation to life” (Friborg et al., 2003, p. 72). Perhaps a greater number of subscales addressing these important concepts would better facilitate understanding of the complex processes involved in resilience.

Similarly, a single scale covers social support, which is limited to family and close friends. This may be problematic as different levels and types of social support have been associated with both resilience and vulnerability (e.g. Bender & Losel, 1997; Buysse, 1997; Cauce, Felner, & Primavera, 1982). This suggests that it may be valuable to examine different types of social support separately, which is not possible using the RSA.

#### 3.4.4.3 *Target population*

The target population for the RSA is adults. The scale was developed using a random population sample of 276 adults living in a Nordic city and 59 adult outpatients attending a psychotherapy clinic. There were slightly more female than male participants (59%), but within the limits of a small sample, the random selection enhances the potential to generalise to the adult Nordic population as a whole. The second revision of the RSA (with the semantic differential response scale) involved a larger sample (n = 482) but was a predominantly male (84%) convenience sample of military personnel who may not be representative of the general adult population. Thus the revision of the measure may not have enhanced the potential to generalise to the target population.

#### 3.4.4.4 *Reliability*

A summary of psychometric testing of the RSA is presented in Table 6. Reliability of the RSA was reported for the random sample of 276 adults (Friborg et al., 2003). The authors reported good internal consistency for the subscales of the RSA, with four of the five subscales with Cronbach alpha scores between the recommended range of 0.80 to 0.90 (Streiner & Norman, 1996). However the



personal competence scale recorded a lower alpha of 0.68 indicating further development might be required. The RSA showed good stability over four months with subscales correlated above 0.5 (see Table 6).

Table 6

Summary of the psychometric testing reported for the Resilience Scale for Adults

Samples	Psychometric testing reported
Friborg et al, 2003 a) Random population sample (n=276) b) Adult outpatient psychotherapy patients (n=59)	<p><u>Social desirability bias (n=276)</u>: No, not significantly correlated with Marlowe-Crowne Social Desirability Scale</p> <p><u>Internal consistency (n=276)</u>: Cronbach <math>\alpha</math> for subscales ranged from 0.67-0.90.</p> <p><u>Test-retest 4 months (n=276)</u>: Subscale correlations ranged from 0.69 to 0.84 (<math>p &lt; 0.01</math>).</p> <p><u>Construct Validity (n=335)</u>: Sense of Coherence Scale: subscales significantly positively correlated (range 0.33-0.75) Hopkins Symptom Check List-25: Subscales significant negatively correlated (range 0.21 to 0.61).</p> <p><u>Clinical groups</u>: Control sample (a) significantly higher scores on RSA subscales than adult outpatients. Control sample significantly higher Sense of Coherence scores, and significantly lower on Hopkins Symptom Check List-25.</p>
<i>Revised RSA</i> : Friborg et al 2005 Semantic differential response scale n = 482 convenience sample (military)	<p><u>Internal consistency</u>: Cronbach <math>\alpha</math> for subscales ranged from 0.67-0.79.</p> <p><u>Construct Validity</u>: Big five/5PF: Predicted moderate to strong positive associations confirmed.</p> <p>Cognitive abilities: Non significant except social competence significantly neg correlated with mathematics ability.</p> <p>Social intelligence (TSIS): Predicated associations confirmed e.g. Significant positive correlation between social competence and social resources.</p>

#### 3.4.4.5 Construct validity

In terms of construct validity, RSA scores have been compared to the Sense of Coherence Scale and Hopkins Symptom Check List-25 (see Table 6). Significant positive correlations with Sense of Coherence Scale scores were reported for all subscales, supporting construct validity. The significant negative correlation between RSA subscales and the Hopkins Symptom Check List-25 (a measure of anxiety, depression and somatisation) was also provided as evidence of construct validity. As discussed in relation to the Resilience Scale, resilience research suggests a complex

relationship between resilience and emotional distress, with conflicting findings reported (e.g. Campbell-Sills et al., 2006; Luthar et al., 1993; Masten & Curtis, 2000). Therefore, measures of anxiety and depression may not provide a reliable indication of construct validity.

On a clinical level, the RSA successfully discriminated between patient and control subjects indicating potential for use in a clinical setting. As predicted by the authors, scores on the RSA subscales were significantly lower for patients than control subjects, with the exception of social support. It may be that the inclusion of both family and friends in a single social support scale masks differences between the two groups. Separation of different forms of social support into separate scales would provide greater flexibility in the investigation of social support and resilient outcomes.

### **3.5 Conclusion**

In summary, the RSA is the most comprehensive existing resilience measure, assessing social factors in addition to individual factors. Results of psychometric testing were encouraging. However, the RSA does not sufficiently cover the range of individual and social factors identified as impacting on resilience and therefore provides an incomplete assessment. Furthermore, resilience research suggests that it is vital to distinguish between different types of social support, which is not possible using the RSA. Thus the RSA fails to provide a broad, psychometrically sound measure of resilience.

The examination of existing resilience measures above indicates that the measurement tools currently available are limited on a number of levels - lacking a theoretical underpinning or developed without reference to a model of resilience, flawed development processes, being limited in breadth or having inadequate psychometric properties. This may explain, to some degree, why resilience measures have not been widely used to date. In 1998 Blum wrote "... there has yet to be developed a multidimensional assessment scale of resilience." (p. 371). Examination of current resilience measures indicates that this still holds true today - the development of a multidimensional measure of resilience is long overdue.

Therefore, as previously stated, the purpose of the present study was to develop and pilot test a comprehensive and theoretically grounded measure of resilience. The measure should be capable of assessing the range of resilience promoting factors identified as developmentally relevant to the adolescent population (12-18 years of age), within the salient domains identified in the ecological-transitional model (i.e. individual, peer, family, school and community). The identification of resilience promoting factors for inclusion in the new measure is the focus of the next two chapters. In Chapter 4, a review of resilience research is described, and focus groups with adolescents living with a chronic illness are detailed in Chapter 5.

## CHAPTER 4. RESILIENCE RESEARCH

*He knows himself, and all that's in him, who knows adversity.*

*(Herman Melville, 1849)*

### 4.1 Introduction

Chapters 4 and 5 detail the processes by which content for the new resilience measure was derived. Firstly, a review of the current resilience literature was conducted to identify the individual and social resilience factors supported by resilience research (detailed in this chapter). Secondly, focus groups were conducted with adolescents living with a chronic illness to provide an adolescent perspective of the resources that are important in dealing with adversity (detailed in Chapter 5).

A broad review of resilience literature was conducted in order to identify resilience factors that were robustly supported by research. MEDLINE, ERIC and PsychINFO were searched to include literature from the fields of medicine, education and psychology. Key search terms were *resilience*, *resilient* or *resiliency* as title or subject words. The following search words were combined with the main search to refine the output: at-risk, high-risk, competence, chronic illness or adolescent development. Any relevant studies that had been missed by the above search method but were cited by authors within the papers reviewed were also included.

Resilience factors identified in each domain were examined to identify which factors to include in the resilience questionnaire. All resilience factors strongly supported by the resilience literature were included in the new resilience measure. Factors were considered strongly supported if all of the following were identified in the literature: positive association with resilient outcomes at a statistically significant level ( $p < 0.05$ ); factor identified as significant resilience factor in different risk populations (e.g. delinquent adolescents, low SES families); factor identified as a significant resilience factor in prospective longitudinal studies and/or large cross sectional studies. The resilience factors identified in the literature are discussed below within each domain.

## 4.2 Individual resilience factors

There has been extensive research as to why and how some individuals successfully negotiate adversity, while others succumb. At an individual level, researchers have identified a number of personal characteristics commonly observed in adolescents and adults who show successful outcomes in the face of adversity. One of the seminal studies examining the personal (and social) characteristics associated with resilience was a longitudinal study on the Island of Kauai undertaken by Werner and Smith (e.g. 1992). The authors conducted a prospective cohort study of 698 infants born in 1955 and followed these individuals and their families over the next 32 years. Data was collected from many sources including the individuals, their families, medical staff, social workers, teachers, home observation, and community records (e.g. police files).

As infants and children, the individuals enrolled in the study were at risk of exposure to a range of both proximal and distal risk factors including poverty (over 50% of cohort), poorly educated and/or teenage parents, single parent families, parental death, divorce, and family conflict (Werner, 1990). One third of the cohort was considered *at-risk* due to exposure to four or more risk factors before the age of two. Two out of three of these at risk infants developed serious learning or behaviour problems by the age of ten, or had delinquency records, mental health problems or teenage pregnancies. However the remaining third developed into “competent, confident and caring adults” (Werner, 1990, p. 182). The author identified a number of individual level factors that distinguished the resilient individuals from those who showed negative outcomes. These included: having a positive temperament as an infant; showing autonomy, independence and self-help skills; being curious and involved in a range of activities; possessing social, communication and help seeking skills; having an internal locus of control and positive self-esteem; and demonstrating clear reasoning and problem solving skills (Werner, 1988, 1990, 1995, 1996). Such individual characteristics and skills have been consistently shown to facilitate resilient outcomes in the resilience research reviewed. A summary of papers examining individual resilience factors is presented in Table 7, showing authors, study type, sample, risk and protective factors examined and the association with resilient

Table 7

Summary count of resilience studies and the nature of the relationship reported for individual resilience factors

Papers	Study type	Sampling	Study location	Sample size	Age group	Risk / Adversity	Confidence/Self Esteem	Internal LOC/Self efficacy	Social Skills / Empathy	Positive future/Optimism	IQ	Cognitive Emotional skills	Problem solving/self help	Temperament	Persistent/Motivated	Involved in activities	Religion/Spirituality	Other (<3 studies)	
Bolger & Patterson, 2001	Long	Prospective community cohort: sample 107 cases & matched controls	America	214	Child	Maltreatment	+												
Borman & Overman, 2004	Long	Stratified random	America	3981	Child	Racial Minority	+												
Born, Chevalier, & Humblet, 1997	Long	Stratified random	Belgium	363	Adol	Delinquency			+			+							Mature (+)
Cicchetti et al, 1993; Cicchetti & Rogosch, 1997; Flores, Cicchetti, & Rogosch, 2005	Long	Summer camp for disadvantaged children	America	213	Child-Adol	Low SES, Maltreatment	+	+	+		+	+							
Costa, Jessor, & Turbin, 1999	Long	Targeted schools to maximise minorities	America	1188	Adol	Alcohol abuse	+			+		+						0	
Egeland, Jacobvitz & Sroufe 1988; Egeland 1997; Farber & Egeland, 1987; Pianta, Egeland & Sroufe, 1990; Egeland & Kreutzer, 1991; Teo et al, 1996	Long	<i>Minnesota Mother-Child Project</i> : Targeted Prospective cohort of high risk primiparous women with unplanned preg	America	267	Infant-Adol	Low SES, Single parent					+		+	0					Mature (+)
Felsman & Vaillant, 1987	Long	Non delinquent controls from paired cohort study (delinquency)	America	456	Adol-Adult	Inner city, Low SES						0					+		
Fergusson & Lynskey 1996, Fergusson & Horwood 2003	Long	Prospective birth cohort	New Zealand	1265	Infant-Adol	Low SES, Family conflict/drug abuse	+				+						0		
Finn & Rock, 1997	Long	Stratified random sample	America	1803	Adol	Low SES	+	+											
Forehand et al, 2000	Long	Subsample of <i>Family &amp; Community Health Study</i> : Stratified by area	America	136 Rural 141 Urban	Child-Adol	Single mothers, Low SES													
Ge et al, 1994; Brody, Stoneman, Flor, 1996; Scarmella, Conger, Simons, 1999; Simons et al, 2001	Long	<i>Iowa Youth and Families Project</i> : Targeted intact rural families with seventh grader in eight-county area	America	451	Adol	Racial minority, NLE, Oppositional behaviour												0	
Gore & Aseltine, 1995	Long	Systematic probability sample	America	1036	Adol	NLE		+	+										
Gribble, Cowen, Wyman, Work, Wannon & Raoof 1993	Long	Targeted school sample: >3 stressful life events	America	131	Child	Low SES, NLE													
Herman-Stahl, Petersen, 1996; 1999	Long	2 of 3 schools in district	America	458	Child	NLE		+	+	+									Avoid coping (-)

Table 7 (continued)

Summary count of resilience studies and the nature of the relationship reported for individual resilience factors

Papers	Study type	Sampling	Study location	Sample size	Age group	Risk / Adversity	Confidence/Self Esteem	Internal LOC/Self efficacy	Social Skills / Empathy	Positive future/Optimism	IQ	Cognitive Emotional skills	Problem solving/self help	Temperament	Persistent/Motivated	Involved in activities	Religion/Spirituality	Other (<3 studies)	
Ladd & Burgess 2001	Long	Representative sample kindergartens	America	396	Child	Early aggression			+										Aggression (-)
Masten et al., 1988; 1999	Long	2 schools in neighbourhood	America	205	Child	NLE					+								
O'Grady & Metz, 1987	Long	Hospital birth cohort		109	Infant-Child	Assessed at risk		+											
Owens et al, 1999	Long	Mothers accessing food aid program	America	310	Child	Low SES					+	+		+					
Prior et al, 2001	Long	Subsample <i>Australian Temperament Project</i> , Victorian cohort n=2443	Australia	186	Child	At-risk of mental disorder			+					+					
Regnerus & Elder Jr 2003; Crosnoe, Cavanaugh & Elder Jr 2003	Long	<i>ADD Health</i> : Nationally representative school sample	America	9667	Adol	Emotionally distant parents	+												+
Rumberger, 1995, Kogan et al., 2005	Long	<i>National Education Longitudinal Study of 1988</i> , subsample of school dropouts	America	318	Adol	Dropping out of school	+	+		+									0
Rutter & Quinton 1984; Quinton & Rutter 1984; Quinton, Rutter & Liddle 1985; Dowdney et al, 1985; Quinton, 1987	Long	Families with child admitted to care over 8 month period and matched GP control group	English	130	Child-Adult	Residential Care													Positive planning (+)
Sameroff, Seifer & Zax 1982; Sameroff & Seifer 1983; Barocas, Seifer & Sameroff 1985; Baldwin, Baldwin & Cole 1990; Seifer et al 1992; 1996; Sameroff et al,1998	Long	<i>Rochester Longitudinal Study</i> : Primiparous women with mental illness targeted through county wide psychiatric register, matched controls.	America	152	Infant-Adol	Low SES, Mo mental illness / racial minority, NLE	+	+						+					
Shiner & Masten, 2002; Shiner, Masten, Roberts, 2003	Long	<i>Project Competence</i> : Normative school population cohort	America	302	Child-Adult	NLE	+	+	+		+			+	+				
Vaillant & Davis, 2000	Long	Non delinquent controls from paired cohort study (of delinquency)	America	349	Adol-Adult	Low SES, Low IQ			+			+				+			Effective coping (+)
Werner, 1990, 1995, 1996; Werner & Smith, 1992	Long	Prospective birth cohort	Hawaii	698	Infant-Adult	Low SES	+	+	+	+			+	+		+	+		

Table 7 (continued)

Summary count of resilience studies and the nature of the relationship reported for individual resilience factors

Papers	Study type	Sampling	Study location	Sample size	Age group	Risk / Adversity	Confidence/Self Esteem	Internal LOC/Self efficacy	Social Skills / Empathy	Positive future/Optimism	IQ	Cognitive Emotional skills	Problem solving/self help	Temperament	Persistent/Motivated	Involved in activities	Religion/Spirituality	Other (<3 studies)
Wyman et al, 1991; Wyman et al, 1992; 1993; 1999; Cowen, Wyman & Work 1996; Magnus et al, 1999;	Long	Subsample <i>Rochester Child Resilience Project</i> , representative school sample: Families > 3 NLE	America	131	Child	Low SES, NLE	+	+	+	+			+	+				Realistic control (+)
Beardslee & Podorefsky 1988; Beardslee, 1989	Long Qual	Community survey, random sampling, clinic sample	America	20	Adol	Cancer survivor/parent mentally ill		+		+			+		+			Self reflection (+)
Clark, 1983; Clark 2003	Long Qual	Non random	England	10	Adol	Low SES, Racial minority	+	+	+	+					+	+		
Hauser, 1999	Long Qual	Psychiatric hospital cohort	America	35	Adol-Adult	Psychiatric illness hospitalisation	+	+							+			Self reflection (+)
Bender & Losel, 1997; Losel & Bliesner, 2000	Long Qual & Quant	Case selection from 60 German residential institutions	Germany	146	Adol	Residential Care	+			+	+				+		+	
Buckner et al, 2003	X-sect	Subsample of longitudinal case study	America	155	Adol	Low SES, homeless	+					+	+					
Buyse, 1997	X-sect	Representative: all adol admitted over 3 months (n= 92) and 63 controls	Holland	155	Adol	Treatment centre admission	+	0										
Cauce, Hannan, & Sargeant, 1992	X-sect	3 schools: all students in target grades	America	120	Adol	NLE		+										
D'Imperio, Dubow, & Ippolito, 2000	X-sect	1 school	America	185	Adol	Low SES	0		0									Approach cop(0)
Dubow & Luster, 1990	X-sect	Subsample <i>National Longitudinal Survey of Youth</i>	America	721	Adol	Teenage mothers, Low SES	+				+							
Dubow, Edwards & Ippolito 1997	X-sect	3 city schools, 3 community clubs	America	315	Adol	NLE, disadvantage	+											
Dumont & Provost 1999	X-sect	1 school	Quebec	297	Adol	Daily hassles, depression	+						+					
Edmond, Auslander, Elze, Bowland	X-sect	Participants in HIV prevention and life skills program	America	99	Adol	Sexual abuse, residential care				+								0



Table 7 (continued)

Summary count of resilience studies and the nature of the relationship reported for individual resilience factors

Papers	Study type	Sampling	Study location	Sample size	Age group	Risk / Adversity	Confidence/Self Esteem	Internal LOC/Self efficacy	Social Skills / Empathy	Positive future/Optimism	IQ	Cognitive Emotional skills	Problem solving/self help	Temperament	Persistent/Motivated	Involved in activities	Religion/Spirituality	Other (<3 studies)	
Garnezy, 1987	X-sect	Community cohort (2 schools), cohort from special needs school	America	200	Child-Adol	NLE, Physical handicap					+		+					Humour (+)	
LaFromboise et al, 2006	X-sect	3 American Indian reservations, all families with adolescent	America	212	Child-Adol	Low SES, parents substance abuse	0												
Luthar, 1991	X-sect	1 School, random class selection	America	144	Adol	Low SES, NLE		+	+		-	+							
Luthar, D'Avanzo & Hites, 2003	X-sect	Targeted: Outpatient clinics, community, primary health care	America	227	Child	Mo drug addicted /mental illness					+								
Murry & Brody, 1999	X-sect	Targeted: Georgia counties with at least 25% African-American pop	America	162	Child	Single parent, Racial minority			+			+		+					
Smith & Prior, 1995	X-sect	Subsample of prospective longitudinal cohort: families >1 NLE in past year	Australia	81	Child-Adol	High stress families			+	+	0								
Spaccarelli & Kim, 1995	X-sect	Clinic patients (non-random)	America	43	Adol	Sexual abuse													
Springer & Gastfriend, 1995	X-sect	Targeted: ALATEEN sponsors, treatment facility administrators	America	24	Adol	Alcoholic father			+		0								
Tiet et al., 1998	X-sect	National Institute of Mental Health Methods: 4 site probability sample	America	1285	Child-Adol	NLE						+							
Fuller, McGraw, & Goodyear, 1999	X-sect Qual Quant	Targeted schools to include rural/metro and state/private schools	Australia	267 1080	Adol	Community sample										+	+		
Floyd, 1996	X-sect Qual	Non random	America	20	Adol	Low SES/Racial Minority											+		
							Count (+)	19	18	14	10	11	8	7	7	4	5	4	
							Count (0)	2	1	1	1	2	0	0	1	0	1	4	
							Count (-)	0	0	0	0	1	0	0	0	0	0	0	

Note. Long = Longitudinal; Adol = Adolescent; NLE = Negative Life Events; Mo = Mother; X-Sect = Cross sectional; Qual = Qualitative; Quant = Quantitative

outcomes (positive, negative or no impact) for each factor studied. Individual resilience factors will now be examined in greater detail, grouped under the overarching themes of positive self-perception; cognitive skills; social skills; positive expectations for the future; and religiosity.

#### ***4.2.1 Positive self-perception (confidence, self-esteem)***

The notion of a positive self-perception has been variously examined in the resilience literature with references to confidence, positive self-esteem and self-worth. Arguably, these concepts all relate to a positive perception of self and, to facilitate brevity and simplicity, such papers will be examined together. As shown in Table 7, many studies have reported a significant positive association between positive self-concept and resilient outcomes. For instance, in a three year longitudinal study of 213 children, Cicchetti and Rogosch (1997) reported a significant positive relationship between positive self-esteem and resilient outcomes. The authors compared maltreated and nonmaltreated young people attending a summer camp program for low SES youth. The authors found that self-esteem was one of the factors that differentiated functioning levels in the maltreated group, with self-esteem significantly higher in the high functioning group compared to the medium and again to the low functioning group. Thus the resilient children had significantly higher self-esteem than those identified as performing poorly.

Interestingly, the authors found slightly different predictors of adaptive functioning in the two at-risk samples. For the maltreated young people, the predictors of adaptive functioning over the three years were the individual characteristics of ego-resiliency, ego over-control and self-esteem. For the nonmaltreated children only, the two relationship factors of a positive bond with their mother and the camp counsellor also contributed. The impact of context (maltreated versus nonmaltreated) on which factors contributed to resilient outcomes highlights some of the complexity inherent in resilience research. For maltreated children, a desire for a close bond with their mother was maladaptive and associated with poorer outcomes. Instead the maltreated children with the best outcomes were self-reliant and had confidence in their own abilities. The authors also reported poorer social skills in the maltreated children, who exhibited less pro-social behaviour and were less likely to form a positive bond with their camp counsellor than nonmaltreated

children. Thus certain contexts such as physical or sexual abuse may inhibit or negate factors that would otherwise enhance resilience (e.g. seeking support from parents) and/or inhibit the development of other resilience factors (e.g. social skills). It is therefore crucial to consider contextual factors when examining resilience.

As can be seen in Table 7, the relationship between positive self-perception and resilient outcomes has been identified in a range of high-risk populations including racial minorities, low SES families, family conflict, sexually abused adolescents and mentally ill parents (Cicchetti et al., 1993; Fergusson & Horwood, 2003). Similarly, evidence for positive self-perception as a resilience factor has been observed using a range of research approaches and sampling procedures (see Table 7), including prospective longitudinal (e.g. Masten et al., 1999) and large cross-sectional studies (e.g. Buckner, Mezzacappa, & Beardslee, 2003); national probability community samples (e.g. Dubow & Luster, 1990); large-scale school samples (e.g. Finn & Rock, 1997) and birth cohorts (e.g. Werner & Smith, 1992).

Only two small to medium cross sectional studies (D'Imperio, Dubow, & Ippolito, 2000; LaFromboise, Hoyt, Oliver, & Whitbeck, 2006) reported no association between positive self-perception and resilient outcomes (see Table 7). This lack of significant findings may be due to inadequate sample sizes for subgroup comparisons in relation to self perception<sup>2</sup>. In a large New Zealand birth cohort longitudinal study a mixed result was reported, with higher self-esteem significantly associated with a decreased likelihood of externalising, but not internalising problems, in high risk adolescents (Fergusson & Horwood, 2003). However, the weight of evidence supports a significant positive association between positive self-perception and resilient outcomes.

Positive self-perception has been shown to be a resilience factor in a variety of settings using a range of research methods, providing strong support for the

---

<sup>2</sup> D'Imperio, Dubow, Ippolito (2000) compared the self esteem of 38 resilient students (high stress/high competence) with 46 nonresilient students (high stress/low competence). While LaFromboise et al examined differences in self competence and global self worth in 126 adolescents grouped into one of three levels of adversity exposure (group numbers not provided). Both analyses potentially lacked the power required to identify significant differences.

validity of the positive relationship. No studies have identified a negative association between positive self-perception and resilient outcomes. Positive self-perception, encompassing confidence, positive self-esteem and self-worth, has therefore been sufficiently supported as a resilience factor to warrant inclusion in the new measurement tool.

#### ***4.2.2 Cognitive skills***

Cognitive skills or mental processes relating to the control of attention, emotion and behaviour are key components of individual development and underlie children's adaptive functioning in a number of key domains including academic achievement and social relationships (Cicchetti & Tucker, 1994; Shields & Cicchetti, 1998). It is apparent that individuals differ in how they respond to adverse events partly because of cognitive differences in the way they perceive and process their experiences (e.g. Buckner et al., 2003; Nuechterlein, Phipps-Yonas, Driscoll, & Garnezy, 1990; Wilson & Gottman, 1996). Such cognitive processes or skills have been variously labelled and investigated including self-organisation (Block & Kremen, 1996), self-regulation (Masten & Coatsworth, 1998) or emotion regulation skills (Shields & Cicchetti, 1998; Wilson & Gottman, 1996). Cognitive skills that have been identified as influencing resilient or vulnerable outcomes include control beliefs, problem solving skills and emotion regulation. These will be examined in turn.

*Control beliefs:* Control beliefs have been broadly examined in resilience research. Control beliefs explore an individual's tendency to ascribe internal or external factors as controlling events and outcomes. Outside of resilience research, research has generally shown positive adjustment to be associated with an internal rather than external locus of control (e.g. Nowicki & Strickland, 1973). Within resilience research, locus of control has been identified as an important facet of resilient outcomes (Seifer et al., 1992). As shown in Table 7, a significant positive association between internal control beliefs and resilient outcomes has been supported in a range of risk settings including minority students from low income families (e.g. Finn & Rock, 1997); maltreatment (e.g. Bolger & Patterson, 2001); poverty and family instability (e.g. Werner, 1987); and low income urban families (e.g. Wyman, 2003). The positive impact of control beliefs on resilient outcomes has been

identified in prospective longitudinal and cross sectional studies, utilising both quantitative and qualitative methods (see Table 7). For example, Wyman and colleagues differentiated control beliefs to include *realistic* control where “children’s expectation for controlling problems (e.g. arguments, substance use) should vary according to the likelihood of children’s typical age-appropriate ability to influence those outcomes” (Wyman, 2003, p. 302). For the children in this study this meant recognising that they were not able to control conflict between their parents, but did have control over conflict with peers or their academic achievement. The authors found that children classified as stress-resilient were more likely to show realistic control beliefs than those classified as stress-affected (Cowen et al., 1997).

Self-efficacy is a closely related concept to locus of control and has been defined as a confidence or belief in one’s own ability to bring about positive change (Bandura, 1995). As with locus of control, studies examining self-efficacy have shown higher self-efficacy to be associated with resilient outcomes (e.g. Cowen et al., 1991; Herman-Stahl & Petersen, 1999).

Of the 19 studies examining control beliefs shown in Table 7, only one small cross-sectional study of Dutch adolescents (Buysse, 1997) failed to find a significant association between control beliefs and resilient outcomes, possibly due to small sample size and measurement issues<sup>3</sup>. No studies have reported a negative association between control beliefs and resilient outcomes. It was apparent from this examination of the resilience research that assessment of internal control beliefs is important in a resilience measure.

*Problem solving:* The ability to solve problems is another cognitive process that has been identified as important in resilience research (see Table 7). For example, Cowen and colleagues conducted a large study of ‘highly stressed urban children’ and their families. The authors used negative life events checklists and competence measures to identify groups of stress-resilient (high stress/high competence) and stress-affected children (high stress/low competence). The stress-resilient children were found to have significantly better social problem solving skills

---

<sup>3</sup> The locus of control subscale used had very poor reliability for a ten item scale ( $\alpha = 0.5$ ).

than both the stress-affected and non-classified children (Cowen et al., 1997). In a longitudinal qualitative study of adolescents living with a mentally ill parent, Beardslee and Podorefsky (1988) wrote “the young men and women who adapted well were doers and problem solvers. .... Subjects commented that it was this problem solving, action orientation – a rejection of extraneous thoughts - which enabled them to function so well” (p. 67).

All of the studies assessing problem solving skills reported a significant positive association with resilient outcomes (see Table 7). Problem solving skills have been identified as promoting resilient outcomes in a range of risk situations including poverty and abuse (e.g. Egeland, 1997), homelessness (e.g. Buckner et al., 2003), cancer survivors and parents with a mental illness (e.g. Beardslee, 1989) and depression (e.g. Dumont & Provost, 1999). As recorded in Table 7, the relationship has been identified via a range of research methods including prospective longitudinal and cross sectional studies, utilising both quantitative and qualitative methods. Problem solving skills have therefore been sufficiently supported as a resilience factor to warrant inclusion in the resilience measure being developed.

*Emotion regulation:* Cognitive understanding and control of emotions has been less extensively researched than the previous two areas (see Table 7). Emotion regulation refers to the processes involved in initiating, maintaining and modulating the occurrence, intensity or duration of internal feeling states (Eisenberg et al., 1997). Aspects of emotion regulation skills have been variously examined and labelled, and the terms used in the resilience literature will be briefly defined prior to the examination of the research findings. Positive emotionality is an active engagement in environments, enthusiasm, zest, and wellbeing, while negative emotionality has been defined as anxiety, resentment, and anger and having negatively charged relationships (e.g. Shiner, Masten, & Tellegen, 2002). Emotional lability relates to difficulty recovering from strong feelings, while inappropriate affect refers to socially inappropriate expression of positive or negative emotion (e.g. Shields & Cicchetti, 1998). Positive emotion regulation skills involve processes by which positive emotionality is maximised or negative emotionality, emotional lability and inappropriate affect minimised. Emotion regulation skills will now be examined in relation to both resilience research and research more broadly.

Evidence for an association between emotion regulation skills and resilient outcomes has been limited, with few studies investigating this area. However the studies available have reported a positive relationship between emotion regulation skills and resilient outcomes. For example, in a small longitudinal study of low income families (Owens, Shaw, Giovannelli, Garcia, & Yaggi, 1999), low levels of negative emotionality at five years of age was protective for externalising but not internalising behaviour problems at six years of age. Similarly, in a small cross-sectional study (Buckner et al., 2003), resilient youths<sup>4</sup> had significantly higher self-regulation scores than did youth classified as nonresilient (self-regulation included both executive function and emotion-regulation skills). In this study, self-regulation was found to be a powerful independent predictor of resilience over and above a range of other factors including age, gender, self-esteem, parental monitoring and emotional support. No studies were identified that reported a negative association between emotion regulation skills and resilient outcomes.

The notion that emotion regulation skills are positively associated with resilient outcomes is in accordance with findings outside the field of resilience, where poor emotion regulation skills have been associated with social and behavioural problems (Eisenberg et al., 1997; Sanson, Oberklaid, Pedlow, & Prior, 1991; Sanson, Smart, Prior, & Oberklaid, 1993; Shields & Cicchetti, 1998; Shiner et al., 2002). Examining the limited evidence available within resilience research and more broadly, Masten and Coatsworth conclude, “the work on self-regulation as a whole strongly suggests that these skills are extremely important for the development of competence” (1998, p. 209). Thus whilst there has been limited research into the impact of emotion regulation skills on resilience, the available evidence supports that reported in other research areas and suggests that emotion-regulation skills are likely to facilitate positive outcomes in risk situations. Therefore, to facilitate further research in the area of emotion regulation and resilience and to ensure a comprehensive measure of resilience, emotion regulation skills were included in the new measure.

---

<sup>4</sup> Resilient youth were those who were free of clinically significant mental health symptoms (both internalizing and externalizing) and evidenced good functioning. Nonresilient youths were those with significant mental health problems and at least some difficulties in adaptive functioning.

In summary, it has been determined that in order to develop a comprehensive measure of resilience, a range of cognitive skills should be assessed including control beliefs, problem solving skills and emotion regulation.

#### **4.2.3 Social skills**

Social skills have been described as the interpersonal behaviours needed to develop and deepen supportive personal relationships (Lieberman, et al., 1986). The development and maintenance of bonds with others has been identified as an important developmental task throughout the lifespan (Carlson & Sroufe, 1995; Hartup, 1983) and has wide ranging implications for healthy development throughout the life span (see Hartup, 1983; Turner, Frankel, & Levin, 1983). It is not surprising therefore that social skills have been identified as contributing to resilient outcomes. Table 7 shows the range of studies supporting the positive association between social skills and resilient outcomes (e.g. Born, Chevalier, & Humblet, 1997; Parker, Cowen, Work, & Wyman, 1990; Shiner et al., 2002). Resilience has been significantly associated with having positive, reciprocal friendships in maltreated children (Bolger & Patterson, 2003); an ability to form appropriate attachments in delinquent youths (Born et al., 1997); higher empathy and better social problem solving skills in impoverished families (Cowen et al., 1992; Parker et al., 1990) and good communication skills (Farber & Egeland, 1987). Thus a range of social skills including forming friendships, empathy and social problem solving skills have been associated with individuals who show positive outcomes in the face of adversity.

As reported in Table 7, the positive association between social skills and resilient outcomes has been reported across a range of risk settings including the juvenile justice system (Born et al., 1997), maltreated young people (Cicchetti et al., 1993), poverty (Farber & Egeland, 1987) and mental disability (Vaillant & Davis, 2000). The positive relationship has been identified in both prospective longitudinal studies and large scale cross-sectional studies. While D'Imperio et al. (2000) failed to identify a significant association between social skills and resilient outcomes (probably due to very small numbers in the comparison groups, see footnote 1), no studies identified a negative association. There was sufficient evidence to warrant the inclusion of social skills such as empathy, communication and the making and maintaining friendships in the resilience measure.



#### ***4.2.4 Positive expectations for the future / optimism***

Positive expectations of the future and the related construct of optimism have commonly been associated with resilient outcomes for individuals at risk (see Table 7). A positive sense of the future can be conceptualised as “expectations of attaining specific objectives (e.g. achieving in school, having close friends) in later developmental periods” (Wyman, Cowen, Work, & Kerley, 1993, p. 651). A comparable construct to positive future expectations is optimism, which can be defined as a general expectation of positive outcomes (Scheier & Carver, 1993). Optimism and positive expectations of the future have been shown to be significantly positively correlated (Carver, Reynolds, & Scheier, 1994) and are therefore closely related concepts. It is therefore not surprising that both positive future expectations and optimism have been positively associated with resilient outcomes.

For instance, in a large prospective longitudinal study of inner city children (Wyman et al., 1993; Wyman et al., 1992), exposure to four or more stressors and multidomain adjustment scores were used to identify stress-resilient ( $n = 75$ ) and stress-affected children ( $n = 72$ ). The resilient children had significantly more positive expectations for the future compared to the stress-affected children. Furthermore, a positive sense of the future at 9-11 years of age predicted enhanced socioemotional adjustment and a more internal locus of control two to three years later (Wyman et al., 1993). Importantly, positive future expectations were a stronger predictor of enhanced competence for children who were stress-affected at time one than those who were resilient. That is, it was protective for children affected by high levels of stress. It has been suggested that positive expectations of the future may lead to planning, problem solving skills, utilisation of social networks and involvement in competence building activities healthy adaptation and act to counter helplessness and frustration in response to adversity (Dubow, Arnett, Smith, & Ippolito, 2001; Wyman et al., 1992).

Conversely, having low expectations of success in the future has been shown to decrease the likelihood of resilient outcomes. For example, in a large scale longitudinal study, Costa, Jessor and Turbin (1999) found that low expectations of future success increased the likelihood of adolescents' involvement in problem drinking behaviours. Of the ten studies examining positive expectations of the future,

a single cross-sectional pilot study of the male offspring of an alcoholic parent did not find a significant association between optimism and resilient outcomes, although it is likely that the very small sample of 24 adults lacked sufficient power to detect significant relationships (Springer & Gastfriend, 1995).

As reported in Table 7, the significant association between positive expectations of the future and resilient outcomes has been identified via a range of research methods and in various risk populations: qualitative studies of cancer survivors and mentally ill parents (e.g. Beardslee & Podorefsky, 1988), residential care (e.g. Dearden, 2004) low SES minority families and adolescents (e.g. Clark, 1983); quantitatively in prospective longitudinal studies (e.g. Herman-Stahl & Petersen, 1996) and cross-sectional studies (e.g. Dubow et al., 2001). Thus positive future expectations and optimism were sufficiently supported to be included in the measure of resilience being developed.

#### ***4.2.5 Individual factors not included***

This section describes the grounds for not including in the questionnaire three factors previously identified in the literature as positively impacting on resilient outcomes. While a positive association between religion, temperament, intelligence and resilient outcomes has been reported in previous studies (see Table 7), the decision was made not to include these factors for the following reasons.

*Religion:* Involvement in religion has been hypothesised to “promote conventional values, facilitate interaction and to establish strong social bonds ...” (Brody, Stoneman, & Flor, 1996, p. 696). Such factors feature in resilience research and indeed there has been some limited evidence supporting religiosity as a resilience factor. For instance, in a large-scale longitudinal study, Regnerus and Elder (2003) reported a moderate protective effect of religion for adolescents from low income backgrounds in relation to academic outcomes. Similarly, Werner and Smith (2001) identified conversion to a religion which required active participation in a community as being associated with resilient outcomes for a small number of young Hawaiian adults who were identified as being at-risk infants. However, as shown in Table 7, a number of research studies failed to identify a significant association between religiosity and resilient outcomes; although in some of these studies indirect effects

were identified. For example, child religiosity was found to have no direct effect on delinquency, but did have an indirect effect through decreasing affiliation with deviant peers and facilitating traditional moral beliefs (L. Simons, Simons, & Conger, 2004). Thus the evidence for the positive association of religiosity and resilient outcomes was not conclusive.

Given the inconclusive evidence, combined with religiosity arguably being a social and cultural factor rather than an individual characteristic or skill, the decision was taken not to include religiosity in the questionnaire. Where researchers have an interest in this area, it may be more beneficial to combine a specific measure of religiosity with the resilience questionnaire, thus providing more detailed data and facilitating greater understanding of the processes occurring.

*Temperament:* It can be seen in Table 7 that temperament has been positively and significantly associated with resilient outcomes (e.g. Prior, Smart, Sanson, & Oberklaid, 2001). Two issues precluded temperament from being included in the resilience measure. Firstly, temperament is thought to be innate and potentially genetically determined and thus has limited potential for change (Mroczek & Little, 2006; Thomas, 1968). Therefore including temperament in the resilience measure was considered less advantageous than factors that could be positively influenced to improve young people's resilience. Secondly, similar to the issues discussed in relation to resilience research (Chapter 2), there remains ongoing debate around the theoretical and definitional understanding of temperament – “temperament research has not settled on a consensual structural model” (Mroczek & Little, 2006, p. 119). Consequently there are numerous and different methods and tools for measuring temperament; and ongoing disagreement as to the best method. Thus it is impossible to satisfactorily address such issues within a small section of a resilience measure. It was concluded that researchers with an interest in temperament and resilience would be better served by utilising one of the more comprehensive temperament measures available, in combination with the resilience questionnaire.

*Intelligence:* Intelligence has been found to be significantly positively associated with resilient outcomes (e.g. Masten et al., 1999). Intelligence was the only resilience factor with significant positive (e.g. Masten et al., 1999), significant negative (e.g. Luthar, 1991) and no association with resilient outcomes (e.g. Smith &

Prior, 1995) reported in different studies. These contradictory findings suggest the relationship between intelligence and resilience is a complex one. Therefore the decision was made to exclude intelligence from the questionnaire due to: 1) the likely complexity of the relationship between intelligence and resilience; and 2) the difficulty of assessing intelligence within a brief measure of resilience. There are standardised measures currently available to measure intelligence and researchers would produce better results by utilising such measures in combination with the resilience questionnaire.

#### ***4.2.6 Summary of individual resilience factors to be included in the questionnaire***

In summary, a number of individual skills and characteristics have been shown to significantly impact on an individual's ability to achieve positive outcomes in the face of adversity. The review of the literature indicated that a comprehensive measure of individual resilience factors should include the following individual characteristics: positive self-concept, cognitive skills including control beliefs, problem solving skills and emotion regulation, social skills and a positive sense of the future. These factors were the focus of scale development in the individual domain of the questionnaire.

### **4.3 Family resilience factors**

Family relationships play a large role in children's development (Maccoby, 1992). The pathways by which parents influence their children are many (Bowlby, 1997; Bronfenbrenner, 1979; Steinberg, 2000). Aside from direct parent-child interactions, parents influence children's lives through cognitive stimulation and behavioural regulation, and they can be a source of advice and guidance about the child's social relationships with peers, teachers, and others outside of the family. Parents provide social opportunities in their children's lives, with the opportunity to promote positive and discourage negative relationships. The active role children play in shaping their family experiences and the transactional nature of familial relationships is also receiving greater attention in current research (Parke, 2004). Not surprisingly, these family characteristics have been identified as contributing to resilient outcomes. Examination of family characteristics that promote resilient or

vulnerable outcomes has been a central theme of resilience research and a number of factors have been identified as important.

Family factors associated with resilient outcomes range from general family support or cohesion, to examination of more specific aspects of family life such as discipline practices or parental monitoring of children. Studies examining family impact on resilient outcomes are shown in Table 8, including authors, study type, sample, risk and protective factors examined and the findings (positive, negative or no impact) for each factor. The family factors detailed in Table 8 will now be examined in greater detail, from general family support to more specific family characteristics.

#### ***4.3.1 General family support / cohesiveness***

At a global level, resilience research has examined whether general family support or family cohesion is positively associated with resilient outcomes. As reported in Table 8, the vast majority of studies examining family support report a significant positive impact, with only four of the 25 studies not finding a significant association and no studies reporting a negative association. A significant positive association was reported in both longitudinal (e.g. Furstenberg & Hughes, 1995 ) and large cross sectional studies (Tiet et al., 1998) and in a range of at risk populations including: adolescents at risk of depression (e.g. Carbonell, Reinherz, & Giaconia, 1998); single parents living in poverty (e.g. Egeland & Kreutzer, 1991); and exposure to a high number of negative life events (e.g. Herman-Stahl & Petersen, 1999). Family impact on resilient outcomes has been further clarified by studies examining more specific characteristics such as the parent-child relationship, communication and parental monitoring.

#### ***4.3.2 Parent-child relationship***

Two influential attributes of parent-child relationships have been identified in the resilience literature: a close bond with a parent or carer and the warm and nurturing involvement of parents (see Table 8). For instance, Werner (1992) in her prospective longitudinal Hawaiian birth cohort study found that all children identified as resilient had had an opportunity to form a close bond with at least one caregiver

Table 8

Summary count of resilience studies and the nature of the relationship reported for family resilience factors

Paper	Study type	Sampling	Study Location	Sample size	Age	Risk / Adversity	Family support/ cohesion	Close bond/warm caregiver	Parent involved/ nurturing	Monitor children	Appropriate/positive expectations	Consistent discipline	Parent coping/self efficacy	Communication/Expressive	No long separation	Expectations of child achievement	Other family factors (< 3 studies)
Born, Chevalier, & Humblet, 1997	Long	Random stratified	Belgium	363	Adol	Delinquency											
Carbonell, Reinherz, & Giaconia, 1998	Long	Subsample of kindergarten cohort N = 400	America	108	Infant-Adol	3 risk factors for depression	+										Pos sibling rel'ships(+)
Cicchetti & Rogosch, 1997; Cicchetti et al, 1993; Flores, Cicchetti&Rogosch, 2005	Long	Summer camp for disadvantaged children	England	213	Child-Adol	Low SES, Maltreatment											
Crosnoe, Mistry & Elder Jr, 2002;	Long	Philadelphia Project subsample: Stratified random sampling	America	489	Adol	Low SES families			+				+			+	
Farber & Egeland, 1987; Pianta, Egeland, & Sroufe, 1990; Teo et al, 1996; Jimerson, Egeland & Teo, 1999	Long	<i>Minnesota Mother-Child Project</i> : Prospective cohort of high risk primiparous women	America	267	Infant-Adol	Low SES, Single parent	+	+			+						Par involved in school (+)
Fergusson & Lynskey 1996, Fergusson & Horwood 2003	Long	Prospective birth cohort	New Zealand	1265	Infant-Adol	Low SES, family conflict, drug abuse			+	+							
Furstenberg Jr. & Hughes 1995; Furstenberg & Weiss (2000)	Long	Participants in prenatal care program	America	404	Infant-Adol	Teenage parents	+			+					+	0	Help homework (0); shared activities (+)
Ge et al., 1994; 1996; Scaramella, Conger & Simons 1999; Simons, et al, 2001; Kim et al., 2003	Long	<i>Iowa Youth and Families Project</i> : Targeted intact rural families with 7th grader in eight-county area	America	451	Adol	Racial minority, NLE			+	+		+					
Gore & Aseltine, 1995	Long	Systematic probability sample	America	1036	Adol	NLE	+										
Herman-Stahl, Petersen, 1996	Long	2 of 3 district schools	America	458	Adol	NLE, Depression	+	+									
Kogan et al, 2005	Long	<i>National Education Longitudinal Study of 1988</i> : Subsample of school dropouts	America	318	Adol	Dropping out of school	+										

Table 8 (continued)

Summary count of resilience studies and the nature of the relationship reported for family resilience factors

Paper	Study type	Sampling	Study Location	Sample size	Age	Risk / Adversity	Family support/ cohesion	Close bond/warm caregiver	Parent involved/ nurturing	Monitor children	Appropriate/positive expectations	Consistent discipline	Parent coping/self efficacy	Communication/Expressive	No long separation	Expectations of child achievement	Other family factors (< 3 studies)
Maggs et al, 1997	Long	Representative school sample	America	693	Adol-Adult	Risk taking, drug use, antisocial beh'r	+										
Masten et al., 1988; 1999	Long	2 schools in neighbourhood	America	205	Child	NLE	+	+									
O'Donnell, Schwab-Stone, Muyeed, 2002	Long	Representative school sample	America	2600	Adol	Comm'ty Violence	+										
Parker et al, 1990; Wyman et al, 1991; 1993; 1999; Cowen et al., 1992; Gribble et al., 1993; Cowan & Schulz 1996; Cowen, Wyman & Work 1996; Cowen et al., 1997; Magnus et al, 1999; Work et al, 2003	Long	<i>Rochester Child Resilience Project:</i> Representative school sample: Targeted families >3 stressful life events = 131 with child 10-12 years	America	656 758	10-12 7-9	Low SES, NLE		+	+		+	+	+		+		Shared activities (+)
Phipps & Mulhern, 1995	Long	All patients over 2.5 year period	America	41	Child-Adol	Bone Marrow Transplant	+							+			
Masten et al, 1990; 1999; Gest et al, 1993	Long	<i>Project Competence:</i> Normative school population cohort	America	302	Child-Adult	NLE	+		+		+						
Regnerus & Elder Jr 2003; Crosnoe, Cavanaugh & Elder Jr 2003; Crosnoe & Elder, 2004	Long	<i>ADD Health:</i> Nationally representative school sample	America	9667	Adol	Emotionally distant parents	+										Siblings (0)
Rutter & Quinton 1984; Quinton & Rutter 1984; Quinton, Rutter & Liddle 1985; Dowdney et al., 1985; Quinton, 1987	Long	Families with child admitted to care over 8mth period and matched general practice control group	England	130	Child-Adult	Residential Care									+		

Table 8 (continued)

Summary count of resilience studies and the nature of the relationship reported for family resilience factors

Paper	Study type	Sampling	Study Location	Sample size	Age	Risk / Adversity	Family support/ cohesion	Close bond/warm caregiver	Parent involved/ nurturing	Monitor children	Appropriate/positive expectations	Consistent discipline	Parent coping/self efficacy	Communication/Expressive	No long separation	Expectations of child achievement	Other family factors (< 3 studies)
Sameroff, Seifer & Zax 1982; Sameroff & Seifer 1983; Barocas, Seifer & Sameroff 1985; Baldwin et al, 1990; Seifer et al, 1992; 1996; Sameroff, Seifer & Bartko 1997	Long	<i>Rochester Longitudinal Study</i> : Primiparous women with mental illness targeted through psychiatric register and matched controls.	America	152	Infant-Adol	Low SES, Mo with mental illness, NLE			+		+	+	+	+			Teaching (+) Mo social support (+) Low criticism (+)
Seidman & Pederson, 2003	Long	<i>Adolescent Pathways Project</i> : 2 cohorts representative school sample	America	1438	Child-Adol	Low SES, Hassles			+								
Simons et al, 2002; Stewart, Simons, Conger, 2002;	Long	<i>Family and Community Health Study</i> : Stratified sampling by area	America	841	Child	Racial minority			+								
Simons et al, 1999	Long	<i>Iowa Youth and Families Project</i> Targeted intact and single Mo families of 7th grader	America	328 Intact 206 Single	Child	Racial minority, divorced families		+									
Werner, 1986, 1988, 1990, 1995, 1996; Werner & Johnson, 1999; Werner & Smith, 1992	Long	Prospective birth cohort	Hawaii	682	Infant-Adult	Low SES		+							+		
Clark, 1983; Clark 2003	Long Qual	Non random	America	10	Adol	Low SES, Racial minority	+	+	+		+	+		+		+	Praise (+)
Bender & Losel, 1997; Losel & Bliesner, 2000	Long, Qual Quant	Targeted case selection from 60 residential institutions	Germany	146	Adol	Residential Care		0									
Baer et al, 1987	X-sect	Unclear - 2 schools	America	425	Adol	NLE	0						0				Family conflict -
Brody et al, 2002; Armistead et al, 2002; Forehand et al., 2000	X-sect	African-American families in target counties identified by community leaders	America	136 Rural 141 Urban	Child-Adol	Single Mo, Low SES		+	+	+ & 0							+ Urban 0 Rural
Brody et al, 2003;	X-sect	Targeted: Disadvantaged neighbourhoods, sample of families	America	296	Child-Adol	Poor neighbourhood, racial minority			+								Sibs with good grades



Table 8 (continued)

Summary count of resilience studies and the nature of the relationship reported for family resilience factors

Paper	Study type	Sampling	Study Location	Sample size	Age	Risk / Adversity	Family support/ cohesion	Close bond/warm caregiver	Parent involved/ nurturing	Monitor children	Appropriate/positive expectations	Consistent discipline	Parent coping/self efficacy	Communication/Expressive	No long separation	Expectations of child achievement	Other family factors (< 3 studies)
Buckner et al, 2003	X-sect	Subsample of longitudinal case control study	America	155	Adol	Low SES				+							
Buyse, 1997	X-sect	Representative (all adolescents in 3 months)	Holland	155	Adol	Treatment centre	0										Perceived conflict (0)
Cauce, Felner, & Primavera, 1982	X-sect	3 schools, random selection students	America	250	Adol	Low SES	0										
Cauce, Hannan, & Sargeant, 1992	X-sect	2 schools, all students in target grades	America	120	Adol	NLE	+										
D'Imperio, Dubow, & Ippolito, 2000	X-sect	1 school	America	185	Adol	Low SES	+										
Dubow & Luster, 1990	X-sect	Subsample of <i>NLSY</i>	America	721	Adol	Young Mo, Low SES		+									
Dubow, Edwards & Ippolito, 1997	X-sect	3 schools, 3 community clubs	America	315	Adol	NLE	+										
Dumont & Provost 1999	X-sect	1 school	Canada	297	Adol	NLE, Depression			+								
Edmond et al, 2006	X-sect	Participants in HIV prevention and life skills program	America	99	Adol	Sexual abuse, residential care	0										
Garnezy, 1987	X-sect	Community cohort (2 schools) & cohort from special needs school	America	200	Child-Adol	NLE, Physical disability	+	+			+	+					
LaFromboise et al, 2006	X-sect	3 American Indian reservations, all families with adolescent	America	212	Child/Adol	Low SES, Parent substance abuse		+									
Legault, Anawati, Flynn 2005	X-sect	Convenience: Agencies in LAC initiative	America	220	Adol	Foster care		+									
Luthar, D'Avanzo & Hites, 2003	X-sect	Outpatient treatment clinics, community, primary health care	America	227	Child	Low SES, Mo drug addict/mental illness						+	+				
Miliotis, Sesma, & Masten, 1999	X-sect	Families with child 6-11 yrs attending emergency shelter in 3 month period	America	59	Child	Homelessness		+				0					

Table 8 (continued)

Summary count of resilience studies and the nature of the relationship reported for family resilience factors

Paper	Study type	Sampling	Study Location	Sample size	Age	Risk / Adversity	Family support/ cohesion	Close bond/warm caregiver	Parent involved/ nurturing	Monitor children	Appropriate/positive expectations	Consistent discipline	Parent coping/self efficacy	Communication/Expressive	No long separation	Expectations of child achievement	Other family factors (< 3 studies)
Murry & Brody, 1999	X-sect	Targeted: Georgia counties with minimum 25% African-Americans	America	162	Child	Low SES, Single parent, Racial minority	+	0					+				
Rodgers & Rose, 2002	X-sect	Targeted schools to represent cross section of pop, random student sample	America	2144	Adol	Marital transitions		+		+							
Rosnati & Marta, 1997	X-sect	Unclear: 103 adoptive (foreign born) & 150 non-adoptive matched families	Italy	253	Adol	Adoption		+						+			
Smith & Prior, 1995	X-sect	Subsample of prospective longitudinal: families with >1 NLE past year	Australia	81	Child-Adol	NLE		+					+				
Spaccarelli & Kim, 1995	X-sect	Clinic patients (non-random)	America	43	Adol	Sexual abuse		+	+								
Tiet et al., 1998	X-sect	National Institute of Mental Health Methods: 4 site probability sample	America	1285	Child - Adol	NLE	+			+							
Marta, 2000	X-sect	Stratified sampling of schools	Italy	279	Adol	Psychosocial risk	+							+			
Fuller, McGraw, & Goodyear, 1999	X-sect Qual Quant	Targeted schools to include rural/metro and state/private	Australia	267 1080	Adol	Community sample	+										
Floyd, 1996	X-sect Qual	Non random	America n	20	Adol	Low SES, Racial Minority		+									
							Count (+)	21	20	13	5	6	6	6	5	4	2
							Count (0)	4	2	0	0	0	1	0	1	0	1
							Count (-)	0	0	0	0	0	0	0	0	0	0

Note. Long=Longitudinal; Adol=Adolescent; NLE=Negative Life Events; Mo=Mother; X-Sect=Cross sectional; Qual=Qualitative; Quant=Quantitative.

from whom they received positive nurturing, be it a parent, grandparent, older sibling, babysitter or neighbour. In contrast, poor outcomes have been identified for children who experienced prolonged periods of separation from their primary caregiver in infancy (e.g. Rutter et al., 1990; Werner & Smith, 1992; Wyman et al., 1992). Not restricted to infancy, the positive significant impact of a close bond with parents has also been reported for at risk child and adolescent populations (see Table 8). Only two of the 22 studies in Table 8 failed to find a significant positive association between a positive bond with a caregiver and resilient outcomes. One of these studies (Losel & Bliesner, 2000) was the only study in which data on parent-child bonding was gathered via retrospective reporting by adolescents. Retrospective reporting by adolescents may be a less reliable source of bonding data than direct methods such as recording of data at the time the behaviour occurs, for example in prospective longitudinal studies such as Egeland and Kreutzer (1991). The study may also have lacked power due to small numbers in the resilient versus non resilient analysis. The second study was a small cross-sectional study that employed an observational assessment of the mother-child bond, which was not identified as a protective factor in relation to the self regulation and self worth of children in low SES single parent black American families (Murry & Brody, 1999). This study may have lacked the power to identify significant relationships. No studies were identified that reported a negative association; therefore the weight of the evidence supported a strong parent-child bond as a resilience factor to be included in the new measure.

As reported in Table 8, warm and nurturing involvement of parents with their offspring has also been identified as a significant resilience factor (e.g. Spaccarelli & Kim, 1995). For example, in the Rochester Child Resilience project, a large prospective longitudinal study, the authors categorised highly stressed inner city children as resilient or stress-affected based on composite competence scores (Work, Cowen, Parker, & Wyman, 1990). The most sensitive predictor of a child's resilience status was the quality of the parenting they received, including nurturing involvement, parent empathy for the child's needs, developmentally appropriate expectations, consistent discipline, and positive expectations of the child's future (Wyman et al., 1999). This positive association between involved, nurturing parenting and resilient outcomes has been supported in both longitudinal and cross-sectional studies, and in a range of contexts (see Table 8), including divorce (R.

Simons, Lin, Gordon, Conger, & Lorenz, 1999), community violence (O'Donnell, Schwab-Stone, & Muyeed, 2002), low SES (Seidman & Pederson, 2003), sexual abuse (Spaccarelli & Kim, 1995) and exposure to negative life events (Masten et al., 1988). Adding weight to the supporting evidence, no studies were identified that reported a non-significant or negative association between nurturing involved parenting and resilient outcomes.

Other aspects of parenting that have been identified as significantly contributing to resilient outcomes include parents actively monitoring their children's activities (Buckner et al., 2003; O'Donnell et al., 2002), providing consistent discipline (e.g. Clark, 1983; Gribble et al., 1993) and positive expectations (e.g. Wyman et al., 1999) (see Table 8 for details). The impact of some of these more specific aspects of parenting was observed to vary according to context. Baldwin, and Cole's (1990) Rochester Longitudinal study illustrates this context specific impact. The authors found that successful discipline approaches varied according to high and low risk contexts. Effective parents of children living in high crime neighbourhoods were more restrictive, less democratic and more severe in their punishments than parents in families categorised as living in low risk contexts. However, being more democratic and less restrictive was more effective in the low risk context. Thus for some specific parenting and family factors, context may be a stronger influence on outcomes than general factors such as parent-child bond. To avoid complexity and enhance consistency, the focus of the new questionnaire was on the factors that showed more consistent, positive impacts on resilience, irrespective of context.

#### ***4.3.3 Family resilience factors to be included in the questionnaire***

Obviously, many of the above family resilience factors are closely linked with each other. Parents who are nurturing and involved are likely to form a cohesive and supportive family context, provide consistent discipline and monitor their children's activities. Therefore, the core family factors that have been widely examined and consistently reported as positively associated with resilient outcomes are the focus of the questionnaire scales, namely family support/cohesion, bonding with a caregiver and nurturing and warm parenting. These factors provided the content for the family domain in the new resilience questionnaire.

## **4.4 Peer resilience factors.**

Peer relationships are a vital part of human development (Hartup, 1983; Sroufe, Egeland, & Carlson, 1999) and become increasingly important during adolescence (T. J. Berndt, 1979; Steinberg & Silverberg, 1986). Peer relationships can be examined in terms of peer groups (acceptance, popularity) and dyadic friendships (Criss, Pettit, Bates, Dodge, & Lapp, 2002). As detailed in Table 9, both peer groups and friendships have been associated with resilient outcomes. In Table 9 are reported authors, study type, sample, risk and protective factors examined and the association with resilient outcomes (positive, negative or no impact) for studies examining peer factors and resilient outcomes. The peer factors will be examined in detail, firstly the resilience research looking at dyadic friendships, followed by the peer group.

### ***4.4.1 Close friend/confidant***

The resilience research regarding dyadic friendships predominantly suggests a positive impact on resilient outcomes (see Table 9). Close friendships have been shown to be protective in a range of adverse situations including poverty and family breakdown (Werner & Smith, 1992), maltreatment (Bolger, Patterson, & Kupersmidt, 1998), having a parent with a mental illness (Beardslee & Podorefsky, 1988), and out of home care (Legault, Anawati, & Flynn, 2006). Such findings have been reported in both longitudinal (e.g. Werner & Smith, 1992) and cross-sectional studies (Legault et al., 2006), utilising both quantitative (Surtees, 1997) and qualitative designs (Beardslee & Podorefsky, 1988). Only one study of German institutionalised adolescents (Losel & Bliesner, 2000), failed to identify a significant association between having a close friendship and resilient outcomes. As previously discussed, the study lacked power in the resilient versus non-resilient analysis due to small group numbers; however significant interaction effects were identified in relation to peer group affiliation (discussed in the next section). Thus having a close bond or friendship has generally been supported as a resilience enhancing factor.

### ***4.4.2 Peer groups***

Examination of research on the impact of peer groups on resilient outcomes revealed diverse findings. Among the ecological domains studied, the peer group was

Table 9

## Summary count of resilience studies and the nature of the relationship reported for peer resilience factors

Paper	Study type	Sampling	Study location	Sample size	Age	Risk / Adversity	Positive/ non deviant peer group	Peer group/ friends	Close friend	Satisfaction with social support/ friendships
Bolger, Patterson & Kupersmidt, 1998	Long	Prospective community cohort: 107 cases & matched controls	America	214	Child	Maltreatment			+	
Carbonell, Reinherz, & Giaconia, 1998	Long	Sub sample of kindergarten cohort N = 400	America	108	Infant-Adol	Depression				+
Costa, Jessor, & Turbin, 1999	Long	Targeted schools to maximise minority groups	America	1188	Adol	Alcohol abuse	+			
Cowen, Parker & Wyman 1990; Wyman et al, 199; 1992; 1993; Cowan et al., 1992; Gribble et al., 1993; Hoyt-Meyers et al., 1995; Cowan & Schulz 1996; Cowen, Wyman & Work 1996; 1997; Cowen et al., 1997; Magnus et al., 1999; Wyman et al., 1999; Work & Wyman, 2003	Long	<i>Rochester Child Resilience Project:</i> Representative school sample: Targeted families >3 stressful life events = 131 with child 10-12 years	America	656 758	Child- Adol	Inner city, Low SES: NLE		0		
Criss, Pettit, Bates, Dodge & Lapp, 2002	Long	3 kindergartens, random families	America	585	Child	Family conflict, harsh discipline	0	+		
Fergusson & Lynskey 1996, Fergusson & Horwood 2003	Long	Prospective birth cohort	New Zealand	1265	Infant-Adol	Low SES, family conflict, parent drug abuse	+	0		
Furstenberg Jr. & Hughes 1995	Long	Cohort participating in prenatal care program	America	404	Infant-Adol	Teenage mothers	+			
Herman-Stahl, Petersen, 1996	Long	Non random: 2/3 schools in district	America	458	Adol	NLE, depression				+
Kogan et al., 2005	Long	National Education Longitudinal Study of 1988: subsample of school dropouts	America	318	Adol	Dropping out of school	+			
Ladd & Burgess 2001	Long	Representative sample kindergartens	America	396	Child	Early aggression		+		
O'Donnell, Schwab-Stone & Muyeed, 2002	Long	Representative sample public school system	America	2600	Adol	Community violence		+ & -		
Owens, Shaw, Giovanelli, Garcia, & Yaggi 1999	Long	Mothers accessing food aid program	America	310	Infant-child	Low SES		+		
Regnerus & Elder Jr 2003; Crosnoe, Cavanaugh & Elder Jr 2003; Crosnoe & Elder, 2004	Long	<i>ADD Health:</i> Nationally representative school sample	America	9667	Adol	Emotionally distant parental relationships	+	-		+

Table 9 (Continued)

Summary count of resilience studies and the nature of the relationship reported for peer resilience factors.

Paper	Study type	Sampling	Study location	Sample size	Age	Risk / Adversity	Positive/ non deviant peer group	Peer group/ friends	Close friend	Satisfaction with social support/ friendships
Sameroff, Seifer & Zax 1982; Sameroff & Seifer 1983; Barocas, Seifer & Sameroff 1985; Baldwin, Baldwin & Cole 1990; Seifer, et al., 1996; Sameroff, Seifer & Bartko, 1997	Long	<i>Rochester Longitudinal Study</i> : Primiparous women with mental illness targeted through county wide psychiatric register & matched controls	America	152	Infant-Adol	Low SES, mother with mental illness, racial minority, NLE		+		
Seidman & Pederson, 2003	Long	School sample	America	1438	Child-Adol	Low SES, Hassles	+	+		
Simons, Chao, Conger, Elder, 2001	Long	<i>Iowa Youth and Families Project</i> : Intact rural families of 7th grader in eight county area	America	451	Adol	Racial minority, early oppositional behaviour	+			
Simons et al., 2002; Stewart, Simons, Conger, 2002;	Long	<i>Family and Community Health Study</i> : Stratified sampling by geographical area	America	841	Child	Racial minority	+			
Surtees, 1980	Long	Prospective cohort of consecutive referrals to psychiatric hospital	America	80	Adult	Episode of depression			+	
Werner, 1986, 1987, 1988, 1990, 1995, 1996; Werner & Johnson, 1999; Werner & Smith, 1992	Long	Prospective birth cohort	Hawaii	698	Infant-Adult	Low SES			+	
Beardslee & Podorefsky 1988; Beardslee, 1989;	Long Qual	Community and clinic sample	America	20	Adol	Cancer survivor or mentally ill parent			+	
Hauser, 1999	Long Qual	Psychiatric hospital cohort	America	35	Adol-Adult	Psychiatric illness, hospitalisation			+	
Bender & Losel, 1997; Losel & Bliesner, 2000	Long Qual & Quant	Targeted, non random	Germany	146	Adol	Residential Care		+ & -	0	+
Buckner, Mezzacappa, & Beardslee, 2003	X-sect	Subsample of longitudinal case control study	America	155	Adol	Low SES		0		
Buysse, 1997	X-sect	Representative (all adol in 3 month period)	Holland	155	Adol	Admitted to treatment centre (unspecified)	+	+		
Cauce, Felner, & Primavera, 1982	X-sect	3 schools, random selection students	America	250	Adol	Inner city, Low SES		+ & -		
Cauce, Hannan, & Sargeant, 1992	X-sect	2 schools, all students in target grades	America	120	Adol	NLE		+ & -		

Table 9 (Continued)

Summary count of resilience studies and the nature of the relationship reported for peer resilience factors.

Paper	Study type	Sampling	Study location	Sample size	Age	Risk / Adversity	Positive/ non deviant peer group	Peer group/ friends	Close friend	Satisfaction with social support/ friendships	
Conger, Lorenz, Elder, Melby, Simons, Conger 1991	X-sect	Subsample if IYFP intact rural families with 7th grader in eight-county area	America	76	Adol	Racial minority, Family conflict	+				
Dubow, Edwards & Ippolito	X-sect	3 inner city schools, 3 community clubs	America	315	Adol	NLE		-			
Dumont & Provost 1999	X-sect	Non random, 1 school	Quebec	297	Adol	Daily hassles, depression	+	0			
Edmond, Auslander, Elze, Bowland, 2006	X-sect	Non random, participants in HIV prevention and life skills program	America	99	Adol	Sexual abuse, majority in residential care	+				
Legault, Anawati, Flynn 2005	X-sect	Convenience: Agencies in LAC initiative	America	220	Adol	Out of home foster care			+		
Luthar, D'Avanzo & Hites, 2003	X-sect	Targeted: Outpatient treatment clinics, community, primary health care facilities	America	227	Child	Low SES, Mo drug abuse /mental illness	+				
Rodgers & Rose, 2002	X-sect	Targeted schools to represent cross section of pop, random student selection	America	2144	Adol	Marital transitions		+ & -			
Simons, Stewart, Gordon, Conger, Elder Jr, 2002	X-sect	Subsample: IYFP Intact rural families with seventh grader in eight-county area	America	236	Young adults	Adolescent Delinquency	+				
Fuller, McGraw, & Goodyear, 1999	X-sect Qual & Quant	Targeted schools to include rural/metro and state/private schools	Australia	267 1080	Adol	Community sample		+	+		
							Count (+)	14	7	7	4
							Count (0)	1	4	1	0
							Count (-)	0	2	0	0
							Count (+ & -)	0	5	0	0

Note. Long=Longitudinal; Adol=Adolescent; NLE=Negative Life Events; Mo=Mother; X-Sect=Cross sectional; Qual=Qualitative; Quant=Quantitative



unique in the number of papers reporting significant negative, or both positive and negative associations with resilient outcomes (see Table 9). It became apparent that the characteristics of both the individual and the peer group impacted on outcomes.

With respect to peer group characteristics, where peer groups were identified as modelling positive behaviours or attitudes, all but one paper identified significant positive association between peer groups and resilient outcomes (see first column in Table 9). For example, Furstenberg and colleagues conducted a 20 year longitudinal study of teenage mothers and their offspring (Furstenberg & Hughes, 1995). The authors report that having a peer group with positive school expectations was significantly related to a range of resilient outcomes for these at risk individuals, including completing high school, enrolling in college and gaining employment. Affiliation with pro-social peers has been associated with resilience in a range of at-risk settings including poverty and family conflict (e.g. Fergusson & Lynskey, 1996), teenage mothers (e.g. Furstenberg & Hughes, 1995), dropping out of school (e.g. Kogan, Luo, Murry, & Brody, 2005) and mental illness (e.g. Buysse, 1997). Conversely, associating with antisocial peers has been shown to be associated with nonresilient outcomes (Buysse, 1997; Costa et al., 1999; Lansford, Criss, Pettit, Dodge, & Bates, 2003; Ryan, 2000; R. Simons, Wu, Conger, & Lorenz, 1994). Thus association with pro social peers does increase the likelihood of resilient outcomes; however association with antisocial or negative peers decreases the likelihood of resilient outcomes.

With respect to the characteristics of the individual, a number of studies reported complex associations between peers and resilient outcomes (represented by the "+" & "-" entries in column 2 of Table 9). For example, belonging to a peer group was associated with resilient outcomes (a decrease in antisocial behaviour) for a group of institutionalised German adolescents but only for the less antisocial adolescents (Bender & Losel, 1997). For the more antisocial adolescents, affiliation with a peer group was not associated with a decrease in problem behaviours. The authors hypothesised that as adolescents generally choose affiliates who are similar to themselves, the antisocial adolescents may have fostered associations that were more likely to support continuity in antisocial behaviours rather than change (Bender & Losel, 1997). Unfortunately the design of the study did not allow testing of this

hypothesis. Other resilience studies have also reported complex associations between peers and resilient outcomes dependent on the characteristics of the individual (e.g. Cauce et al., 1982; O'Donnell et al., 2002; Rodgers & Rose, 2002). Thus there appear to be complex processes involved in the influence of peers on young peoples' resilient or vulnerable responses to adversity. The central finding was that peers operate as a protective factor only when their focus was pro-social rather than antisocial, and this association may also be influenced by individual characteristics.

#### ***4.4.3 Peer resilience factors to be included in the questionnaire***

While having a close friend has been shown to be consistently protective, the impact of peer groups on resilience has been shown to vary according to both individual and peer group characteristics. Unravelling the complexities apparent in the association between peer groups, individual characteristics and resilient outcomes is beyond the scope of a brief multidimensional measure of resilience. Therefore, the peer domain in the new questionnaire focused on identifying whether adolescents had close and supportive friends, rather than attempting to examine the wider peer group.

The more complex findings for peers as compared to the generally positive findings observed for family support also indicated it is important to examine family and peer support separately. This may be especially appropriate in an adolescent measure, as adolescence is a time when peer relationships and autonomy from family become increasingly important (T. J. Berndt, 1979; Heaven, 1994; Steinberg & Silverberg, 1986). The support provided by family and peers therefore formed separate scales to facilitate understanding of their potentially distinct contribution to resilient outcomes.

### **4.5 School resilience factors**

Engagement with education and connectedness to school have been identified as central to positive outcomes for children and adolescents across a range of health, academic, and life outcomes (Bond et al., 2007; Osterman, 2000; Patton et al., 2000; Rutter, 1994). For young people at risk of poor outcomes, aspects of the school environment have been identified that promote resilient outcomes. The reader is directed to Table 10 for the details of the studies examining school resilience factors,

including authors, study type, sample, risk and protective factors examined and the association with resilient outcomes (positive, negative or no impact) for each factor. The school level factors will be examined in detail under the headings of engagement, attitude to school, and teacher-student relationships.

#### ***4.5.1 School Engagement***

Engagement with school is generally defined in terms of behaviours such as trying hard to do well, being attentive and cooperative in the classroom, attending school regularly and preparing for classes (Finn & Rock, 1997; Rutter, 1994). As shown in Table 10, engagement with school has been shown to be protective across a range of risk situations. For example, Finn and Rock (1997) conducted in a large scale study of at risk students (low SES ethnic minority students) from Year 8 through to Year 12. The authors grouped the students into academically successful completers (resilient completers = 332), completers with poor academic results (nonresilient completers = 1301) and noncompleters (n = 170). The resilient students showed significantly more engaged behaviours than nonresilient completers, who in turn were significantly more engaged than noncompleters were. The relationships held true even when family context and psychological factors were controlled statistically.

Engagement with school has been associated with resilient outcomes in different at-risk populations including low SES minority groups (Borman & Overman, 2004), children exposed to community violence (O'Donnell et al., 2002) and marital transitions (Rodgers & Rose, 2002). No studies were identified that did not find a significant positive association between school engagement and resilient outcomes (see Table 10). Thus school engagement was sufficiently supported to warrant inclusion in the new measure of resilience.

#### ***4.5.2 Attitude to school***

A positive attitude to school and school engagement are likely to be closely associated and, not surprisingly, school attitude has also been found to be positively associated with resilient outcomes (see Table 10). For instance, in a longitudinal study of a New Zealand birth cohort, Fergusson and Lynskey (1996) found that significantly more resilient adolescents reported enjoying school than did nonresilient adolescents. However, enjoyment of school was not a significant predictor of

Table 10

Summary count of resilience studies and the nature of the relationship reported for school resilience factors

Paper	Study type	Sampling	Study Location	Sample size	Age	Risk / Adversity	Positive engagement	Positive teacher-student relations	Positive attitude /experience	Involved in school activities	Opportunity for participation	Complete homework	Parents involved	Low absenteeism	Par positive attitude/ expectations	School Other (<3 studies)
Borman & Overman, 2004	Long	Stratified random	America	3981	Child	Low SES, Racial Minority	+		+							Teacher monitor progress (+)
Costa, Jessor, & Turbin, 1999	Long	Targeted schools (maximise minority rep)	America	1188	Adol	Alcohol abuse			+							
Crosnoe & Elder, 2004	Long	Nationally representative school sample	America	9667	Adol	Emotionally distant parent relationships		+								+
Crosnoe, Mistry & Elder Jr, 2002;	Long	Philadelphia Project: school sample	America	489	Adol	Low SES										
Fergusson & Lynskey 1996, Fergusson & Horwood 2003	Long	Prospective birth cohort	New Zealand	1265	Infant-Adol	Low SES, family conflict			0 & +							
Finn & Rock, 1997	Long	Stratified random sample	America	1803	Adol	Low SES, Racial Minority	+			0		+		+		
Furstenberg Jr. & Hughes 1995	Long	Cohort participating in prenatal care program	America	404	Infant-Adol	Teenage mothers							0		0	
Ladd & Burgess 2001	Long	Representative sample of kindergartens	America	396	Child	Early aggression		+								NB. combined as one measure of school support
Mahoney & Cairns, 1997; Mahoney 2000	Long	School sample	America	695	Child-Adult	Low SES, poor grades, drop out				+						
O'Donnell, Schwab-Stone & Muyeed, 2002	Long	Representative sample public school system	America	2600	Adol	Community violence	+	+	+							
Regnerus & Elder Jr 2003; Crosnoe, Cavanaugh & Elder Jr 2003;	Long	<i>ADD Health</i> : Nationally representative school sample	America	9667	Adol	Low performing school	+		+							
Rutter & Quinton 1984; Quinton & Rutter 1984; Quinton, Rutter & Liddle 1985; Dowdney et al.,1985; Quinton, 1987	Long	Families with child admitted to care over 8mth period and matched general practice control	England	130	Child-Adult	Residential Care			+							

Table 10 (continued)

Summary count of resilience studies and the nature of the relationship reported for school resilience factors.

Paper	Study type	Sampling	Study Location	Sample size	Age	Risk / Adversity	Positive engagement	Positive teacher-student relations	Positive attitude /experience	Involved in school activities	Opportunity for participation	Complete homework	Parents involved	Low absenteeism	Par positive attitude/ expectations	School Other (<3 studies)	
Werner, 1986, 1987, 1988, 1990, 1995, 1996; Werner & Johnson, 1999; Werner & Smith, 1992	Long	Prospective birth cohort	Hawaiian	682	Infant-Adult	Low SES		+									
Clark, 1983; Clark 2003	Long Qual	Non random	America	10	Adol	Low SES, Racial minority	+	+	+	+	+	+	+	+	+		
Bond, Toumbourou, Thomas, Catalano, & Patton 2005	X-sect	Stratified random	Australia	8984	Adol	Alcohol, Substance abuse					+					Reward pro-social involvement (+)	
Brody et al., 2002; Brody, Murry & Conger 2002;	X-sect	Target counties, African American families identified by community leaders	America	136 Rural 141 Urban	Child-Adol	Single mothers, Low SES	+				+					Rule clarity(+) Ordered class(+)	
Edmond et al., 2006	X-sect	Non random: HIV prevention and life skills program	America	99	Adol	Sexual abuse, residential care			+					0			
Miliotis, Sesma, & Masten, 1999	X-sect	All families with child 6-11yrs attending emergency shelter over 3 month period	Italy	59	Child	Homelessness							+				
Rodgers & Rose, 2002	X-sect	Targeted schools to represent cross section of pop, random student selection	America	2144	Adol	Marital transitions	+										
Rumberger, 1995	X-sect	School sample	America	17424	Adol	Dropping out				+		+	+	+	+		
Floyd, 1996	X-sect / Qual	Non random	America	20	Adol	Low SES, Racial Minority		+									
Fuller, McGraw, & Goodyear, 1999	X-sect / Qual Quant	Targeted schools to include rural/metro and state/private schools	America	267 1080	Adol	Community sample	+	+									
							Count (+)	8	7	7	3	3	3	3	3		
							Count (0)	0	0	0	1	0	0	1	1	1	
							Count (-)	0	0	0	0	0	0	0	0	0	
							Count (0 & +)	0	0	1	0	0	0	0	0	0	

Note. Long=Longitudinal; Adol=Adolescent; NLE=Negative Life Events; X-Sect=Cross sectional; Qual=Qualitative; Quant=Quantitative

resilience when a range of other protective and risk factors were included. Borman and Overman (2004) also found that a positive attitude towards school significantly differentiated between resilient and nonresilient students (as categorised by mathematics achievement) in a sample of minority students from impoverished backgrounds. As shown in Table 10, a positive attitude towards school has been shown to be protective in a range of adverse situations including low SES (Borman & Overman, 2004), children exposed to community violence (O'Donnell et al., 2002) and residential care (Rutter & Quinton, 1984a). As discussed above, Fergusson and Lynskey (1996) found a limited positive association between attitude to school and resilient outcomes, while no studies were identified with results challenging the positive association. Therefore, a positive attitude to school appeared sufficiently supported by the literature to be incorporated into the school domain of the new questionnaire.

#### ***4.5.3 Teacher-student interaction***

A known factor associated with both school engagement and student attitude towards school is the staff-student relationship. In a study of grade six students, perceived teacher support made the strongest contribution to school interest and was a positive and independent predictor of interest in class and school, and willingness to comply with classroom norms (Wentzel, 1998). Following these students through to 8<sup>th</sup> grade, the author reported that perceived caring from teachers was also significantly and positively related to motivation for pro-social behaviour, social responsibility goals and academic efforts and negatively related to student reported distress (Wentzel, 1997). Thus perception of caring from teachers appears to play an important role in students' engagement and enjoyment of school.

Engagement with and a positive attitude towards school has been associated with resilient outcomes, so it is not unexpected that student perception of staff support and availability has also been associated with resilient outcomes (see Table 10). For example, for adolescents with emotionally distant parents, teacher bonding was the most significant protective factor in decreasing the likelihood of 'off track' academic behaviour (including skipping school, repeating a grade, being suspended or expelled, achieving poor results) (Crosnoe & Elder, 2004). The protective impact of positive teacher-student relations has been reported in different risk settings and for a range of

outcomes (as shown in Table 10). No studies were identified that contradicted this positive association. Furthermore, positive teacher-student interactions have been demonstrated to facilitate student engagement and a positive attitude towards school, two factors also identified as important for resilient outcomes. Therefore, positive teacher-student relations will be assessed in the school domain of the resilience questionnaire.

#### ***4.5.4 School factors to be included in the questionnaire***

In summary, the key resilience factors in relation to adolescents and the school domain were student's engagement with and positive attitude towards school and positive teacher-student relations. These were the focus of school scale development in the new resilience questionnaire.

## **4.6 Community resilience factors**

Community is a word that can be linked to a variety of meanings. Indeed, rural sociologist Hillery catalogued 94 different definitions of community in 1955 (cited in Bess, 2002). Debate exists in community research as to whether community is a multi- or uni-dimensional concept and definitions range from physical localities to groups united by a common purpose (see Bess, 2002; Long & Perkins, 2003; McMillan & Chavis, 1986). Such debate is beyond the scope of this study, in which an understanding of community as the local geographic area was adopted as a simple and accessible definition for adolescents.

Irrespective of how community is defined, there appears to be a growing interest in studying communities and their impact at an individual level.

“The idea that we belong to communities and that these communities provide benefits and responsibilities is one that has gained a growing appreciation in the last decade. As a reaction to the urbanisation faced by many people, globalisation, cross-national forms of media and their impact on cultures, physical and social isolation from family and friends, and a growing fear of change and

the unknown, images of community, belonging and support have become paramount.” (Bess, 2002, p. 3).

However, examination of the benefits provided by communities and the characteristics of communities that enhance resilient outcomes has not been extensive. Sonn and Fisher (1998) describe resilient communities as providing mediating structures such as schools, church groups, family networks, sporting organisations and activity settings that “provide opportunities for people to experience security, stability, belongingness and psychological relatedness” (p. 466). There is some evidence that community level variation in such ‘mediating structures’ can be identified and does impact on outcomes an individual level. For instance, Hawkins, Van Horn and Arthur (2004) examined data from 28,021 students living in 41 communities across the United States. The authors reported reliable and significant differences in the level of risk and protective factors between the communities and that this variation was related to differing levels of substance use in these communities. Having higher levels of protective factors and lower exposure to risk factors in the community resulted in a greater likelihood of positive outcomes for individuals within the community.

Is it also possible to identify specific characteristics of communities (as opposed to aggregates of risk and protective factors) which facilitate resilient outcomes for individuals exposed to adversity? Examination of Table 11 reveals the paucity of research into community specific factors. The table includes authors, study type, sample, risk and protective factors examined and the association with resilient outcomes (positive, negative or no impact) for all studies identified as examining community resilience factors. The few community factors identified in the literature will be examined briefly.

#### ***4.6.1 Supportive adults in the community***

A common theme within resilience research is the importance of bonding with significant adults for resilient outcomes in the face of adversity (eg, Herman-Stahl & Petersen, 1996; Miliotis et al., 1999; Rodgers & Rose, 2002; Rutter et al., 1990; Werner & Smith, 1992; Wyman et al., 1992). As discussed previously, these key relationships are generally with parents, but can also be with extended family or other



adults in the community. As shown in Table 11, several studies have identified adults in the community as facilitating resilient outcomes for young people at risk, including church leaders, coaches, social/case workers and neighbours (Floyd, 1996; Rodgers & Rose, 2002; Surtees, 1980; Werner & Smith, 1992). For instance, in a large cross-sectional study of adolescents at risk due to family break-up or remarriage (single parent, divorced or blended families), support from a neighbour was protective for both internalising and externalising problems (Rodgers & Rose, 2002). No studies were identified that contradicted the positive association between supportive community adults and resilient outcomes. Thus, there is some evidence that non-parental adults within the community may facilitate resilient outcomes and no evidence contradicting the association. Given the paucity of research in this area, support from adults in the community was included in the community domain of the new resilience questionnaire.

#### ***4.6.2 Sense of belonging***

As shown in Table 11, the association between an individual's sense of belonging or being affiliated with a community and resilient outcomes has been examined in a small number of studies. For instance, Murray and Brody (1999) examined the impact of a sense of community belonging for 162 economically stressed single-parent rural Black-American families. The authors found a significant positive impact of the mother's sense of community belonging on their child's outcomes. Similar findings were reported for young people in a small cross-sectional study of American-Indian youth (2006). The authors report that resilient youth were significantly more likely to report a sense of belonging to the American-Indian culture than nonresilient youth. Thus a sense of belonging to a community, although differently defined in the studies reported here, may be associated with resilient outcomes. One study failed to identify a significant association between community belonging and child outcomes (Furstenberg & Hughes, 1995). The authors nominate their measurement of community belonging as probably inadequate (a single item that asked young adults to retrospectively assess their sense of community belonging in their youth). Thus there is limited support for a sense of community belonging as being associated with resilient outcomes and no contradictory evidence was identified. Given the general lack of investigation into community factors, the limited

Table 11

Summary count of resilience studies and the nature of the relationship reported for community resilience factors

Paper	Study type	Sampling	Study Location	Sample size	Age	Risk / Adversity	Involvement in groups/activities	Feeling of belonging/ caring	Support from adult e.g. group leader, neighbour	Community resources e.g. services
Forehand et al, 2000	Long	Subsample of FACHS: Targeted stratified sampling by geographical area	America	136 Rural 141 Urban	Child-Adol	Single mothers, Racial minority, Low SES				+
Furstenberg Jr. & Hughes 1995	Long	Participants in prenatal care program	America	404	Infant-Adol	Teenage mothers		0		
Luther, Cushing, 1999	Long	Prospective targeted sample drug treatment clinics	America	137	Child-Adol	Drug addicted parent				+ & 0
Simons et al, 1997	Long	Iowa Single Parent Project: Random selection female headed households	America	207	Adol	Racial minority, NLE				+
Simons, Lin, Gordon, Brody & Murry, Conger 2002; Stewart, Simons, Conger 2002	Long	Family and Community Health Study: Stratified sampling by geographical area	America	841	Child	Racial minority				+
Surtees, 1980	Long	Prospective cohort of consecutive referrals to psychiatric hospital	England	80	Adult	Episode of depression			+	
Werner, 1986, 1987, 1988, 1990, 1995, 1996; Werner & Johnson 1999; Werner & Smith, 1992	Long	Prospective birth cohort	Hawaii	682	Infant/Adult	Low SES	+		+	
Clark, 1983; Clark 2003	Long Qual	Non random	America	10	Adol	Low SES, Racial minority	+	+		
Brody et al., 2003	X-sect	Low SES neighbourhoods, random selection families	America	296	Child-Adol	Low SES, racial minority				+
Dumont & Provost 1999	X-sect	Non random, 1 school	America	297	Adol	NLE, depressive symptoms	0			
LaFromboise et al., 2006	X-sect	Targeted: 3 Indian reservations, all families with adol	America	212	Child-Adol	Low SES, Racial minority, parent substance abuse		+		

Table 11 (continued)

Summary count of resilience studies and the nature of the relationship reported for community resilience factors

Paper	Study type	Sampling	Study Location	Sample size	Age	Risk / Adversity	Involvement in groups/activities	Feeling of belonging/ caring	Support from adult e.g. group leader, neighbour	Community resources e.g. services	
Murry & Brody, 1999	X-sect	Targeted: Georgia counties with minimum 25% African-America pop sampled	America	162	Child	Low SES, single parent families, racial minority		+		+	
Rodgers & Rose, 2002	X-sect	Targeted schools for cross section of pop, random student selection	America	2144	Adol	Marital transitions			+		
Floyd, 1996	X-sect Qual	Non random	America	20	Adol	Low SES, Racial Minority			+		
							Count (+)	2	3	4	5
							Count (0)	1	1	0	0
							Count (-)	0	0	0	0
							Count (+ & 0)	0	0	0	1

Note: Adol=Adolescents

evidence was deemed sufficient for inclusion in the resilience questionnaire at this early stage of development.

#### ***4.6.3 Community groups and activities***

There has been some evidence that involvement in community organisations or activities can improve outcomes for at-risk youth (Clark, 1983; Eccles & Barber, 1999; Werner & Smith, 1992). For example, higher levels of involvement in structured activities such as organised sport, musical activities and volunteer work has been shown to predict lower levels of behaviour problems for aggressive youths over time in a large longitudinal study (see Wyman, 2003). However, studies of adolescents in the wider literature (not specifically resilience) suggest that the type of activity adolescents are involved in may have a bearing on the outcome. For instance, in a large cross-sectional study of general leisure activities, Mahoney and Stattin (2000) divided youth activities into two categories: structured leisure activities were defined as having an adult leader and meeting at least once per week; while attending youth recreation centres was classified as unstructured activities. The authors found that participation in structured activities was linked to low antisocial behaviour, whereas involvement in unstructured activities was associated with higher antisocial behaviour. Attending unstructured activities appeared to expose young people to older friends, who tended to stay out late in the evenings, report poor school performance and have police involvement (Mahoney & Stattin, 2000). Thus involvement in structured community activities may be protective for young people exposed to risk, but this protective impact might be qualified by contextual factors such as the type of activity and characteristics of other participants. Thus, again there is very limited evidence, but the available evidence suggests involvement in structure community activities may prove protective for some young people at risk of poor outcomes. Therefore involvement in structured community activities was included in the new measure at this early stage of development.

#### ***4.6.4 Community factors to be included in the questionnaire***

To summarise, there has been limited resilience research conducted at a community level. The available evidence suggests there *may* be benefits to having support available from adults in the community, a sense of community belonging and

being involved in structured community activities. Whilst there are few relevant studies available to date, investigation of such factors may prove to be an area where relatively simple government intervention may provide benefits. Intervention at a community level has the potential to assist many families in a time and cost effective method. Thus, despite the limited evidence available, these factors were included in the new resilience questionnaire on the understanding that clarification of the role of community factors is an ongoing goal of resilience research.

## **4.7 Conclusion**

Considerable research has been conducted investigating the individual and ecological factors that facilitate resilient outcomes in times of adversity. Some resilience factors such as individual problem solving skills or nurturing parent-child relationships have been extensively researched and supported in a range of settings with various methodological approaches. Other areas, such as community resilience factors, have been less adequately investigated and the findings are less conclusive. However, sufficient evidence has been presented in this chapter to establish the foundation of a comprehensive, multidimensional measure of resilience in adolescence. In order to ensure no areas had been overlooked and to gain a current adolescent perspective, the review of the literature was supplemented with focus groups conducted with adolescents dealing with adversity in the form of a chronic illness. The focus groups and themes arising from the focus group discussion will be detailed in the next chapter.

## CHAPTER 5. FOCUS GROUPS ON RESILIENCE

*By trying we can easily learn to endure adversity. Another man's, I mean.*

*(Mark Twain, 1897)*

### 5.1 Introduction

The decision to conduct focus groups in addition to a literature review centred on a desire to add scope and a uniquely adolescent perspective. Focus groups have been identified as a helpful first step in the development of constructs and questionnaires (Kleiber, 2004; Millward, 2000). According to Kitzinger, focus group discussion:

“... is particularly appropriate when the interviewer has a series of open ended questions and wishes to encourage research participants to explore the issues of importance to them, in their own vocabulary, generating their own questions and pursuing their own priorities. When group dynamics work well the participants work alongside the researcher, taking the research in new and often unexpected directions.” (1995, p. 299).

This open ended approach is particularly valuable in the early stages of identifying central themes to be examined in a questionnaire and can identify areas that may otherwise have been overlooked or disregarded (Millward, 2000; Wilkinson, 2005).

The focus group approach encourages active participation of young people in research and facilitates access to their unique worldviews (Shucksmith & Hendry, 1998). The focus groups also expose the researcher to current adolescent language and forms of expression around the topic rather than imposing *researcher language* upon adolescents (Wilkinson, 2005). “Focus group interactions reveal not only shared ways of talking, but also shared experiences, and shared ways of making sense of these experiences. The researcher is offered an insight into the commonly held assumptions, concepts and meanings which constitute and inform participants talk

about their experiences.” (Wilkinson, 2005, p. 85). The adolescent language utilised in the focus groups can also provide guidance for the appropriate wording of questionnaire items.

### ***5.1.1 Study population***

Participants in focus groups should be chosen “on theoretical grounds as reflecting those segments of the population who will provide the most meaningful information in terms of the project objectives. Moreover participants should have something to say about the topic of interest” (Millward, 2000, p. 310). Adolescents living with a chronic illness represent a group of young people known to be dealing with varying levels of adversity in their day to day lives. Consequently, a number of studies have identified them as being at greater risk of poor outcomes including low self-esteem, poor body image and social difficulties (Bennett, 1994; Cadman, Boyle, Szatmari, & Offord, 1987; Kliwer, 1997; Lavigne & Faier-Routman, 1992; Madan-Swain & Brown, 1991). However, a range of studies have also identified that many young people living with a chronic illness show positive or resilient outcomes (Billings, Moos, Miller, & Gottlieb, 1987; Garrison & McQuiston, 1989; Hanson & Onikul-Ross, 1990). Therefore adolescents with a chronic illness were selected as an appropriate group in which to explore notions of resilience – a group of adolescents exposed to risk in which resilient outcomes have been observed. For the purpose of this study, a chronic illness was defined as any medically defined physical illness lasting more than six months.

Focus groups have been identified as an appropriate research method for this population - adolescents in a medical context (e.g. Deatrck & Faux, 1991; Horner, 2000; Wilkinson, 2005). For instance, Deatrck and Faux (1991) found that children are comfortable speaking with adults (both individually and in group settings) about health and illness experiences by school age. To engage adolescents across the spectrum of illness severity, adolescents with a chronic illness were recruited from both a community and hospital context.

### ***5.1.2 Sample size***

Focus groups generally comprise between 4-12 participants, with 6-8 often seen as ideal (Kitzinger, 1995; Kleiber, 2004; Millward, 2000). There appears to be a

limit to the usefulness of running large numbers of focus groups on the same topic, with “researchers suggesting that data generated after about 10 sessions are largely redundant” (Millward, 2000, p. 314). Running five groups, each with eight participants, was seen to balance limited resources with the need to gather enough data to highlight recurring themes in the discussions (Kitzinger, 1995).

Thus the focus group approach was included to provide an up-to-date adolescent perspective on what was important for successfully navigating challenges arising from living with a chronic illness. The focus groups were conducted to facilitate discussion around the challenges related to living with a chronic illness in adolescence and resources the young people utilised to positively deal with those challenges. The aim of the discussion was to identify the resources young people felt were the most important and effective when dealing with their life challenges. This was explored in each of the domains to be addressed in the questionnaire: self, family, peers, school and community.

## **5.2 Method**

### **5.2.1 Participants**

Focus group participants were recruited through a peer support group for adolescents living with a chronic illness and adolescents admitted to the adolescent ward at the Royal Children’s Hospital Melbourne, Australia.

Parental and individual consent was given by 26 of the 138 support group members invited to participate in the study. Four focus groups were organised for peer support group members and one for hospitalised adolescents. On the designated day of the hospital focus group, six chronically ill adolescents on the ward were identified as well enough to participate. Four adolescents attended the focus group. Due to illness and transport difficulties six peer support group members were unable to attend their focus group and therefore numbers ranged from three to six adolescents (see Table 12).



Table 12

Demographics of focus group participants

	Participants n	Female n (%)	Age range Years	Mean age Years
Support group				
Metropolitan Melbourne	6	6 (100)	17 - 22	19.2
Metropolitan Melbourne	3	2 (66.7)	19 - 22	20.3
Metropolitan Melbourne	5	3 (60.0)	15 - 19	16.8
Country Victoria	6	4 (66.7)	14 - 24	17.6
Hospital Ward	4	2 (50.0)	19	19.0
Total	24	17 (70.8)	14 - 24	18.6

As shown in Table 12, participants in the five focus groups ranged in age from 14 to 24 years with a mean age of 18.6 years (SD=2.5).

### 5.2.2 Materials

Preset questions were used to initiate focus group discussion and to redirect adolescents' attention when necessary. Addressing each of the five domains in turn (self, family, peers, school and community) participants were asked:

- What issues or difficulties arise for/in (*insert domain*) because of your illness?
- What would help with the issues identified within the group? What resources/strategies would you call on to help deal with those issues?
- What positive aspects arise for/in (*insert domain*) because of your illness?

For example, in discussions regarding the individual domain, the first question became "What issues or difficulties arise for you because of your illness?". To initiate discussion in the family domain, the group was asked "What issues or difficulties arise in your family because of your illness?"

### 5.2.3 Procedure

Ethics approval was granted by the Royal Children's Hospital, Melbourne and Swinburne University, Melbourne.

Adolescents in a Chronic Illness Peer Support program (ChIPS) were invited to participate in the focus groups. The ChIPS programme is administered by the Centre for Adolescent Health at the Royal Children's Hospital and is open to adolescents with a range of medical conditions. Groups meet weekly for eight weeks and typically include between six and eight young people. Support groups are facilitated by a health professional and peer co-leader. Young people can choose to remain involved in broader social, educational and recreational activities following completion of the 8-week programme.

Members of ChIPS were mailed parent and participant information statements detailing the aims and time requirement of the focus groups, and parent and participant consent forms (Appendix A). A reply paid envelope was included for respondents and parents to return consent forms indicating whether they did or did not wish to participate in a focus group. A range of dates and times were listed for respondents to indicate time preferences. After four weeks, a reminder letter was sent to all nonrespondents.

While the peer support group is for adolescents, many members remained part of the ongoing social support arm beyond adolescence. While the information letter specified the desired age group, some members aged between 18 and 24 years of age expressed a desire to participate. These older members were included with a view that the more widely the issues were explored, the greater the breadth of information available to the researcher. ChIPS focus groups were run by a Centre for Adolescent Health researcher (CO) with experience in conducting focus groups, with the author as scribe.

Young people attending the hospital adolescent ward were recruited through the ward recreation officer who was familiar with, and to, the patients. Due to difficulties with the health of participants and competing hospital health care demands (physiotherapy sessions, medical tests, etc) a single hospital focus group was conducted. The recreation officer identified chronically ill patients who were

well enough to participate, gave them and their parents the information statement and consent forms, and invited them to attend a focus group on the ward at a specified time. The author conducted the hospital ward focus group.

Focus groups generally comprise between one to two hours of discussion (Kitzinger, 1995; Kleiber, 2004; Millward, 2000). To limit demands on time and energy for the chronically ill participants, one hour was specified for the hospital focus group and 1.5 hours for the remaining groups. Light refreshments were provided.

At the beginning of each group, the researcher explained that the purpose of the focus group was to explore young peoples' experience of living with a chronic illness and how it impacted on themselves, their family, peers, school and community. It was stated that:

- the privacy of all participants was important and the focus group discussion should not be disclosed outside the group;
- comments did not have to be directly related to personal experience and participants could draw on what they knew of others' experiences

This was intended to encourage open discussion and allow individuals to raise sensitive issues as a friend's experience if they wished to. The preset questions (see materials) were then employed to initiate discussion and redirect adolescents' attention if the discussion veered into irrelevant areas (for example character analysis of a medical practitioner). The five domains identified as relevant to the questionnaire were addressed in turn (self, family, peers, school and community). The main points of discussion were recorded on a whiteboard, which allowed participants to clarify or query the transcript as it was produced. The whiteboard print out was retained as a record of each focus group.

### **5.3 Results**

Whiteboard print outs of statements made in the focus groups were examined to identify the resources or behaviours the adolescents employed to successfully negotiate challenges in their lives. Within each domain, the central concept of each

statement on the transcript was identified as a theme. For example, with respect to positive aspects arising from having a chronic illness in the personal domain, a comment which was recorded was “Greater empathy, I can understand others and other’s lives more”. A theme of ‘Empathy’ was created and any other statements with empathy as the central concept were grouped under this theme. In this way every statement recorded in the focus groups was grouped under a particular theme and counts recorded as a measure of how common or important particular themes were within each domain. This process produced a large number of themes so similar themes were then combined where appropriate. For example, the *social skills* and *empathy* themes were combined, as statements within these two themes were very similar. The themes identified in each domain are detailed in Table 13, with a count of the number of statements relating to each theme reported (summed across the five focus groups). The themes identified in each domain will be briefly discussed in turn.

### **5.3.1 Individual Domain**

Fourteen themes were identified across focus group discussions in the individual domain (see Table 13). The most commonly mentioned themes will be explored. At the level of individual characteristics or behaviours, adolescents commonly reported that they sought *support or help* from others in order to successfully navigate challenges. Statements in this theme referred to seeking support from peers (n = 6), trusted adults (n = 3) and siblings (n = 1). In terms of professional support, both teachers and medical personnel were mentioned. An ability to seek out support appears important for adolescents in dealing with challenges. This concurs with the review of the resilience literature in Chapter 4, where support seeking was associated with resilient outcomes.

Adolescents also commonly reported engaging in individual activities as a means of dealing with adversity. The activities identified by adolescents were divided into the three themes of *creative* (n = 8), *screen time* (n = 5) and *physical* (n = 5) activities. Specific activities identified within these three themes included writing and artwork (creative), playing computer games (screen time) or exercising (physical). Statements within these themes indicated that adolescents use such activities as a means of gaining time out from problems or, in the words of one participant in Focus Group three (FG 3), “to step outside yourself”. Many of the activities within these

Table 13

Number of statements, summed across the five focus groups, relating to each theme by domain (n = 24 participants)

Theme	Domain				
	Individual	Family	Peers	School	Community
Seek support or help from others (e.g. family)	10	9			4
Seek support or help from staff / professionals	2			11	7
Activity: Creative e.g. writing, art, music	8			1	
Maturity / responsibility	8	5			
Empathy / social skills	7		3		
Cognitive control e.g. rethink things	6				
Activity: Screen-time e.g. computer games, movies	5		1		
Activity: Physical e.g. yoga, exercise, go to beach	5				
Introspection / reflection	5	3			
Talk / let out feelings	4	5	10	1	
Spend time alone	4				
Practical support e.g. homework, sick bay	4	10	8	11	4
Humour / cheer up			10		
Flexibility	1	1		2	
Support group e.g. Asthma foundation	1				3
Support / acceptance		17	13	1	
Understanding / sympathy		1	7		
Seek advice		2			
Liaise with others on your behalf		6		1	
Educate people about issue / problem				8	
Positive school atmosphere				1	
Understanding teachers				8	
Government legislation / funding e.g. Wheelchair access, taxi concession				2	8

three themes, such as writing, yoga, meditation or listening to music, may also provide adolescents with the space to think and reflect. This complements the *introspection / reflection* theme also identified in the individual domain, where adolescents reported being more reflective and thoughtful as a result of their illness. Examples of statements in this theme include:

“Do a lot of thinking - Think about the meaning of life and the direction you are taking at an earlier age than other adolescents” (FG 1).

“Get to know yourself more, self-reflective” (FG 3).

“You work out the things that matter and the things that don’t” (FG 1).

It may be that these two ways of dealing with life challenges complement each other – individual activities such as writing or yoga could also provide opportunities for self-reflection and introspection. Therefore, the ability to occupy oneself and engage in introspection and self reflection may be a source of strength or effective coping strategy for adolescents in challenging times. Introspection and self reflection was also identified in the review of the resilience literature (Chapter 4), with evidence that utilising this cognitive strategy increased the likelihood of resilient outcomes.

Adolescents also identified personal characteristics that assisted them in dealing with challenges, for example the theme of *maturity/responsibility*, which included statements such as:

“Wiser – had to cope with more situations, do a lot of thinking” (FG 1).

“Self-maturity” (FG 2).

“I’m more mature as I have had to face things” (FG 1).

Another theme relating to personal skills was *empathy/social skills*. Adolescents reported having to further develop their social skills as a result of the challenges they faced. For example, adolescents commented:

“People skills have been enhanced through negotiating with medical staff, standing up for myself, communication skills, liaising with doctors etc.” (FG 1).

“Empathy, I can understand others and others’ lives” (FG 1).

Social skills were nominated by adolescents as an important resource in both the individual and peer domains (see Table 13). This fits with the findings of the resilience review and indicates it may be important to address this theme in both domains in the new measure.

An unexpected theme identified in the individual domain was adolescents’ explication of *cognitive strategies* such as:

“Thinking about things - What if? What would I do if ... Planning strategies for if things happen, practical strategies” (FG, 3).

“Focusing on being strong” (FG 2).

“Turning off emotions so that things don’t get to you” (FG 2).

Cognitive strategies are often utilised without explicit knowledge but the adolescents in the focus groups were able to articulate such strategies as important skills in dealing with challenges. A range of cognitive strategies were identified as resilience factors in the literature review, and will need to be addressed in the individual domain of the new measure of resilience.

Thus adolescents reported drawing on a diverse array of individual resources and approaches in order to negotiate the challenges arising from living with a chronic illness successfully.

### **5.3.2 Family domain**

A number of the themes identified in the family domain related the provision of support, both emotional and practical (see Table 13). Adolescents identified *seeking support or help* from particular family members. Adolescents reported seeking support or help from siblings (n = 5), mother (n = 1), parents (n = 1), extended family (n = 1) and a family pet (n = 1). But the most commonly identified

theme within the family domain (n = 17) was the provision of general support and acceptance, for example:

“Provide emotional support” (FG 1).

“Don’t have to explain yourself, don’t have to explain how you are feeling” (FG 1).

“They will always be there – friends might not be” (FG 5).

General family support, also labelled cohesion was identified as an important resilience factor in the review chapter, again highlighting the impact of social factors on resilience and the importance of addressing such factors in order to comprehensively measure resilience.

Family support was also reported in the form of *practical assistance* (n = 10) a theme including the provision of money, transport, information and organisation (especially around illness related issues). Another theme closely related to *practical assistance* was parents playing a *liaison* role, acting as a buffer or conduit between adolescents and professionals or institutions. For instance:

“Parents liase with school, explain the situation and your needs” (FG 1).

“Parents help out with doctors, do the hard work. Remember things and provide you with the information” (FG 2).

Family was also identified as a safe place to *talk/let out feelings*, particularly negative feelings (n = 5).

“You can vent feelings on family, can take things out on them” (FG 3).

“Someone to yell at and let stuff out to” (FG 2).

In summary, the adolescents in the focus groups identified families as an important source of acceptance and support - both practical and emotional. It was evident from adolescents’ focus group comments that family support was seen to be unique in providing readily available and accepting support and nurturing.



### 5.3.3 Peer domain

As can be seen in Table 13, the most commonly endorsed theme in the peer domain was that peers gave *support/acceptance* (n = 17), the opportunity to *talk/share feelings* (n = 10) and *humour/cheer up* (n = 10). The *support/acceptance* of peers was differentiated from support provided by family in one focus group discussion with comments such as:

“Connect with friends in a totally different way than with family” (FG 4)

“Greatest resource other than family - sometimes better than family” (FG 4).

Although friends provided support, adolescents also made statements identifying a need to protect some friends from illness-related issues and the advantage of friends also chronically ill. For instance:

“You tell them what is safe for you to share. What they can handle” (FG 2).

“Only talk illness with special friends who either have an illness or have a special understanding (long time friend, doing medical degree etc)” (FG 1).

“Friends with same illness or similar illness are great - can talk to them about anything, they won't get grossed out. Can talk about the most disgusting things that happen in hospital” (FG 2).

Two themes were identified only in adolescents' discussions in the peer domain. The provision of *understanding/sympathy* was only talked about in relation to peers, with the exception of one mention in the family domain (as can be seen in Table 13). Secondly, peers were identified as sharing a sense of humour and as having an ability to *cheer up* adolescents when they were down. This theme was not identified in any other domain.

“Black humour helps to get you through, use it to communicate with friends about illness” (FG 1).

“Humour – joking around” (FG 2).

“When you are feeling down they can cheer you up” (FG 3).

“Distract you when you are feeling down – will drag you out and you feel better” (FG 2).

In the focus groups, adolescents reported that peers were a source of support and identified being able to talk and share feelings more often with peers than in any other domain, including family. Positive peer friendships and networks were also identified in the previous review chapter as an important resilience factor, increasing the likelihood of resilient outcomes in the face of life challenges. As peer relationships are thought to gain particular salience in adolescence, this domain will be important in the new adolescent measure of resilience.

#### **5.3.4 School domain**

The major theme arising in discussions around what helped adolescents deal with difficult times in the school domain also centred on support. The three most common themes were the *support provided school personnel* (n = 11), *understanding teachers* (n = 11) and *practical support* (n = 11). School personnel who were identified as providing support included counsellors (n = 4), teachers (n = 3), specialist aides (n = 3) and a school nurse (n = 1). Adolescents also talked about the importance of having *understanding teachers*, expressed in one focus group as:

“A teacher who keeps you in touch, understands and is flexible, they might drop work off to you, and won’t ask for assignments if you’re sick etc. There is a line between a good teacher and friend.” (FG 1).

*Practical support* was a theme commonly highlighted in the school domain, as it was in the family domain. This was support that helped the adolescents deal with the demands of their illness while at school. Practical support mentioned included sick bays, school nurses, ramps and the availability of appropriate foods for adolescents with illness related dietary restrictions (e.g. diabetes).

A unique theme identified in the school domain was the importance of ‘educating’ their school community about their illness (n = 8). This was seen to help

to normalise their experiences and increase understanding and tolerance of both students and staff.

“Schools and teachers aren’t listening to your needs. Some teachers hound at you or keep on at you, are overly attentive or don’t take into account you being away and missing work. Students treat you like crap, teasing, kicking. They don’t understand or don’t care that you have special needs.” (FG 3)

“Educate classes and school about chronic illness or it can alienate you” (FG 4).

“Educate teachers with general information and information relevant to adolescents, increase their understanding of how to support adolescents with a chronic illness” (FG 4).

These themes fit with the review of resilience literature in the previous chapter, where support environment and school connectedness were identified as significant resilience factors. Having supportive and understanding school personnel and the provision of practical support could be expected to impact on both creating a supportive environment and increasing adolescents’ connectedness to school. These themes will inform the school content for the new resilience measure.

### **5.3.5 Community domain**

There was not much discussion generated the community domain and few themes were identified. The two main themes identified related to government funding or legislation affecting the quality, cost or physical accessibility of transport, health services and facilities (n = 8). The second most common theme was seeking support from health professionals (n = 7) or trusted adults such as neighbours (n = 4). Having access to trusted and supportive adults in the community was one of the few resilience factors identified in the review of the scarce community resilience literature (as illustrated in the previous chapter). Community bonding or connectedness was a resilience factor identified in the literature, but was not referred to in the focus groups. There are a few reasons why this might be so. Given the limited discussion, the community domain may be a less salient than other more personal domains for the

adolescents in these focus groups - feeling bonded to ones community may be a more unconscious or subtle resource. Alternatively, being the last domain discussed, the limited discussion may have simply reflected the adolescents tiring and being less able to participate fully. However, participants seemed reluctant to finish and generally had to be encouraged to wrap up discussion, so it may simply be that the community is a less important or dominant domain for these adolescents, when compared to self, family, peers and school.

## **5.4 Discussion**

The young people attending the focus groups were open and articulate about their experience of living with a chronic illness. The adolescents appeared comfortable discussing sensitive issues with their peers in the focus group context. This concurs with research findings suggesting that group discussions can facilitate greater openness and enhance disclosure compared to other methods such as direct interviewing (Kitzinger, 1995; Kleiber, 2004; Millward, 2000; Wilkinson, 2005). It should be noted that the sharing of personal challenges and difficult experiences with peers formed part of the peer support program from which many of the participants were recruited. Thus this group of adolescents were familiar and comfortable with the focus group approach, and may not be representative of adolescents more generally.

Whilst these adolescents acknowledged distressing and difficult experiences arising from living with a chronic illness, they were also able to highlight positive outcomes and to clearly see how they drew strength from within themselves and from those around them. These adolescents discussed drawing on a wide range of individual skills or characteristics and social supports when dealing with the challenges of living with a chronic illness.

Themes highlighted in the focus groups included engaging in activities (creative, screen time e.g. computer/television, or physical) to provide distraction from negative experiences and, arguably, to facilitate reflection and introspection. Maturity, social skills and cognitive strategies were seen to be personal attributes or skills that assisted adolescents to successfully navigate challenges. Seeking help or

support from family, peers, school and the community were also common themes across the focus group discussions.

Interestingly, family and peers appeared to fulfil slightly different support roles. Family was commonly identified as providing emotional and practical support and was the only source from which adolescents reported seeking advice. While adolescents reported peers shared a common sense of humour and were able to understand them and ‘cheer them up’ when they were feeling down. Adolescents identified both friends and family as the people they turned to for talking and sharing feelings with. School staff was also identified as a source of support, including not only teachers but also specialist aides and school counsellors. Health professionals and trusted adults were reported to be desirable sources of support in the community. Thus measurement of positive support for adolescents will need to encompass all these areas and take into account the different roles identified by adolescents.

An interesting sub theme could be identified in some of the discussions relating to a *fine line* – the line over which a positive resource became problematic. It became apparent that positive resources such as family and friends could also have negative aspects:

“Fine line between supportive and over protective parents, and changes with age. They can take too long to let go of you as a ‘child’.” (FG 4).

“Friends can’t deal with you feeling down, they worry and don’t enjoy themselves.” (FG 3).

“Over protective friends can make your decisions for you - don’t ask you out because you may be tired. Make sure you do the right thing. It can get annoying” (FG 1).

Thus there may be a fine line between some resources providing positive or negative experiences. As highlighted by the adolescent statements above and in the review of the resilience literature, context and developmental stage can change the importance or impact of particular resources.

A number of the focus group participants recruited from the peer support group were older adolescents or young adults. These individuals continued to be linked to the peer support group through the ongoing social arm of the program. Due to interrupted school attendance, many of these adolescents had been delayed in completing their secondary schooling or enrolling in further education or employment. Thus they could be perceived as being embedded in adolescence for a slightly longer period and arguably continue to provide an adolescent perspective. However, some of the oldest participants had begun the transition into young adulthood with enrolment in tertiary study or apprenticeships. It became apparent that some of these participants had reflected on their recent adolescent years and were able to provide a more synthesised understanding of their experiences, approaches and later outcomes. Thus conducting focus groups with individuals transitioning into young adulthood, in addition to both younger and older adolescents, appeared to facilitate both depth and breadth in the discussion.

The participation rate and gender imbalance limit the potential for the focus group findings to represent the views of all adolescents living with a chronic illness. Physically attending the focus groups was reported to be a problem for many of the group members due to illness or transport difficulties. This significantly decreased the participation rate below the desired eight participants per group. Discussion may have ranged more broadly with greater numbers in each group. Furthermore, the focus group sample was predominantly female (70.8%). Females have been shown to more readily participate in such activities and may be more comfortable with the 'talking' approach of focus groups. However, the focus groups formed one part of a three pronged approach to the questionnaire development and the gender bias was not observed in the literature review or in the experts consulted in the item development phase. Therefore, the predominance of females in the focus group sample was not seen as necessarily prejudicial to the development of a questionnaire appropriate for both male and female adolescents.

Talking with adolescents about how they manage the challenges involved in living with a chronic illness identified many approaches and resources they considered important. The discussions also highlighted some interesting distinctions in the roles of different sources of social support. The focus groups discussions

provided exposure to adolescent language in relation to adversity and resilience factors, which will be used to guide the wording of items as appropriate. The following chapter details the combining of the resilience literature review and the results of the focus groups to construct the new measure of resilience.

# **CHAPTER 6. CONSTRUCTION AND PILOT TESTING OF THE NEW MEASURE**

*... for prosperity doth best discover vice, but adversity doth best discover  
virtue. (Francis Bacon, 1561–1626)*

## **6.1 Introduction**

In Chapters 4 and 5, the factors that facilitate resilient outcomes in times of adversity, both internal and external to an individual, were identified through focus groups and an examination of resilience research. This information was used to inform the content of a new measure of resilience and the construction and pilot testing of this measure is the focus of this chapter.

First, the process of writing the Adolescent Resilience Questionnaire is described. Next, the collection of pilot data and the analysis of the questionnaire data are detailed. These analyses were used to revise the new measure of resilience, ensuring the development of statistically and conceptually valid scales, comprised of the best performing items.

## **6.2 The construction of a new measure of resilience in adolescents**

### ***6.2.1 Development of conceptual scales***

As detailed in Chapters 4 and 5, an extensive review of the resilience literature and focus groups with adolescents were conducted to ascertain what resilience factors should be included in the new measure of resilience. The factors identified in the resilience literature (Chapter 4) and themes identified in the focus groups (Chapter 5) formed the basis of scale development in each of the five nested ecological domains relevant to adolescents (i.e. individual, family, peers, school and community). Focus group themes and resilience factors were combined into central concepts to be developed into scales as detailed in Figures 2 (individual domain) and



3 (family, peer, school and community domains). It can be seen in Figures 2 and 3 that there was high concordance between the resilience factors identified in the literature review and the focus group themes. Six conceptual scales were created in the individual domain, and two in each of the remaining domains, resulting in 14 scales altogether.

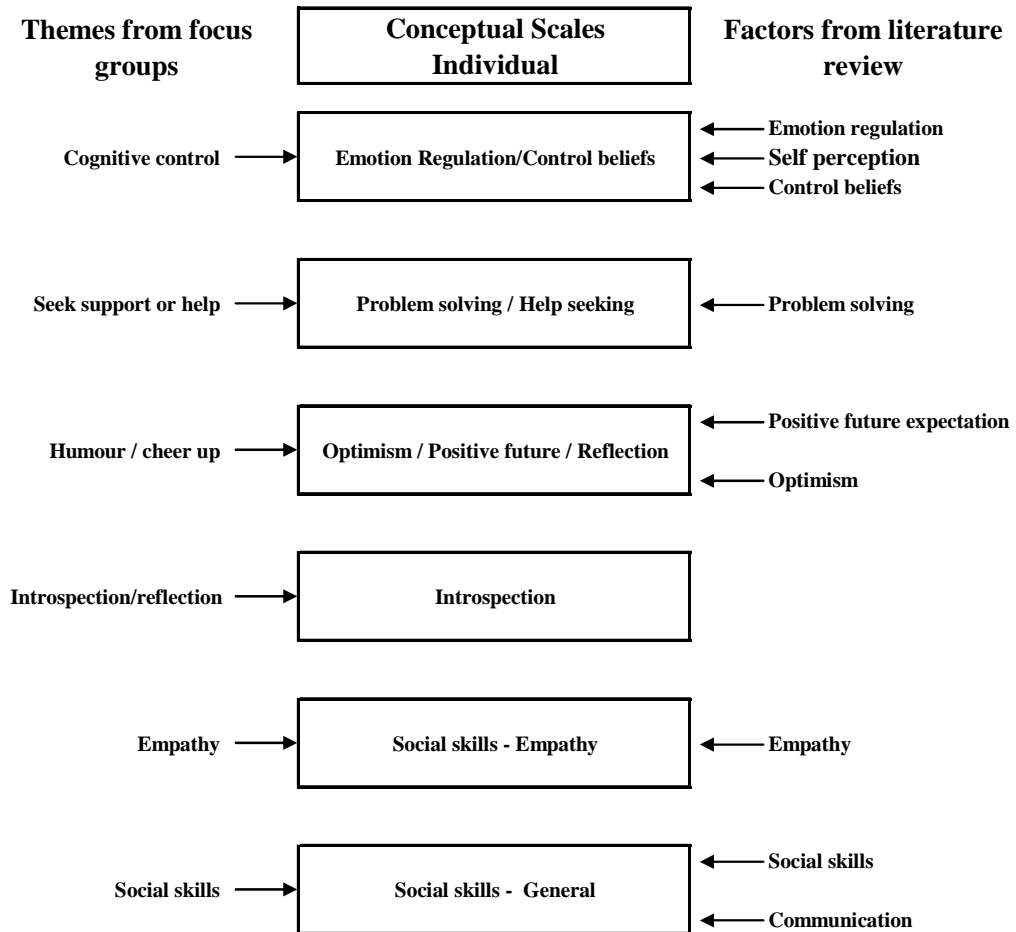


Figure 2. The development of conceptual scales from themes identified in the focus groups and factors from the resilience literature review for the individual domain.

As shown in Figure 2, six conceptual scales were created in the individual domain labelled: emotion regulation/control beliefs; problem solving/help seeking;

optimism/positive future expectation; introspection; social skills – empathy; and social skills – general. Two conceptual scales labelled connectedness and availability of support were developed in each of the family, peer and community domains; while the two conceptual scales in the school domain were labelled school environment and connectedness (see Figure 3).

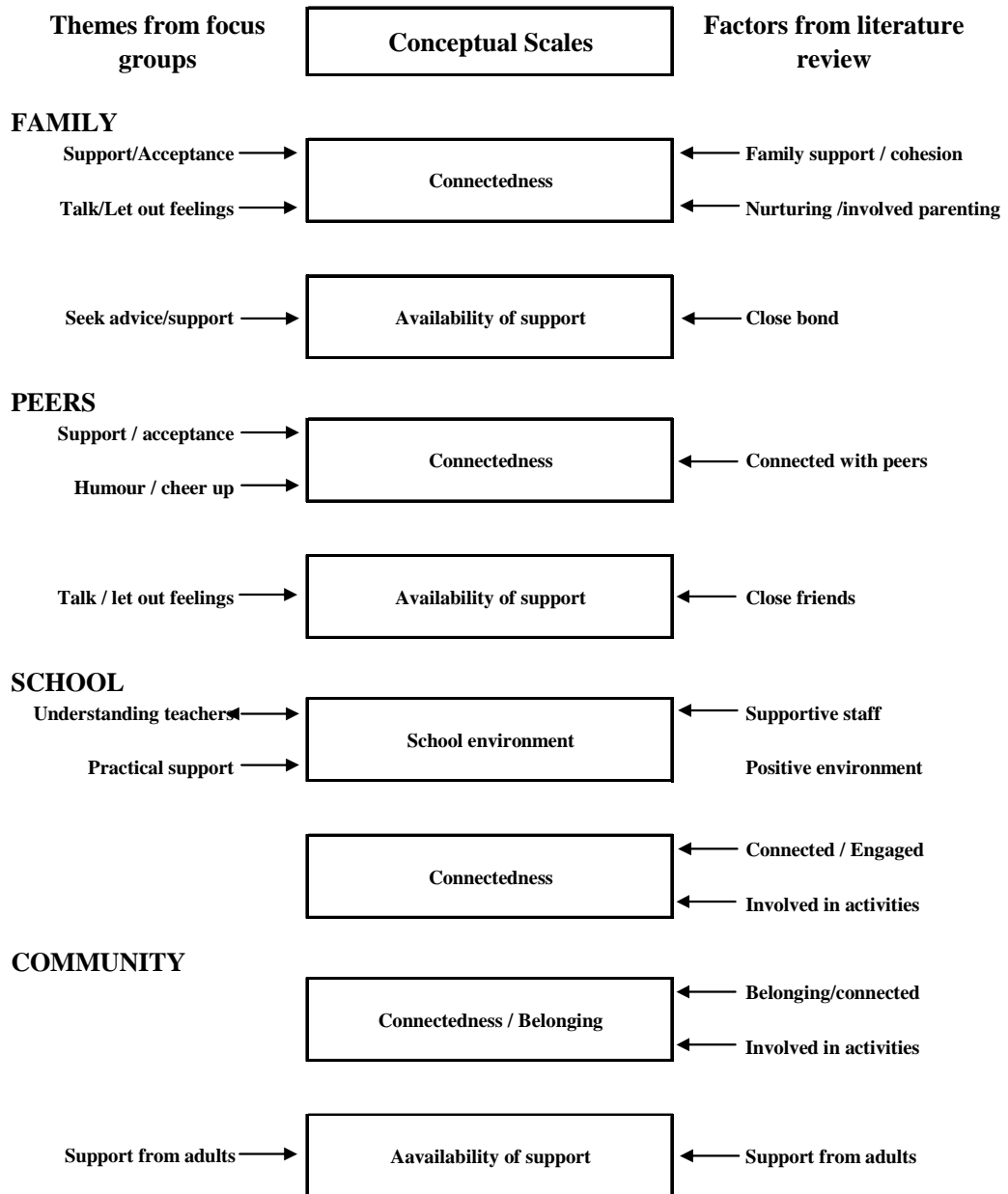


Figure 3. The development of conceptual scales from themes identified in the focus groups and factors from the resilience literature review in the family, peer, school and community domains.

### **6.2.2 Item development**

A large item pool was then written for each of the conceptual scales according to the guiding principals for item development as summarised by T. Kline (2005) and Streiner and Norman (1996). Items were composed as statements to be answered on a five point Likert response scale labelled: 1 *Never*, 2 *Not often*, 3 *Sometimes*, 4 *Most of the time* and 5 *All the time*. Every effort was made to limit the statements to a Year 6 reading level to cater for adolescents with all levels of reading skills.

Items were written to address the focus group themes and resilience factors relevant to each conceptual scale (see Figures 2 and 3). For example, items were written for the Family Connectedness scale to cover support/acceptance, talking/letting out feelings, cohesion, and nurturing/involved parenting (Figure 3). Language and terms used by the adolescents in the focus groups were incorporated into items where appropriate. A number of school items were derived from previous school based research conducted at the Centre for Adolescent Health (Bond et al., 2004; Bond, Thomas, Toumbourou, Patton, & Catalano, 2000; Patton et al., 2000).

A research team comprising of the author and four practitioners (working with adolescents in clinical and/or research roles) individually and then jointly assessed the items in relation to face and content validity, simplicity, value laden words, ambiguity and reading level (Streiner & Norman, 1996). Items were revised as necessary according to group consensus and the 'best' items (in terms of face and content validity etc) were retained for each scale, to form the Adolescent Resilience Questionnaire–Pilot (ARQ-Pilot).

### **6.2.3 Pre-test of the ARQ-Pilot**

Prior to pilot testing the ARQ-Pilot, two focus groups were conducted in an adolescent hospital ward, with eight adolescents in total (two male and six female) aged 12 to 19 years of age (mean = 16.6 years, SD = 2.3) to assess the new measure

for clarity, ease of understanding and completion time. As a result of the focus groups, a number of items were simplified without loss of meaning. The 14 ARQ-Pilot scales and 87 items are presented in Table 14. The ARQ-Pilot contained six sections, one for each domain and a demographics section (see Appendix B). Scale items within each domain were randomly distributed. Pilot testing was then conducted with the newly developed resilience measure.

Table 14  
Pilot ARQ scales and items

Scale	Items
Optimism / positive future	I try to make the best out of situations
	I feel hopeful about my life
	Seeing the funny side of situations helps me when things get bad
	I try to take a relaxed approach to things
	I tend to think the worst is going to happen [R]
	I worry about the future [R]
	I try to live a healthy life
Problem solving/help seeking	If something is becoming a problem I try to ignore it [R]
	I feel helpless when faced with a problem [R]
	If one approach to a problem doesn't work, I find it hard to think of other ideas[R]
	If I have a problem, I know there is someone I can talk to
	If I have a problem I deal with it by myself
	If I can't handle something I find help
	I keep my problems to myself [R]
Introspection	I can stand up for myself when there is a problem
	I like to think about why things happen the way they do
	I try to find meaning in the things that happen to me
	I look for what I can learn from bad things that happen
	Even if it isn't clear to me I believe things happen for a reason
	I carefully consider all options before making decisions

Table 14 (continued)

## Pilot ARQ scales and items

Scale	Items
Emotion regulation/control beliefs	<p>I take it easy on myself when I am not feeling well</p> <p>When people say nice things about me I find it hard to believe them [R]</p> <p>I understand why I feel the way I do</p> <p>If I get upset, I know how to make myself feel better</p> <p>If something upsets me it affects how I feel about everything [R]</p> <p>I worry about what people are thinking about me [R]</p> <p>When I make a mistake I feel that I am a hopeless person [R]</p> <p>When things go wrong I give myself a hard time [R]</p> <p>I am not happy unless things are perfect [R]</p> <p>I feel that I have little control over the things that happen to me[R]</p> <p>I push myself too hard to do what everyone else does [R]</p> <p>I find it difficult to cope when things change unexpectedly [R]</p>
Social skills - empathy	<p>People who know me think that I am understanding</p> <p>I think about what things might be like for other people</p> <p>I listen carefully to my friends when they have problems</p> <p>I am forgiving of other people</p> <p>I easily get frustrated with people [R]</p> <p>I feel obliged to do the right thing by others</p>
Social skills - general	<p>I enjoy meeting new people</p> <p>I have a hard time getting along with others [R]</p> <p>I make friends easily</p> <p>I feel confident that I will have a romantic relationship</p> <p>I enjoy spending time by myself</p> <p>I have trouble explaining how I am feeling [R]</p> <p>I am a good listener</p> <p>I find it easy to talk to people</p>

Table 14 (continued)

## Pilot ARQ scales and items

Scale	Items
	I find it hard to express myself to others [R]
	I am a private person when it comes to how I feel [R]
Family availability	My family is there for me when I need them
	If I have a problem there is someone in my family I can talk to
	There is someone in my family that I feel very close too
	The amount of time I spend doing things with my family is
Family connectedness	I enjoy spending time with my family
	My family is caring
	My family understand my needs
	My family is over-protective of me [R]
	I feel close to my family
	My family puts me down [R]
	I can be honest with my family about how I feel
	My family listens to me
	I have a say in family decisions
Peer connectedness	My friends are caring and supportive
	My friends like doing the same things as me
	My friends leave me out of things [R]
	I have fun with my friends
Peer availability	I have a group of friends that I keep in touch with
	I have a friend(s) that I feel close to
	I have a friend(s) that I can talk to about anything
	The amount of time I spend with my friends is:

Table 14 (continued)

Pilot ARQ scales and items

Scale	Items
School connectedness	Doing well at school is important to me I hate going to school [R] I get involved with school activities I feel left out at school [R]
Community connectedness	I trust the people in my neighbourhood I feel isolated in my neighbourhood [R] I like my neighbourhood I like the people in my neighbourhood I am part of a social group in my neighbourhood which is not run by my school (eg sports club, girl guides)
Community availability	There is an adult in my neighbourhood that I could talk to if I had a personal problem (eg neighbour, family friend) People in my neighbourhood go out of their way to help People in my neighbourhood are caring

Note: [R] = reverse item

### 6.3 Pilot testing the Adolescent Resilience Questionnaire

In order to assess the psychometric properties of the new resilience measure, the ARQ-Pilot was administered to 534 adolescents. The ARQ-pilot data was used to statistically identify the underlying scale structure of the new measure through factor analysis. This enabled assessment of the validity of the conceptually developed scales and the opportunity to improve the psychometric performance of the new measure through the revision of scales and items based on test results.

#### 6.3.1 Methodology

As was established in Chapter 2, the definition of resilience necessarily includes the experience of adversity. It was desirable therefore to pilot test the new resilience measure with a group of adolescents known to be experiencing adversity of

some kind to enhance the likelihood that adolescents exhibiting varying levels of resilience contributed data. Adolescents living with a chronic illness were identified as a group known to be dealing with adversity in their day to day lives. As a result of the challenges of living with a chronic illness, these adolescents have been identified as being at increased risk of poor outcomes (Bennett, 1994; Kliwer, 1997; Lavigne & Faier-Routman, 1992). However, a number of studies have reported that many chronically ill adolescents show resilient outcomes, particularly those with less severe illness and without corresponding physical disability (Billings et al., 1987; Garrison & McQuiston, 1989; Hanson & Onikul-Ross, 1990). Therefore, this group of adolescents was identified as likely to include both vulnerable and resilient individuals and therefore are an ideal group in which to pilot test a new measure of resilience.

Data was also sought from the general population (secondary students) to ensure that adolescents from a range of backgrounds and experiences contributed to the revision of the questionnaire, promoting broad applicability of the measure.

The primary analysis planned for the ARQ-pilot data was factor analyses to identify the underlying structure of the new measure. The aim of factor analysis is to summarise the interrelationships among variables, identifying coherent subsets of variables that are relatively independent of one another (Gorsuch, 1983; T. Kline, 2005; Tabachnick & Fidell, 2007). These subsets or factors are thought to reflect underlying processes that have created the correlations among the variables (Tabachnick & Fidell, 2007). That is, factor analysis of the ARQ-pilot data can establish how the items fit together, identifying sub-sets that could be developed into scales. Ideally, the factors identified in the analysis would replicate the conceptually developed scales, supporting the structure of the ARQ and the operationalisation of the resilience factors. It should be noted that factor analysis does not establish that these scales measure the resilience factors described (that would require testing of construct validity), just that adolescents respond similarly to items within each factor.

The steps involved in a factor analysis include extracting a set of factors from the correlation matrix, determining the number of factors, rotating to increase interpretability and interpreting the results. Unlike other analyses such as regression, there are no objective or external criteria by which to test or judge a chosen factor



solution (Tabachnick & Fidell, 2007). However there are relevant statistical considerations to most of the steps explicated above or *rules of thumb* to use Kline's description (T. Kline, 2005). The rules of thumb or statistical considerations relevant to pilot testing the new measure of resilience were:

- Sample size: 300 participants has been established as a good sample size for factor analysis (Comrey & Lee, 1992), therefore the aim was to enrol more than 300 participants in each sample group (chronically ill adolescents and students) to allow separate factor analysis of data from each group.
- Stability of factor solution: Replication of factor solutions across data sets adds evidence for the validity of the factor structure, greatly increasing confidence that the factor structures obtained may be generalised to other samples (T. Kline, 2005; Munro & Connell, 2005). Therefore, factor analyses were conducted on the two data sets (chronically ill adolescents and students) separately to assess stability of the factor solutions in two different samples.
- Domain specific analysis: Factor analysis was conducted in each domain separately to maintain the recommended 10 participants per item ratio (T. Kline, 2005).
- Correlation between scales: Oblique rotation was employed to allow for likely correlation between factors (Tabachnick & Fidell, 2007). If the factors replicated the conceptually developed scales, it was highly likely the factors would be correlated to some degree given the similarity of some of the concepts, for example family connectedness and availability.

Ultimately, a good factor solution lends itself to interpretation – it “makes sense” (Tabachnick & Fidell, 2007). The items making up each factor should be able to be meaningfully interpreted and have “scientific utility” (Gorsuch, 1983; T. Kline, 2005; Tabachnick & Fidell, 2007). Achieving a ‘good’ solution was the goal of the factor analysis of the ARQ-pilot data. This analysis will identify how the items in the new measure fit together and test the soundness of the conceptually developed scales.

In the following sections, the method, sample and results of the pilot testing will be elaborated. To enhance readability and avoid repetition, discussion of these results will be held over until the second round of revision is detailed in the following chapter. Thus, the discussion in Chapter 7 will draw on results from Chapters 6 and 7.

## **6.4 Method**

As the sample characteristics and procedures necessarily differed for the two samples they will be detailed separately.

## **6.5 Participants**

### ***6.5.1 School sample***

Secondary school students in year 9 were recruited from 11 Victorian Catholic Schools. The ARQ-Pilot was completed by 330 of the 1031 year nine students across the 11 schools, a response rate of 32%. Given that only one in three students participated, this sample may not be representative of the adolescent population. No data was available on the students who chose not to participate and therefore it is unknown whether participants differed systematically from nonparticipants.

The demographics of the school sample are presented in Table 15. The students ranged in age from 13 to 16 years, with a mean of 14.3 years ( $SD = 0.49$ ). Just over half the students were female (60%). Eighty seven percent of students were living in 'couple' families, a slightly higher proportion than the 78% reported for the general Australian population (Australian Bureau of Statistics, 2004).

Table 15

Demographics of school sample (n = 330)

	n	%
Female	188	59.9
Family composition		
Mother and Father	262	84.8
Parent and Step parent	7	2.2
Mother	33	10.7
Father	7	2.3
Sibling(s)	282	85.5
Mothers' highest level of education		
Primary/Secondary	112	35.9
Further education	132	42.3
Don't know	68	21.8

Mothers' education level was included in the questionnaire as a proxy indicator of SES. As shown in Table 15, around 40% of mothers had undertaken further education, with 31% having attended university. According to the Australian Bureau of Statistics, around 55% of the general population have further 'nonschool' education and 21% have a bachelor degree or above (Australian Bureau of Statistics, 2004). Direct comparisons are difficult due to differences in categorisation (gender and education levels), however it appears that the school sample may be more highly educated than the state average and therefore may represent a higher socioeconomic group.

### **6.5.2 Chronic illness sample**

Adolescents living with a chronic illness were recruited from hospital clinics and support groups. Of the 437 adolescents invited to participate, 247 completed the ARQ-pilot, a response rate of 57%. While the majority of the sampled population completed the questionnaire, the sample may not be representative of the population as a whole. While the response rate in most clinics and groups was above 60% (see Table 16), other clinics had low return rates and were under-represented in the final

sample. No data was available on adolescents who chose not to participate and therefore it is unknown whether participants differed systematically from nonparticipants.

Table 16

Sample size, gender and response rates for hospital clinics and support groups

	Population	Female	ARQ-Pilot completed	Response Rate
	N	%	n	%
<b>Hospital Clinics</b>				
Asthma	73	52	36	49
Neurology	6	50	4	67
Cystic Fibrosis	130	45	75	58
Rheumatology	29	97	23	79
Adolescent Ward	20	75	15	75
<b>Support Groups</b>				
Diabetes	10	70	7	70
Epilepsy	20	40	13	65
<b>Peer support (Not illness specific)</b>				
Metropolitan	99	64	43	43
Regional	50	52	31	62
<b>Total</b>	<b>437</b>	<b>57</b>	<b>247</b>	<b>57</b>

As can be seen in Table 16, females were over represented in the chronic illness population due to certain disease types predominantly affecting females (e.g. rheumatic illnesses). As adolescents are the target population for this questionnaire, 43 respondents over 18 years of age were excluded, leaving a total of 204 adolescents. The adolescents surveyed represented a broad spectrum of illness groups including cystic fibrosis, asthma, diabetes, epilepsy and lupus. The demographics of the sample are provided in Table 17. The mean age of participants was 14.9 years (SD =1.8).

Table 17

Chronic illness sample demographics (n = 204)

	n	%
Female	123	61
Participants lived with:		
Mother & Father	161	80
Parent & Stepparent	8	4
Mother	31	15
Sibling	1	1
Sibling(s)	165	81
Currently attending:		
School	179	90
Uni/TAFE	12	7
Currently ill, not attending	6	3
Mothers' highest level of education		
Primary/Secondary	98	51
Tertiary	87	45
Don't know	8	4

As shown in Table 17, the majority of participants were living with their mother and father or stepfather (94.1%) and there were few single parent families (n = 8). Most families included siblings (80%). Almost half of the participants reported their mothers had completed tertiary education (see Table 17). As with the school sample, this appears higher than the state average although directly comparable statistics were difficult to find. Therefore, this sample of adolescents may also come from a higher socioeconomic background than the average Victorian family.

### 6.5.3 Materials

Participants completed the ARQ-Pilot, a new measure of resilience in adolescents (see Appendix B). The ARQ-Pilot covers the five domains of individual, family, peers, school and community. The six scales in the individual domain comprise *emotion regulation/control beliefs*, *problem solving/help seeking*,

*optimism/positive future expectation, introspection, empathy and general social skills.* The family, peer and community sections each contain the two scales *connectedness* and *availability of support* while the school domain consists of the *school environment* and *connectedness* scales.

Items comprise statements with a five point Likert response scale labelled: 1 *Never*, 2 *Not often*, 3 *Sometimes*, 4 *Most of the time* and 5 *All the time*. Respondents were instructed to circle a number that was closest to “how it is for you” generally. Higher scores indicate greater resilience. A space was available at the end of each domain for participants to write any comments or difficulties regarding the items.

#### **6.5.4 Procedure**

As the procedure necessarily differed for the two samples, each will be detailed in turn.

*School sample:* School sample data were collected with the assistance of a BA Honours student. Due to time constraints, a convenience sample of metropolitan private Catholic schools was approached. Both Swinburne University and the Catholic Education Office granted ethics approval. Eleven of the 45 schools approached participated giving a response rate of 24%, thus the students sampled came from only a small proportion of the Catholic schools in Victoria and cannot be considered representative of all catholic school students. To limit time and resource demands on schools, a single year level was surveyed. Year nine students were selected as they fall in the middle of the target age range of the ARQ-Pilot (12-18 years). All year nine students in the participating schools were invited to take part in the study. Written parent and participant consent was a requirement for participation in the study, with students taking information statements and consent forms home to parents (see Appendix C).

Students with signed parent consent forms completed the ARQ-Pilot during class time. At the beginning of the class, students were given a letter explaining the purpose and procedure of the study and a consent form (see Appendix C). The researcher read the letter aloud and answered questions to ensure students understood what was required. Students signed the consent form if they wished to participate.

Participation was anonymous and the consent forms were collected prior to students completing the questionnaire and kept separately.

The researcher read the instructions and sample item printed on the front of the questionnaire (see Appendix B). Students were given the opportunity to ask questions and were encouraged to ask the researcher about any words or items that were unclear as they progressed through the questionnaire. The researcher gave simple explanations as required. Students placed completed questionnaires into a box at the end of class. Data was collected in 2000.

*Chronic illness sample:* A hospital-based sample was likely to over-represent adolescents who were more severely ill than a community sample. Therefore a hospital and a community sample were recruited to encompass a broad spectrum of illness severity. Both Swinburne University and the Royal Children's Hospital granted ethics approval. Adolescents were contacted through the Royal Children's Hospital, a tertiary hospital (serving both rural and metropolitan populations) and through a range of community support groups for people living with a chronic illness. With the exception of one clinic<sup>5</sup>, patients recorded on hospital clinic lists and community support group members were sent a letter explaining the purpose and procedure of the study, consent forms and the ARQ-Pilot (see Appendix C for information and consent forms). Release of information regarding age of patients and group members was prohibited for privacy reasons; therefore some respondents outside the target age range of 12-18 years were anticipated.

Written parent and participant consent was a requirement for participation in the study. Parents and participants indicated on a consent form whether they agreed or declined to participate in the study. Completed consent forms and questionnaires were returned separately in reply paid envelopes provided. After three weeks,

---

<sup>5</sup> One clinic patient list was not released; instead, adolescents were invited to participate in the study during routine hospital visits. Clinicians were instructed by their head of department to give the questionnaire package to all medically stable patients aged between 10 and 18 years. Recruitment occurred over a period of two months. Patients were able to return completed consent forms and questionnaires to the clinic desk or in reply paid envelopes provided.

reminder letters and replacement forms and questionnaires were sent to all nonrespondents. Data was collected between November 1999 and June 2000.

### 6.5.5 *Statistical Analysis*

The goal of the analyses was to ascertain the underlying structure of the questionnaire in order to develop statistically valid scales and employ item and scale analyses to identify the best performing items for each scale. The ARQ-Pilot was therefore examined on two levels – individual items and scales.

*Item analysis:* At an item level, the distribution of responses was examined. Just as a test is designed to reflect the *range* of aptitudes or attitudes, so too should items (Cohen, Swerdlik, & Phillips, 1996). Generally items should have endorsement rates between 20 and 80% (P. Kline, 2003; Streiner & Norman, 1996). If less than 20 or more than 80% of respondents endorse an item, the item provides little variability or information about individual differences. Such items “do not improve a scale’s psychometric properties, and may actually detract from them while making the test longer” (Streiner & Norman, 1996, p. 59). Therefore items showing less than 20% or more than 80% endorsement were identified and rewritten, or removed, based on scale analyses.

*Factor analysis:* Factor analyses were used to guide the development of scales and the selection of the best items to retain in the questionnaire. As established in Section 6.3.1, all factor analyses were conducted using maximum likelihood extraction and oblique rotation. The most parsimonious solution was established through consideration of the following:

- Percentage of variance explained: Good solutions account for a greater proportion of the variance (T. Kline, 2005).
- Number of factors: Scree plot ‘elbow’ was used to guide selection of the optimum number of factors (T. Kline, 2005).
- Stability of factors across solutions and data sets: Replication of factor solutions across data sets adds evidence for the validity of the factor structure (T. Kline, 2005).



- Item loadings within and across factors: Factors should have more than three items with loading at 0.4 or higher and be ‘clean’, meaning items do not also have high loadings on other factors (T. Kline, 2005; Tabachnick & Fidell, 2007).
- Conceptual fit: The items making up each factor can be meaningfully interpreted and have “scientific utility” (T. Kline, 2005; Tabachnick & Fidell, 2007).
- Sample size: Where factor solutions were stable across the two data sets, data were combined to increase sample size (Tabachnick & Fidell, 2007).

*Scale development and revision:* Once the most parsimonious solution was chosen, each factor was developed into a scale following the steps detailed below:

1. Poorly performing items were discarded or rewritten (i.e. items loading at less than 0.4, excessively high/low endorsement).
2. Scale reliability was examined and items that reduced reliability were removed (i.e. Cronbach alpha coefficient for scale improves when item is deleted).
3. Items were re-assessed for face validity and language and were deleted or rewritten according to performance in steps 1, 2 and 4.
4. Newly developed scales were examined to ensure fidelity to the original concept, and new items written to fill any gaps in face and content validity.

At this stage the goal remained to be over inclusive in addressing each construct, as a second phase of revision was planned in which the size of the questionnaire would be reduced.

## **6.6 Results**

Missing data was minimal, ranging from 8 to 19 responses per item (1.5 to 3.6% of combined sample). Only two items had missing responses representing more

than 3% of the sample. Therefore data presented throughout this chapter will be valid responses only (i.e. missing data will be excluded).

### **6.6.1 Item analysis**

The performance of each item was examined using both qualitative and quantitative data. All comments written by respondents on the questionnaires were collated and examined. Comments relating to particular items were highlighted and difficulties with understanding items, words or response choices were noted, as were positive comments. For example in the domain of self:

"46 was hard to answer."

"Aren't a couple too philosophical i.e.46. Even if it isn't clear to me I believe things happen for a reason."

"I like the range of categories the questions are asked in!"

Items that were identified by more than two respondents as difficult to understand or answer (such as item 46 above) were deleted. Other items were flagged for possible rewriting, expansion or exclusion, to be guided by the results of the statistical analyses. (All item revisions are detailed below in the scale analyses).

The response distribution was examined for each item, with between 20% and 80% endorsement required (as per *Statistical Analysis* in Method). That is, items with 20% to 80% of respondents endorsing the categories of 'All of the time' or 'Most of the time' were retained (negatively worded items were reversed). The number of items in each domain identified as having endorsement less than 20% (low) or greater than 80% (high) is shown in Table 18.

These items were flagged for either rewriting or exclusion following the results of the scale analyses. As shown in Table 18, excessively high or low endorsement was more common in the peer and school domains, where participants were generally very positive in their responses. These domains were therefore identified as requiring significant revision to improve the response distribution of items.

Table 18

Number of items with less than 20% or greater than 80% endorsement (n=534)

Domain	Items N	Items with poor distribution	
		n	%
Individual	48	0	0.0
Family	13	2	15.4
Peers	8	4	50.0
School	11	2	20.0
Community	8	0	0.0

Scale analyses were then conducted following the process described in the Section 6.5.5. Analyses were conducted within each domain. Factor analyses were conducted on the two data sets separately to establish the stability of the factors across samples and will be detailed in turn.

### ***6.6.2 Factor analysis in the individual domain***

The exploratory factor analysis of the school sample data produced 13 factors and explained 46.6% of the variance. Examination of the scree plot and initial eigenvalue statistics suggested four or five factors (see Appendices E1 and E2). Accordingly, three to six-factor solutions were examined. Similar core factors were identified in the different solutions, suggesting a stable factor structure. The six-factor solution (shown in Appendix E3) was the most parsimonious according to criteria detailed in the Section 6.5.5. Solutions with fewer factors absorbed factors that were important conceptually, while seven and eight factor solutions added unstable factors with less than three items.

Examination of data from the chronic illness sample was then undertaken to examine the stability of this factor structure across two data samples. An exploratory factor analysis of the chronic illness data identified 12 factors, which explained 63.2% of the variance. Examination of the scree plot and initial eigenvalue statistics suggested four or five factors (see Appendices F1 and F2). Therefore, three to six-factor solutions were examined. The six-factor solution was the most parsimonious according to criteria described in the Section 6.5.5. The solution comprised the same

factors as the school sample and the majority of the items loaded on the same factors in both samples. The six-factor solution is presented in Appendix F3, with items italicised where they load on different factors compared to the school sample data. The similarity of the factor solutions in the two data sets supported the stability of the identified structure.

Given the similarity of the six-factor solutions across the two data sets, the data were combined ( $n = 534$ ) and a six-factor solution used to guide the construction of scales. The six-factor solution was 'clean' with items showing minimal cross loading and all factors comprised of three or more items with loadings above 0.4. The factors replicated the six conceptually developed scales, with some redistribution of items. A table of the six-factor solution is presented in Appendix F4, with column one indicating the original conceptual scale each item was associated with. Factors one (Emotion Regulation) and four (Social Skills) were slightly correlated ( $r = 0.31$ ).

### ***6.6.3 Scale development and revision in the Individual domain***

The six individual domain factors were developed into factor scales through the process elucidated in Section 6.5.5. The six factor scales resembled the six conceptually developed scales and were labelled accordingly: *Emotion regulation (negative)*, *Introspection/Meaning*, *Problem solving*, *Social Skills*, *Empathy* and *Optimism/Positive future expectations*. Scale development and the revisions undertaken are presented in Table 19. A number of important differences between the factor scales and conceptually developed scales were identified and acted upon. The *emotion regulation* factor scale appeared more focussed on negative cognition, due in part to the positive *emotion regulation* items loading on the *optimism/positive future expectation* factor scale (see Table 19). Therefore, it was decided to:

- Rename the *emotion regulation* factor scale as *negative cognition* and add new items to more comprehensively cover negative emotion regulation.
- Add new items to the *optimism/positive future expectation* scale to more closely reflect the construct.

Table 19

Revision of the individual domain of ARQ-Pilot to produce ARQ-Rev1 based on the six-factor solution of combined data (n = 534)

Conceptual scale	ARQ-Pilot	Factor loading	ARQ-Rev1	ACTION taken and why
	<b>Emotion regulation</b>		<b>Negative cognition</b>	
Optimism/PF	I tend to think the worst is going to happen	0.61	I tend to think the worst is going to happen	Unchanged
Emotion Reg	I find it difficult to cope when things change unexpectedly	0.60	I find it difficult to cope when things change unexpectedly	Unchanged
Problem sol	I feel helpless when faced with a problem	0.60	I feel helpless when faced with a problem	Unchanged
Emotion Reg	If something upsets me it affects how I feel about ...	0.51	If something upsets me it affects how I feel about everything	Unchanged
Emotion Reg	When things go wrong I give myself a hard time	0.50	When things go wrong I give myself a hard time	Unchanged
Emotion Reg	I feel that I have little control over the things that ...	0.50	I feel that I have little control over the things that happen to me	Unchanged
Social skills	I have trouble explaining how I am feeling	0.49	I have trouble explaining how I am feeling	Unchanged
Emotion Reg	When I make a mistake I feel that I am a hopeless person	0.47	When I make a mistake I feel that I am a hopeless person	Unchanged
Optimism/PF	I worry about the future	0.43	I worry about the future	Unchanged
Emotion Reg	I am not happy unless things are perfect	0.41	I am not happy unless things are perfect	Unchanged
Emotion Reg	I push myself too hard to do what everyone else does	0.40	I push myself too hard to do what everyone else does	Unchanged
Empathy	I worry about what people are thinking about me	0.39	I worry about what people are thinking about me	Unchanged
Problem sol	If one approach to a problem doesn't work, I ...	0.52		Returned to Problem solving
Empathy	I easily get frustrated with people	0.46		Returned to <i>Empathy</i>
Problem sol	If something is becoming a problem I try to ignore it	0.31		Returned to Problem solving
Social skills	I find it hard to express myself to others	0.35		Returned to <i>Social skills</i> : loads evenly on both
Emotion Reg	When people say nice things about me	< 0.30		Discarded: Loads <0.3
			My feelings are out of my control	New item
			Sometimes I just can't let go of bad feelings	New item
			I can't stop worrying about my problems	New item
			I dwell on the bad things that happen	New item
			I get wound up about things	New item
			I tend to get anxious in unfamiliar situations	New item

Table 19 (continued) Revision of the individual domain of ARQ-Pilot to produce ARQ-Rev1 based on the six-factor solution of combined data (n = 534)

Conceptual scale	ARQ-Pilot	Factor loading	ARQ-Rev1	ACTION taken and why
	<b>Introspection/Meaning</b>		<b>Introspection/Emotional insight</b>	
Introspection	I like to think about why things happen the way they do	0.62	I like to think about why things happen the way they do	Unchanged
Introspection	I try to find meaning in the things that happen to me	0.56	I try to find meaning in the things that happen to me	Unchanged
Empathy	I think about what things might be like for other people	0.46	I think about what things might be like for other people	Unchanged
Introspection	Even if it isn't clear to me I believe things happen for a reason	0.40		Discarded: Qualitative data indicated poorly understood
			I take it easy on myself when I am not feeling well	From Optimism/Positive future
			I understand why I feel the way I do	From Optimism/Positive future
			If I get upset, I know how to make myself feel better	From Optimism/Positive future
			I think things through carefully before making decisions	From Empathy
			I make time to do the things I enjoy	New item
			I am able to let go of things I can't control	New item
			I accept things that I can't change	New item
			I can change my feelings by changing the way I see things	New item
			I can change the way I feel by changing the way I think	New item
			When I am feeling down, I take extra special care of myself	New item
			I slow down when things are going too fast	New item
			I have ways of getting rid of bad feelings	New item
	<b>Optimism/Positive future expectation</b>		<b>Optimism/Positive future expectations</b>	
Optimism/PF	I feel hopeful about my life	0.45	I feel hopeful about my life	Unchanged
Optimism/PF	Seeing the funny side of situations helps ...	0.38	Seeing the funny side of situations helps me when things get bad	Unchanged
Introspection	I look for what I can learn from bad things that	0.32	I look for what I can learn out of bad things that happen	Unchanged
Optimism/PF	I try to take a relaxed approach to things	0.52	I am a person who can go with the flow	Rewritten: Qualitative data indicated poor item
Optimism/PF	I try to make the best out of situations	0.48	I can find positives even in bad situations	Rewritten: General only 7.1% disagree
Emotion Reg	I understand why I feel the way I do	0.36		Added to Emotional insight
Emotion Reg	If I get upset, I know how to make myself feel better	0.49		Added to Emotional insight

Table 19 (continued) Revision of the individual domain of ARQ-Pilot to produce ARQ-Rev1 based on the six-factor solution of combined data (n = 534)

Conceptual scale	ARQ-Pilot	Factor loading	ARQ-Rev1	ACTION taken and why
	<b>Optimism/Positive future expectation (continued)</b>		<b>Optimism/Positive future expectations (continued)</b>	
Emotion Reg	I take it easy on myself when I am not feeling well	< 0.30		Added to Emotional insight
			I use humour to help me feel better about problems	New item
			My life has a sense of purpose	New item
			I make plans for the future	New item
			<b>Self Confidence</b>	
			I feel stronger because of the problems I have faced	New item
			I feel good about myself	New item
			I am confident that I can achieve what I set out to do	New item
			I feel confident that I can handle whatever comes my way	New item
			I think about new activities or projects I would like to try	New item
			If I have a problem I can work it out	New item
	<b>Problem Solving</b>		<b>Problem solving</b>	
Problem sol	If I have a problem I know there is someone I can talk to	-0.47	If I have a problem, I know there is someone I can talk to	Unchanged
Problem sol	If I can't handle something I find help	-0.46	If I can't handle something I find help	Unchanged
Problem sol	I keep my problems to myself	0.74		Discarded: Ambiguous for resilience
Problem sol	If I have a problem I deal with it by myself	0.64		Discarded: Ambiguous for resilience
Social skills	I am a private person when it comes to how I feel	0.59	I can share my personal thoughts with others	Returned to <i>Social skills</i> : rewritten
			If something is becoming a problem I try to ignore it	From Emotion Regulation
			If one approach to a problem doesn't work, I find it hard to ...	From Emotion Regulation
			I find it hard to make important decisions	New item
			I make quick decisions which I regret later	New item
	<b>Empathy</b>		<b>Empathy</b>	
Social skills	I am a good listener	0.72	I listen carefully to what other people are saying	Rewritten: General only 4.9% disagree
Empathy	I listen carefully to my friends when they have problems	0.62	I can understand how other people feel when they talk to me about their problems	Rewritten: High endorsement
Empathy	People who know me think that I am understanding	0.46	I find it hard to understand people	Rewritten: General only 5.0% disagree

Table 19 (continued) Revision of the individual domain of ARQ-Pilot to produce ARQ-Rev1 based on the six-factor solution of combined data (n = 534)

Conceptual scale	ARQ-Pilot	Factor loading	ARQ-Rev1	ACTION taken and why
Introspection	I carefully consider all options before making decisions	0.30	I think things through carefully before making decisions	Returned to Introspection/Meaning:
Optimism/PF	I try to live a healthy life	0.30		Discarded: Not relevant
Empathy	I feel obliged to do the right thing by others	<0.30	I try to do the right thing by others	Rewritten: Loads <0.3, value laden
Empathy	I am forgiving of other people	<0.30	I expect people to live up to my standards	Rewritten: Loads <0.3, too general
			I am easily frustrated with people	From Emotion regulation
			I get frustrated when people make mistakes	New item
			I am patient with people who can't do things as well as I can	New item
			I can accept other people's opinions even if they are different from mine	New item
			I enjoy helping people with their problems	New item
	<b>Social skills</b>		<b>Social skills</b>	
Social skills	I make friends easily	0.66	I feel shy around people	Rewritten: Reversed to balance scale
Social skills	I have a hard time getting along with others	-0.57	I prefer to do activities with other people	Rewritten: Negative connotation
Social skills	I enjoy meeting new people	0.43	I get a buzz out of meeting new people	Rewritten: High endorsement (80%)
Problem sol	I can stand up for myself when there is a problem	0.42	I can stand up for myself when there is a problem	Unchanged
Social skills	I enjoy spending time by myself	0.33	I enjoy spending time by myself	Unchanged
Social skills	I find it easy to talk to people	-0.30		Discarded: Complex loading
Social skills	I feel confident that I will have a romantic relationship	<0.30		Discarded: Ambiguous for resilience
			I find it hard to express myself to others	From Problem Solving
			I can share my personal thoughts with others	From Problem Solving
			I avoid social situations	New item
			I feel alone in the world	New item
			I am comfortable having different opinions to my friends	New item
			I feel pressured to do things because my friends do them	New item
			I feel confident to do things by myself	New item
			I can express my opinions when I am in a group	New item
			I feel that I am misunderstood	New item
			People come to me with their problems	New item



- Expand the *introspection/meaning* scale to include items addressing positive emotion regulation and rename the scale *introspection/emotional insight*, as these items conceptually fit better here than in the *optimism/positive future expectation* factor scale.

New items were added and a number of items were rewritten in the remaining scales so that items reflected the underlying construct more closely or to simplify the language (details in Table 19).

With the addition of the new items, the resilience factors optimism and a positive sense of the future were well covered. However, self-confidence and self-esteem were not adequately addressed in the newly developed factor scales. As discussed in Chapter 4, self-confidence and self-esteem have been identified as significantly contributing to resilient outcomes (Borman & Overman, 2004; Costa et al., 1999; Dubow et al., 1997; Fergusson & Horwood, 2003; Werner & Smith, 1992). Therefore new items were added to create a new scale specifically assessing these factors and labelled *self-confidence*. It was hoped that these revisions would improve the structure and reliability of the scales.

Following this revision process, the individual domain of the revised ARQ-Pilot, labelled ARQ-Revision 1 (ARQ-Rev1), consisted of seven scales and 79 items in total. The seven scales were *negative cognition*, *introspection/emotional insight*, *optimism/positive future expectation*, *self-confidence*, *problem solving*, *empathy* and *social skills*. It can be seen that these seven scales remained true to the original resilience constructs identified in the literature review and focus groups (as described in Figure 2, Section 6.2.1) and were psychometrically tested in a subsequent study detailed in the next chapter

#### **6.6.4 Factor analysis in the Family domain**

Results of the school and chronic illness data will be detailed in turn. An exploratory factor analysis of the school data identified two factors explaining 52.22% of the variance. Further, the scree plot and initial eigenvalues suggested two factors (see Appendices G1 and G2). However the two-factor solution was inadequate due to: poor conceptual clarity; all but two items loaded on the second factor (see pattern matrix in Appendix G3); moderate correlation between the factors

( $\bar{r} = 0.4$ ) and some communality estimates exceeded one. Thus a single factor appeared to underlie the family domain items, describing general family connectedness.

Examination of the chronic illness sample data replicated the school data results. Scree plot and initial statistics (see Appendices H1 and H2) suggested two factors might fit the data better. The two-factor solution had poor conceptual clarity, high correlation between the factors ( $r = 0.5$ ), a number of communality estimates that exceeded one and a single item loading on the second factor (see pattern matrix in Appendix H3). Given the similarity of the factor analysis in the two data sets, the data were combined and the two-factor solution used to guide the construction of scales.

#### ***6.6.5 Scale development and revision in the Family domain***

The conceptually developed scales in the family domain addressed two constructs – connectedness and availability of support. However the factor analysis failed to support these two facets of family cohesion. The factor structure suggested the family items tapped into a single underlying concept. This either reflected the reality of a single concept underlying family connectedness or indicates an inadequate item pool. While a general entity of family connectedness is entirely plausible, overly high endorsement of a number of family items may have masked existing differences. It is highly likely that family connectedness and availability are interrelated. However, it is conceivable that an adolescent could have a close bond with their family (high connectedness) but wish for greater access to family members (low availability). Therefore, the decision was taken to retain the unstable two-factor solution and to revise the two factor scales in order to strengthen the operationalisation of these two concepts.

Construction of the scales followed the revision process as detailed in Section 6.5.5. The revision of scales and items is detailed in Table 20. With a large number of items to choose from for the *connectedness* factor scale, two items with borderline high endorsement (80%) were deleted. New items that were more specific and less positively worded were added to both factor scales to strengthen conceptual fit and improve the differentiation between them. At the conclusion of the revisions, the

Table 20

Revision of the family domain in ARQ-Pilot to create ARQ-Rev1 based on the two-factor solution of combined data (n = 534)

Conceptual scale	ARQ-Pilot	Factor loading	ARQ-Rev1	ACTION taken and WHY
	<b>Connectedness</b>		<b>Connectedness</b>	
Connectedness	My family understands my needs	0.84	My family understands my needs	Unchanged
Connectedness	My family is caring	0.79		Discarded: 86% endorsement
Communication	My family listens to me	0.78	My family listens to me	Unchanged
Connectedness	I feel close to my family	0.77	I don't feel loved by my family	Rewritten: Reversed to balance scale
Availability	My family is there for me when I need them	0.73		Discarded: 80% endorsement
Communication	I can be honest with my family about how I feel	0.69	I can be honest with my family about how I feel	Unchanged
Connectedness	I enjoy spending time with my family	0.66	I enjoy spending time with my family	Unchanged
Connectedness	My family puts me down	-0.60		Discarded: 80% endorsement
Communication	I have a say in family decisions	0.58	I have a say in family decisions	Unchanged
Connectedness	My family is over protective of me	< 0.30	My mum or dad is over protective of me	Unchanged
Availability	The amount of time I spend doing things with my family is: (Too little/Enough/Too much)	< 0.30		Returned to <i>Availability</i> : Rewritten to fit 5-point scale (91% endorsement)
			I do fun things with my family	New item
			We do things together as a family	New item
			My family provides me with emotional support	New item
			People in my family expect too much of me	New item
			My family is a safe place when things seem to be falling apart	New item
			My family helps me to believe in myself and my abilities	New item
			My parents trust me to look after myself	New item
			My family talks about problems we are having	New item
	<b>Availability</b>		<b>Availability</b>	
Availability	If I have a problem there is someone in my family...	-0.91	If I have a problem there is someone in my family I can talk to	Unchanged
Availability	There is someone in my family that I feel very close to	-0.50	There is someone in my family that I feel particularly close to	Unchanged
			I get to spend enough time with my family	From Connectedness
			There is someone in my family I can talk to about anything	New item
			People in my family are too busy to pay attention to me	New item

family domain comprised two scales addressing *connectedness* and *availability* of family members for support, containing 15 and 5 items respectively.

#### **6.6.6 Factor analysis in the Peer domain**

An exploratory factor analysis of the school data was conducted on the peer items. The scree plot and initial statistics (presented in Appendices I1 and I2) suggested two factors would fit the data best. However, the two-factor solution was inadequate due to: poor conceptual clarity, highly correlated factors ( $r = 0.6$ ), all items but two loading on the first factor (see Appendix H3 for the pattern matrix) and communality estimates that exceeded one. Items loading on the first factor related to *connectedness* to peers, while the second factor contained two items from the conceptual scale *availability of support*.

Analysis of the chronic illness sample data produced the same two factors, with the same issues as the student data (details in Appendix J). Given the similarity of the results from the two data sets, the data were combined and produced an identical two-factor solution. All but two items loaded on the first factor, with the second factor comprised of two items from the conceptual *availability* scale. The two factors were highly correlated ( $r = 0.6$ ) but the stability of the factor structure across the data sets and the high factor loadings of the two availability items indicated that this factor might be a viable entity once revised and strengthened.

#### **6.6.7 Scale development and revision in the Peer domain**

The results of the factor analysis of the peer items suggested that there were potentially two factors corresponding to the original conceptual scales of *connectedness* and *availability*. Therefore the decision was taken to retain the two-factor solution and create two factor scales but with significant revision. The revision of items and scales is presented in Table 21. As described in the Section 6.6.1, excessively high endorsement of items was more common in the peer domain than other domains. Therefore, most of the items were rewritten to be more specific and less positive in order to increase the variability in responses. In addition, new items were added to each scale to strengthen conceptual clarity and increase the differentiation between the two scales. Following the revision of the peer items, the

Table 21

Revision of the peer domain in ARQ-Pilot to create ARQ-Rev1 based on the two-factor solution of combined data (n = 534)

Conceptual scale	ARQ-Pilot	Factor loading	ARQ-Rev1	Action: Reason
	<b>Connectedness</b>		<b>Connectedness</b>	
Connectedness	I have fun with my friends	0.80	I have friends who make me laugh	Rewritten: 91% endorsement
Connectedness	My friends like doing the same things as me	0.71		Discarded: not relevant
Connectedness	My friends leave me out of things	-0.64	I feel left out of things	Rewritten: 4% endorsement
Availability	I have a group of friends that I keep in touch with	0.56		Returned to <i>Availability</i>
Connectedness	My friends are caring and supportive	0.47	My friends get me into trouble	Rewritten: 80%endorsed, Rev. to balance
Availability	The amount of time I spend with my friend(s) is (Too little/enough/Too much)	-0.34	I feel confident around people my age	Returned to <i>Availability</i> New item
			I enjoy being around people my age	New item
			When I am down I have friends that help cheer me up	New item
	<b>Availability</b>		<b>Availability</b>	
Availability	I have a friend(s) that I feel close to	-0.89	I wish I had more friends I felt close to	Rewritten: 86%endorsed, Rev. to balance
Availability	I have a friend(s) that I can talk to about anything	-0.80	I have a friend I can trust with my private thoughts and feelings	Rewritten: 81% endorsement
			I have a group of friends that I keep in touch with regularly	From Connect: Rewritten 87% endorsed
			I get to spend enough time with my friends	From Connectedness: Rewritten to fit 5-point scale, 91% endorsement
			I find it hard making friends	New item

Note. Rev = Reversed to balance scale

ARQ-Rev1 peer domain comprised of two scales addressing *connectedness* and *availability* of peers, with 6 and 5 items respectively.

#### **6.6.8 Factor analysis in the School domain**

Again, the school and chronic illness sample results will be explored in turn. An exploratory factor analysis of the school data extracted three factors explaining 56.6% of the variance. Examination of the scree plot and initial eigenvalues statistics (shown in Appendices K1 and K2) suggested two factors and therefore two and three factor solutions were examined. The three-factor solution was unconvincing with some communality estimates greater than one, highly correlated factors ( $r = 0.6$ ) and a poorly defined second factor (two items with complex loading). In contrast, the two-factor solution showed clean conceptually meaningful factors comprised of three or more items with minimal cross loading (see Appendix K3 for pattern matrix). The first factor was similar to the conceptually developed *supportive environment* scale and the second factor to the conceptual *connectedness* scale.

Analysis of the chronic illness data produced the same results (see Appendix L). The two-factor solution distributed items identically to the school sample solution, and the factors were labelled accordingly (see Appendix L3 for pattern matrix). Given the replication of the factor structure, the data samples were combined and a two-factor solution specified. The resulting solution was clean, stable and conceptually clear, with moderate correlation between the two factors ( $r = 0.4$ ).

#### **6.6.9 Scale development and revision in the School domain**

Two factors were identified in the school domain and were developed into scales following the revision process detailed in Section 6.5.5. The school factor scales closely resembled the conceptually developed scales and were accordingly labelled *supportive environment* and *connectedness*. As with the peer domain, a number of items had excessively high endorsement levels and were rewritten using more precise language (see Table 22). Five new items were also added to address aspects of support and connectedness considered to be inadequately covered. At the conclusion of this process the school domain comprised of two scales describing a *supportive environment* at school (9 items) and a sense of social and academic *connectedness* to school (6 items).

Table 22

Revision of the school domain of the ARQ-Pilot to create ARQ-Rev1 based on the two-factor solution of combined data (n = 534)

Conceptual scale	ARQ-Pilot	Factor loading	ARQ-Rev1	Action: Reason
	<b>Support</b>		<b>Supportive environment</b>	
Environment	My teachers are caring and supportive	0.90	My teachers are caring and supportive of me	Rewritten - more specific
Environment	I have a teacher that I feel looks out for me	0.73	I have a teacher that I feel looks out for me	Unchanged
Environment	My teachers provide me with extra help if I need it	0.67	My teachers provide me with extra help if I need it	Unchanged
Environment	My teachers expect too much of me	-0.43	My teachers expect too much of me	Unchanged
Environment	There is an adult at school that I could talk to if I had a personal problem	0.35	There is an adult at school who I could talk to if I had a personal problem	Unchanged
Connected	Doing well at school is important to me	<0.30	I try hard in school	Rewritten: 81% endorsed, load < 0.3
			My teachers notice when I am doing a good job and let me know about it	New item
			Teachers in my school are caring	New item
			At school students help to decide and plan things like school activities and events	New item
			I feel that what I say counts at school	New item
	<b>Connectedness</b>		<b>Connectedness</b>	
Connected	I feel left out at school	0.66	I feel included by other students at school	Rewritten: more specific/positive
Connected	I get bullied or teased at school	0.64	I get teased at school	Rewritten: 83% endorsed, simplified
Environment	I feel safe at school	-0.61		Discarded - not relevant resilience
Connected	I hate going to school	0.33	I hate going to school	Unchanged: Complex loading but with new items may improve
Connected	I get involved with school activities	-0.30	I get involved with school activities	Unchanged
			I am bored at school	New item

#### **6.6.10 Factor analysis in the Community domain**

An exploratory factor analysis of the school sample data identified two factors explaining 45.9% of the variance. Examination of the scree plot and initial statistics (presented in Appendices M1 and M2) supported a two factor solution. Items in the two-factor solution showed minimal cross loading and both factors comprised of more than three items loading at above 0.3. Items loading on the first factor were associated with a sense of liking and trust in the community while the second factor contained items linked to the *availability* of adult support in the community. The two factors were highly correlated ( $r = 0.7$ ).

Analysis of the chronic illness sample data replicated these results in the community domain (details in Appendix M). With the stability of the factor structure confirmed, the two data samples were combined and a two-factor solution examined. Items loaded cleanly on the two highly correlated factors ( $r = 0.6$ ).

#### **6.6.11 Scale development and revision in the Community domain**

The factors identified in the analysis of the community items replicated the conceptually developed scales of *connectedness* and *availability* of social support in the community. The two factors extracted were highly positively correlated ( $r = 0.6$ ), meaning that the inclusion of the two scales will not provide much additional information as scores on one scale will closely reflect scores on the second scale. Therefore the focus of scale development and revision was on developing scales that tapped more discrete constructs.

In order to broaden the conceptual underpinning of the community domain, sense of community and social capital literature was examined. Social capital can be understood as all the interactions between individuals in a community, notably including the elements of obligation, expectations, trustworthiness, information, norms and sanctions (Coleman, 1988). Sense of Community (SoC) can be described as the feelings of belonging and attachment an individual has to their community, incorporating the elements of membership, influence, integration and fulfilment and shared emotional connection (Bess, 2002). Clearly the two theoretical approaches have interrelated elements (Perkins & Long, 2002). It has been argued that SoC may be a psychological correlate of social capital (Pooley, Cohen, & Pike, 2005).



Table 23

Revision of the community domain of the ARQ-Pilot to create ARQ-Rev1 based on the two-factor solution of combined data (n = 534)

Conceptual scale	ARQ- Pilot	Factor loading	ARQ-Rev1	ACTION taken and WHY
	<b>Connectedness</b>		<b>Connectedness</b>	
Connectedness	I like my neighbourhood	0.85	I like my neighbourhood	Unchanged
Connectedness	I like the people in my neighbourhood	0.77	I like the people in my neighbourhood	Unchanged
Connectedness	I feel isolated in my neighbourhood	0.53	I feel isolated in my neighbourhood	Unchanged
Connectedness	I trust the people in my neighbourhood	-0.41	I trust the people in my neighbourhood	Unchanged
			I get involved in social groups in my neighbourhood that are not part of school (e.g. sporting club, scouts/guides)	From Availability
			The people in my neighbourhood look out for me	New item
	<b>Availability</b>		<b>Supportive community</b>	
Availability	People in my neighbourhood go out of their way to help	0.91	People in my neighbourhood go out of their way to help	Unchanged
Availability	People in my neighbourhood are caring	0.58	People in my neighbourhood are caring	Unchanged
Availability	There is an adult in my neighbourhood that I ...	0.35	There is an adult in my neighbourhood I could talk to if I had a personal problem (e.g. neighbour, family friend)	Unchanged
Connectedness	I am part of a social group in my neighbourhood which is not run by my school	<0.30		To Connectedness: load<0.3, rewritten
			Young people have a say in what happens in our neighbourhood	New item
			If I did something wrong people in my neighbourhood would find out	New item
			People in my neighbourhood know me personally	New item
			The people in my neighbourhood treat other people fairly	New item
			People in my neighbourhood keep to themselves	New item
			The people in my neighbourhood look out for one another	New item

The *connectedness* scale already tapped SoC or adolescents' perception of belonging and attachment to their neighbourhood. However the *availability* scale was broadened with the addition of new items aimed at encompassing the social capital notions of trust, obligation and sanction (Coleman, 1988) and was labelled *supportive community*. It was hoped that this process would create two scales that tapped into different elements of the community resources available to adolescents. Thus the revised community domain contained two scales addressing *connectedness* to community and the perception of being part of a *supportive community*. The scales comprised six and nine items respectively (see Table 23).

## 6.7 Summary

The formation, pilot testing and revision of the ARQ-pilot have been the focus of this chapter. Following this revision process, the ARQ questionnaire comprised six scales and 79 items in the individual domain and two scales each in the family (20 items), peer (11 items), school (15 items) and community (15 items) domains. Whilst the ARQ-Rev1 was relatively long, being over inclusive at this stage of development facilitated selection of the best items and scales in the second phase of data collection and revision.

To enhance readability and avoid repetition, discussion of these results will be included in the following chapter where relevant. The next chapter introduces the second round of data collection using the ARQ-Rev1. Similar analyses were employed to revise the ARQ-Rev1 and create a brief, functional measure of resilience in adolescents.

## **CHAPTER 7. REVISION OF THE ARQ-REV1**

### **7.1 Introduction**

In the previous chapter the psychometric testing and revision of the ARQ-pilot to create ARQ-Rev1 was described. The development of the questionnaire up to this point has been expansive rather than reductionist in order to encompass all the theoretical concepts identified in the resilience literature and focus groups with a large pool of items within each scale. This facilitated selection of the best performing scales and items through statistical analysis. The goal of the revision process that follows in this chapter was to create a brief functional measure of resilience in adolescents by selecting the most stable and conceptually meaningful scales and then retaining no more than eight of the best performing items per scale (given the number of scales, eight items per scale was seen to be the limit in terms of developing a brief measure).

Firstly, the process of recruitment and administration of the ARQ-Rev1 to a general population sample of secondary school students will be detailed. The revision process employed in Chapter 5 will be described for the ARQ-Rev1 data, namely assessment of item performance, followed by factor and scale analyses. The scale structure identified in the ARQ-Rev1 data will be compared to that of the ARQ-pilot to assess stability of the questionnaire structure. Finally the use of the factor and scale analyses to guide revision and creation of the final version of the ARQ is presented.

### **7.2 Method**

#### **7.2.1 *Participants***

Adolescents were recruited through a random sample of Victorian secondary schools. Eight metropolitan and three rural schools were randomly selected using a database of all government schools in Victoria. Seven of the eight metropolitan schools approached agreed to participate in the study. One of the three rural schools

declined to participate due to other research commitments and therefore a replacement school was randomly selected from within that area and agreed to participate.

Years seven and nine were chosen in order to sample across the target age group of the questionnaire, while taking into account the reluctance of many schools to interrupt older classes for research purposes. To limit the demand on individual schools, two classes at each year level were randomly selected to participate in the study (random numbers were generated and used to select class identification numbers).

Of 982 year seven and nine students in the target classes, 451 completed the questionnaire, a response rate of 45.9% (see Table 24). Response rates were better in the year 7 classes, with teachers reporting difficulties in motivating year 9 students to return signed consent forms (irrespective of whether consent was given or withheld).

Table 24

Student response rates

	N	Consent form returned n	Completed ARQ n	Response rate %
Year seven	412	238	189	45.87
Year nine	420	172	133	31.67
Overall	982	541	451	45.93

Note. Some students who consented were absent at the time of data collection

Demographic information collected from students is presented in Table 25. Students were aged between 11 and 16 years, with a mean age of 13.9 years ( $SD = 1.4$ ). Half the sample was female and most students were living with both parents (70.1%), while a quarter of the sample lived in separated households. Mothers' highest level of education was included as a proxy measure of SES. The majority of mothers had completed at least secondary school, and 23% had completed further education (see Table 25). Family composition and the education level of mothers appeared similar to Victorian state averages as provided by Australian Bureau of

Statistics (2004), who report 78% adolescents live with their married parents and 21% adults tertiary educated. Whilst directly comparable data was not obtainable, these data indicate that the sample could be considered representative of the general population on these marker variables.

Table 25

Participants' gender, age and parent's marital status (n = 451)

	n	%
Year level		
Year 7	191	42.4
Year 9	260	57.6
Female	218	50.0
Parent Marital Status		
Living together	305	70.1
Separated/Divorced/ Never lived together	109	24.6
One/both deceased	18	4.1
Mothers Education		
Primary school	8	1.9
Secondary school	270	64.9
University	95	22.8
Technical/TAFE/ Apprenticeship	39	9.4
Other	4	1.0

### 7.2.2 Materials

Resilience was assessed using the ARQ-Rev1, the newly revised measure of resilience in adolescence (see Appendix A). The ARQ-Rev1 covers resilience in the five domains of self, family, friends, school and neighbourhood. Individual domain scales included *negative cognition*, *optimism/positive future expectations*, *introspection/emotional insight*, *problem solving*, *self-confidence*, *empathy* and *social skills*. The family, peer, school and community domains each included two scales addressing connectedness and availability of support.

Items comprised of statements with a five point Likert response scale of 1 *Never*, 2 *Not often*, 3 *Sometimes*, 4 *Most of the time* and 5 *All the time*. Respondents were instructed to choose “the number that is closest to how it is for you”. The items can be summed to give scale totals and an overall resilience score, with higher scores indicating greater resilience. A ‘comment’ space was available at the end of each domain for participants to write any difficulties or suggestions regarding the questionnaire.

### **7.2.3 Procedure**

Ethics approval was granted by Swinburne University and the Department of Education, Employment and Training.

Written parental and student consent was a requirement for participation in the study. Letters explaining the purpose and procedure of the study and consent forms (see Appendix B) were distributed to parents prior to administration of the questionnaire. This process was tailored to individual school requirements - seven schools distributed the forms via students and three schools posted forms directly to parents. In all schools consent forms were returned to class teachers. The initial three weeks allocated for return of consent forms was extended to eight weeks due to low rates of return (less than 30%). Supplementary methods were employed in an attempt to boost return of consent forms including ringing parents and sending reminder letters to achieve an overall response rate of 45.9%.

Students with signed parent consent forms completed the ARQ during class time. At the beginning of the class students were given a letter explaining the purpose and procedure of the study (see Appendix C). The researcher read the letter aloud to ensure students understood and answered any questions. Students then signed a consent form if they wished to participate.

Before students began completing the questionnaire, the researcher read through the instructions and practice item printed on the front of the questionnaire. Students were given the opportunity to ask questions and were encouraged to ask the researcher about any words or items that were unclear as they progressed through the questionnaire. The researcher gave simple explanations as required. On completion of the questionnaire, students were given a sheet thanking them and detailing a range

of people they could contact (including the researcher) if any issues or concerns had been raised while completing the questionnaire.

A brief report was prepared for each school involved in the study (see Appendix D for an example). The report contained a subset of items that were selected by the researcher as being interesting and informative for schools across the domains of school, family and friends. Each report contained both individual school data and whole sample data. Brief comments accompanied the data, highlighting areas that might be of interest to each school. No individual student data was provided.

#### **7.2.4 Statistical analysis**

The goal of the analysis was to identify the underlying factor structure of the data, compare the new structure against the ARQ-Rev1 scales and to create statistically and conceptually valid scales containing the best performing items. In order to do this the ARQ-Rev1 data was analysed using the same analysis process followed in the previous revision (as detailed in Section 6.5.5). The analysis plan will be briefly reviewed.

##### *7.2.4.1 Item analysis*

At an item level, the distribution of item responses was examined. As detailed in Section 6.5.5, items with very high (more than 80%) or very low (less than 20%) endorsement provide little information about individual differences (P. Kline, 2003; Streiner & Norman, 1996). Such items do not improve the psychometric properties of the measure while adding unnecessary length (Streiner & Norman, 1996). Therefore items with less than 20% or more than 80% endorsement were identified and removed.

##### *7.2.4.2 Factor and scale analysis*

Factor analysis and scale revision replicated the processes employed in the previous chapter. Factor analyses were conducted using maximum likelihood extraction and oblique rotation. The most parsimonious solution was established through consideration of the following:

- Percentage of variance explained: Good solutions account for a greater proportion of the variance (T. Kline, 2005).
- Number of factors: Scree plot ‘elbow’ was used to guide selection of the optimum number of factors (T. Kline, 2005).
- Item loadings within and across factors: Factors should have more than three items with loading at 0.4 or higher and be ‘clean’, meaning items do not also have high loadings on other factors (T. Kline, 2005; Tabachnick & Fidell, 2007).
- Conceptual fit: The items making up each factor can be meaningfully interpreted and have “scientific utility” (T. Kline, 2005; Tabachnick & Fidell, 2007).

*Scale development and revision:* Once the most parsimonious solution was chosen, factors were developed into scales following the steps detailed below:

1. Items with highest loading on each factor (up to a maximum of eight) were retained to form scale.
2. Poorly performing items were discarded (i.e. items loading at less than 0.4, excessively high/low endorsement).
3. Scale reliability was examined and items that reduced reliability were removed, while those that improved it were retained (i.e. Cronbach alpha coefficient for the scale improves or decreases when item is deleted).
4. Items were re-assessed for face validity and language and were deleted or rewritten according to performance in steps 1, 2 and 4.
5. Newly developed scales were examined to ensure fidelity to the original concept.

Whilst some debate exists around ideal alpha scores for scales, it is generally proposed that Cronbach alpha coefficients ranging from 0.6 to 0.9 represent good



reliability, depending on the purpose of the scale (Cohen, 2005; P. Kline, 2003). Any higher suggests excessive consistency or repetitive items, while lower suggests items may not be addressing a single concept. The scale reliability target in this study was set at the more stringent range of 0.7 to 0.9.

## **7.3 Results**

The occurrence of missing data was minimal, ranging from one to 31 responses per item (0.2% to 6.9%), with less than 10 items having more than 5% missing responses. Therefore data presented throughout the chapter will be valid responses only (i.e. missing data will be excluded).

### **7.3.1 Item analysis**

As seen in Section 6.5.5, item analysis involved examination of the endorsement distribution of items. Items with less than 20% or more than 80% of responses in the categories of ‘All of the time’ and ‘Most of the time’ were flagged for removal or rewriting pending the results of the factor analysis (negative items were reversed). The number of items with poor endorsement distribution in each domain is shown in Table 26. As highlighted in the previous chapter, poor endorsement distribution in the ARQ-Pilot was most obvious in the peer and school domains. This also proved to be the case with ARQ-Rev1. However there was a decrease in the number of items with poor endorsement distribution from nine (10%) in the ARQ-pilot to four in the ARQ-Rev1 (2.86%). This suggests that the rewriting of items in the previous revision process was reasonably successful with respect to improving response distribution.

More rigorous examination of item performance was conducted in the individual domain to reduce the number of items prior to factor analysis. Items with less than 10% of respondents disagreeing with the item (response categories ‘Not often’ or ‘Never’) were examined. Using this method, nine items were identified as general statements that adolescents were unlikely to disagree with such as ‘I listen carefully to what other people are saying’ or ‘I avoid social situations’ (reversed). Or the items had an element of ‘social desirability’ where the positive response could be

Table 26

Number of items with less than 20% or greater than 80% endorsement (n = 451)

Domain	Items N	Items with poor distribution	
		n	%
Individual	79	0	0.0
Family	20	0	0.0
Peers	11	3	27.3
School	15	1	6.7
Community	15	0	0.0

perceived as the ‘right’ answer, such as ‘I enjoy helping people with their problems’. These items were removed prior to further analysis.

### 7.3.2 Scale analysis – Individual domain

Exploratory factor analyses of the 70 remaining items in the individual domain identified 20 factors explaining 60.4% of the variance. Examination of the scree plot and initial statistics suggested that three to five factors would provide a meaningful solution (see Appendix E). Examination of the factor solutions indicated that the core factors showed considerable stability across the different solutions. The five-factor solution was the most parsimonious in terms of criteria established in Section 6.5.5. The solution was conceptually meaningful, had few items that loaded across multiple factors and all factors had numerous items with loadings above 0.4 (see Appendix E for pattern matrix). Additional factors added little in terms of variance explained or conceptual clarity. Factors two and five were moderately positively correlated ( $r = 0.38$ ).

Major similarities and differences between the current factor solution and the ARQ-Rev1 scales were:

- Four factors closely resembled the ARQ-Rev1 scales of *negative cognition*, *empathy*, *social skills* and *emotional insight/introspection* and were labelled accordingly.

- Items from the ARQ-Rev1 *self-confidence* and *optimism/positive future expectation* scales loaded on a single factor. This factor was therefore labelled *confidence (self and future)*.
- The ARQ-Rev1 *problem solving* scale was not supported by the factor analysis, with items loading on various factors in the solution (see Table 27).

The five factors were used to construct scales following the steps described in Section 7.2.4. In summary: up to eight items with the highest loading on each factor were retained; items that loaded at less than 0.4 or decreased the reliability of the scale were deleted; while items that improved the reliability of the scale were retained. The action taken for each item is detailed in Table 27. The five individual domain scales developed closely reflected the original conceptually developed scales and the factor structure of the ARQ-Rev1, with the exception of the loss of the *problem solving* scale and the combining of the *confidence* and *optimism/positive future expectation* scales.

Following this second revision of the ARQ, the individual domain of the ARQ-Rev2 encompassed five scales: *negative cognition*, *confidence (self and future)*, *emotional insight*, *empathy* and *social skills*. Each scale contained six to eight items and scale reliabilities ranged from adequate to very good: *negative cognition* ( $\alpha=0.83$ ), *confidence (self and future)* ( $\alpha=0.81$ ), *emotional insight* ( $\alpha=0.71$ ) *empathy* ( $\alpha=0.66$ ) and *social skills* ( $\alpha=0.68$ ). The final two scales listed failed to attain a reliability coefficient in the target range of 0.70-0.90.

Table 27

Revision of the ARQ-Rev1 individual domain based on the five-factor solution (n = 451)

ARQ-Rev1 Scale	ARQ-Rev1 Factors	Factor loading	Action taken to create ARQ-Rev2 scales
<b>Factor 1 - Negative cognition / Lack of optimism</b>			
Cognition	When things go wrong, I tend to give myself a hard time	0.63	Unchanged
Cognition	Sometimes I just can't let go of bad feelings	0.59	<i>Sometimes</i> removed
Cognition	I can't stop worrying about my problems	0.57	Unchanged
Cognition	If something upsets me it affects how I feel about everything	0.54	Unchanged
Cognition	I tend to think the worst is going to happen	0.52	Unchanged
Cognition	I worry about the future	0.49	Unchanged
Cognition	I dwell on the bad things that happen	0.48	Unchanged
Cognition	My feelings are out of my control	0.47	Unchanged
	Twelve remaining items discarded		Excess item/load <0.4
<b>Factor 2 - Confidence (self and future)</b>			
Optimism	I feel hopeful about my life	0.67	Unchanged
Confidence	I am confident that I can achieve what I set out to do	0.65	Unchanged
Confidence	I feel confident that I can handle whatever comes my	0.64	Unchanged
Confidence	I feel good about myself	0.56	Unchanged
Optimism	My life has a sense of purpose	0.54	Unchanged
Optimism	I am a person who can go with the flow	0.47	Unchanged
Confidence	I think about new activities I would like to try	0.45	Discarded: Alpha ↑
Confidence	I feel confident to do things by myself	0.43	Unchanged
Confidence	If I have a problem I can work it out	0.43	Unchanged
Confidence	I feel stronger because of the problems I have faced	0.39	Discarded: Excess
Emotion	If I get upset, I know how to make myself feel better	0.38	Discarded: Excess
	Eight remaining items		Discarded: Load <0.4

Table 27 (continued)

Revision of the ARQ-Rev1 individual domain based on the five-factor solution (n = 451)

ARQ- Rev1 Scale	ARQ-Rev1 Factors	Factor loading	Action taken to create ARQ-Rev2
<b>Factor 3 - Empathy / Tolerance</b>			
Empathy	I am patient with people who can't do things as well as I can	-0.55	Unchanged
Empathy	I get frustrated when people make mistakes	0.55	Unchanged
Empathy	I am easily frustrated with people	0.52	Unchanged
Empathy	I expect people to live up to my standards	0.49	Unchanged
Cognition	I push myself too hard to do what everyone else does	0.32	Both retained: Load
Emotion	I am able to let go of things I can't control	-0.32	<0.4 but alpha ↑
Three remaining items		Discarded: Load<0.4	
<b>Factor 4 - Social skills</b>			
Social skill	I find it hard to express myself to others	0.54	Unchanged
Social skill	People come to me with their problems	-0.46	Discarded: Alpha ↑
Social skill	I feel helpless when faced with a problem	0.41	Unchanged
Social skill	I can share my personal thoughts with others	-0.39	Unchanged
Problem	I find it hard to make important decisions	0.37	Unchanged
Cognition	I have trouble explaining how I am feeling	0.36	Unchanged
Social skill	I can express my opinions when I am in a group	-0.36	Unchanged
Three remaining items		Discarded: Load < 0.4	
<b>Factor 5 - Emotional insight</b>			
Emotion	When I am feeling down, I take extra special care of myself	0.48	Unchanged
Emotion	I look for what I can learn out of bad things that happen	0.44	Unchanged
Emotion	I think things through carefully before making decisions	0.42	Unchanged
Emotion	I take it easy on myself when I am not feeling well	0.41	Unchanged
Problem	If I have a problem, I know there is someone I can talk to	0.40	Unchanged
Emotion	I slow down when things are going too fast	0.40	Discard: next item better fit
Problem	If I can't handle something I find help	0.40	Unchanged
Emotion	I can change my feelings by changing the way I see things	0.37	Unchanged
Emotion	I try to find meaning in the things that happen to me	0.33	Retained: Load<0.4 but alpha improved
Two remaining items		Discarded: Load < 0.4	

### 7.3.3 Scale analysis - Family domain

Four factors were identified in the exploratory factor analysis of the 20 family items. However three factors contained only three items each, too few for development into scales according to the statistical analysis plan detailed in Method - Statistical Analysis. Furthermore, examination of the scree plot and initial statistics suggested that two factors would better fit the data (see Appendix F). Therefore two and three factor solutions were examined.

The two-factor solution was conceptually convincing and most items loaded cleanly at above 0.4 (see Appendix F). The two factors closely replicated the ARQ-Rev1 scales of *connectedness* and *availability* and the factors were labelled accordingly. The factors were highly correlated ( $r = 0.66$ ).

Scales were constructed from the two-factor solution according to the analysis plan established in Section 7.2.4. Accordingly, the eight items with the highest factor loadings were used to construct scales, with items loading at less than 0.4 discarded (see Table 28). However, for the *connectedness* scale it was decided to retain the negative item 'People in my family expect too much of me' as it was considered important to include negative aspects of family life. Therefore an item with borderline high endorsement<sup>6</sup> was excluded to restore the number of items to eight (detailed in Table 28). Both scales had excellent reliability with Cronbach alpha coefficients of 0.86 and 0.80 respectively.

---

<sup>6</sup> The discarded item was endorsed by 78.0% of respondents. The exclusion criterion was greater than 80% endorsement for deletion prior to the factor analysis.

Table 28

Revision of the ARQ-Rev1 family domain based on the two-factor solution (n = 451)

ARQ-Rev1 Scale	ARQ-Rev1 Factors	Factor loading	Action taken to create ARQ-Rev2 scales
<b>Factor 1 - Connectedness</b>			
Connected	I do fun things with my family	0.88	Unchanged
Connected	We do things together as a family	0.81	Unchanged
Connected	My family understands my needs	0.71	Unchanged
Connected	I enjoy spending time with my family	0.69	Unchanged
Connected	My family helps me to believe in myself and my abilities	0.68	Unchanged
Connected	My family is a safe place when things seem to be falling apart	0.67	Discarded: Only 10.1% disagree
Availability	I get to spend enough time with my family	0.66	Unchanged
Connected	My family listens to me	0.65	Unchanged
Connected	I have a say in family decisions	0.64	Discarded: Excess item
Connected	My family provides me with emotional support	0.58	Discarded: Excess item
Connected	My parents trust me to look after myself	0.47	Discarded: Excess item
Connected	People in my family expect too much of me	-0.45	Retained: conceptually important
Connected	I can be honest with my family about how I feel	0.42	Discarded: Excess item
Availability	People in my family are too busy to pay attention to me	-0.40	Discarded: Excess item
Connected	My family talks about problems we are having	0.34	Discarded: load < 0.4
<b>Factor 2 - Availability</b>			
Availability	There is someone in my family I can talk to about anything	-0.92	Unchanged
Availability	If I have a problem there is someone in my family I can talk to	-0.79	Unchanged
Availability	There is someone in my family that I feel particularly close to	-0.50	Unchanged
Connected	My mum or dad is over-protective of me		Discarded: load < 0.4

### 7.3.4 Scale analysis - Peer domain

An exploratory factor analysis of the peer items identified two cleanly defined factors. Examination of the scree plot and initial eigenvalues supported the two-factor solution (see Appendix G). The two factors appeared similar to the ARQ-Rev1 scales of *connectedness* and *availability* and were labelled accordingly. The items loading on the availability factor were all negative, reflecting isolation and a perceived lack of friends and the factors were negatively correlated ( $r = -0.54$ ).

The two-factor solution was used to construct scales following the steps detailed in Section 7.2.4, and the action taken for each item is presented in Table 29. Three items in the peer *connectedness* scale were retained despite high endorsement as they were considered to be conceptually important. The *availability* scale included only negatively worded items thus identifying dissatisfaction with peer relationships. This scale needs to be reversed when scoring the resilience measure. The *connectedness* scale had excellent reliability ( $\alpha = 0.80$ ), but the *availability* scale was only adequate ( $\alpha = 0.64$ ) indicating further development was required.

Table 29

Revision of the ARQ-Rev1 peer domain based on the two-factor solution (n = 451)

ARQ-Rev1 scale	ARQ-Rev1 factor	Factor loading	Action taken to create ARQ-Rev2 scales
<b>Factor 1 - Connectedness</b>			
Connected	When I am down I have friends that help cheer me up	0.78	Unchanged
Availability	I have a group of friends that I keep in touch with regularly	0.65	High endorsement but conceptually important
Availability	I have a friend I can trust with my private thoughts and feelings	0.65	Unchanged
Connected	I have friends who make me laugh	0.59	High endorsement but conceptually important
Connected	I enjoy being around people my age	0.57	High endorsement but conceptually important
Availability	I get to spend enough time with my friends	0.41	Unchanged
Connected	I feel confident around people my age	0.40	Unchanged
<b>Factor 2 - Availability (negative)</b>			
Connected	I feel left out of things		Unchanged
Availability	I wish I had more friends I felt close to	0.82	Unchanged
Availability	I find it hard making friends	0.55	Unchanged
Connected	My friends get me into trouble	0.46	Discarded: Loads < 0.3



### 7.3.5 Scale analysis - School domain

Exploratory factor analysis of the school items identified three factors which explained 51.17% of the total variance. Examination of the initial eigenvalues and scree plot suggested two factors fit the data better (see Appendix H). The two-factor solution was a conceptually convincing and clean solution with all items loading on a single factor. The items loading on the two factors closely replicated the ARQ-Rev1 scales (see Table 30) and were accordingly labelled *supportive environment* and *connectedness (negative)*. It should be noted that, as expected, the two factors were correlated ( $r = -0.48$ ).

Scales were constructed from the two factors following the analysis plan outlined in Section 7.2.4. The action taken for each item when constructing the ARQ-Rev2 scales is shown in Table 30. One item in the *connectedness* scale was retained despite borderline low endorsement (19.60% with exclusion criteria set at 20%) due to the item leading to improved scale reliability (see Table 30). Cronbach alpha coefficients indicated excellent reliability for the *supportive environment* scale ( $\alpha = 0.81$ ) and adequate reliability for the *connectedness* scale ( $\alpha = 0.66$ ), indicating further development of the *connectedness* scale was desirable. The *connectedness* scale is reversed when scoring the new measure of resilience.

Table 30

Revision of the ARQ-Rev1 school domain based on the two-factor solution (n = 451)

ARQ-Rev1 scale	ARQ-Rev1 factor	Factor loading	Action taken to create ARQ-Rev2 scales
<b>Factor 1 - Supportive Environment</b>			
Environ	My teachers are caring and supportive of me	0.83	Unchanged
Environ	Teachers in my school are caring	0.74	Discarded: same item 1
Environ	My teachers provide me with extra help if I need it	0.66	Unchanged
Environ	I have a teacher that I feel looks out for me	0.63	Unchanged
Environ	My teachers notice when I am doing a good job and let me know about it	0.58	Unchanged
Environ	I feel that what I say counts at school	0.49	Unchanged
Environ	There is an adult at school who I could talk to if I had a personal problem	0.48	Unchanged
Environ	I get involved with school activities	0.31	Unchanged
Connected	At school students help to decide and plan things like school activities and events	0.31	Unchanged
Connected	I feel included by other students at school		Discarded: Loads < 0.3
<b>Factor 2 - Connectedness</b>			
Connected	I hate going to school	0.77	Unchanged
Connected	I am bored at school	0.66	High endorsement but improved alpha
Connected	I try hard in school	-0.40	Unchanged
Environ	My teachers expect too much of me	0.33	Unchanged
Connected	I get teased at school		Discarded: Loads < 0.3

Note. Connected = Connectedness scale; Environ=Supportive Environment scale

### 7.3.6 Scale analysis - Community domain

Exploratory factor analysis of the community items identified three factors explaining 59.11% of the total variance. The solution was neither clean nor conceptually convincing. The majority of items loaded on the first factor, with two items apiece loading on the remaining two factors. Four items loaded fairly equally across two factors. Examination of the scree plot and initial eigenvalues suggested two factors (see Appendix I). The solution was again unconvincing conceptually and structurally (see Appendix I), suggesting the community items addressed a single underlying concept of connectedness. The first factor was stable across the different solutions and was therefore used to guide the revision of the community scale as established in Section 7.2.4.2 (see Table 31).

Table 31

Revision of the ARQ-Rev1 community domain based on a two-factor solution (n = 451)

ARQRev1 scale	ARQ-Rev1 factor	Factor loading	Action taken to create ARQ-Rev2 scales
<b>Factor 1 - Connectedness</b>			
Connect	I trust the people in my neighbourhood	0.90	Unchanged
Support	People in my neighbourhood are caring	0.83	Unchanged
Support	The people in my neighbourhood treat other people fairly	0.80	Unchanged
Connect	I like my neighbourhood	0.80	Unchanged
Connect	The people in my neighbourhood look out for me	0.77	Unchanged
Connect	I like the people in my neighbourhood	0.75	Discarded: $\alpha > 0.9$
Support	The people in my neighbourhood look out for one another	0.73	Discarded: $\alpha > 0.9$
Support	People in my neighbourhood go out of their way to help	0.70	Replaced with adult item below
Support	People in my neighbourhood know me personally	0.51	Discarded: excess item
Support	There is an adult in my neighbourhood I could talk to if I had a problem	0.42	Retained: conceptually important
Support	Young people have a say in what happens in our neighbourhood	0.40	Discarded: Excess item
Connect	I get involved in social groups in my neighbourhood	0.31	Discarded: Loads < 0.4
Connect	I feel isolated in my neighbourhood	<0.30	Discarded: Loads < 0.4

The construction of the connectedness scale from the factor analysis and the action taken for each item is detailed in Table 31. The scale was constructed by retaining the eight items with the highest loadings on the first factor of the two-factor solution. However, the availability of a supportive adult in the community was identified as important in both the resilience literature and the focus groups and therefore the item ‘There is an adult in my neighbourhood I could talk to if I had a problem’ was retained in place of the eighth item (see Table 31). The Cronbach alpha coefficient of the community *connectedness* scale was greater than 0.90 suggesting excessive consistency or repetitive items (Cohen, 2005; John & Benet-Martinez, 2000; P. Kline, 2003). Therefore items with the lowest factor loading were discarded until the alpha coefficient was reduced to 0.9. Two items were deleted to produce a six-item scale with excellent reliability ( $\alpha = 0.87$ ).

## 7.4 Discussion

The revised Adolescent Resilience Questionnaire assesses a range of resilience factors in the domains of self, family, peers, school and community. The factor and scale analyses conducted with ARQ-Rev1 data largely supported the scale structure identified in the ARQ-Pilot, creating five scales in the individual domain and two scales each in the family, peer, school domains and a single community scale. The ARQ-Rev2 is presented in Table 32. The response scale for the items is: 1 *Never*, 2 *Not often*, 3 *Sometimes*, 4 *Most of the time* and 5 *All the time*. Development and scale revisions in each of the five domains will be discussed in turn.

### 7.4.1 Individual domain

The individual domain is the largest of the five domains with five scales (see Table 32), reflecting the importance of individual characteristics in shaping an individual’s world and experiences. The five ARQ-Rev2 scales (*negative cognition*, *confidence (self and future)*, *emotional insight*, *empathy and social skills*) closely replicated the ARQ-Rev1 scales with two exceptions - *confidence* and *problem solving*. The *self-confidence* scale was newly developed for the ARQ-Rev1 but was not uniquely identified in the subsequent data analysis. Instead, the *self-confidence* items and the *optimism/positive future expectation* items loaded on a single factor. The ARQ-Rev2 scale developed was therefore labelled *confidence (self and future)* to reflect this.

Table 32

## ARQ-Rev2 scales and Cronbach Alpha coefficients

Scale	Items	Reliability ( $\alpha$ )
Confidence (self and future) 8 items	I feel hopeful about my life I am confident that I can achieve what I set out to do I feel confident that I can handle whatever comes my way I feel good about myself My life has a sense of purpose I am a person who can go with the flow I feel confident to do things by myself If I have a problem I can work it out	0.81
Emotional insight 8 items	When I am feeling down, I take extra special care of myself I look for what I can learn out of bad things that happen I think things through carefully before making decisions I take it easy on myself when I am not feeling well If I have a problem, I know there is someone I can talk to If I can't handle something I find help I can change my feelings by changing the way I see things I try to find meaning in the things that happen to me	0.71
Negative cognition 8 items	When things go wrong, I tend to give myself a hard time (R) I just can't let go of bad feelings (R) I can't stop worrying about my problems (R) If something upsets me it affects how I feel about everything (R) I tend to think the worst is going to happen (R) I worry about the future (R) I dwell on the bad things that happen (R) My feelings are out of my control (R)	0.83
Social skills 8 items	I find it hard to express myself to others (R) I feel helpless when faced with a problem (R) I can share my personal thoughts with others I find it hard to make important decisions (R) I have trouble explaining how I am feeling (R) I can express my opinions when I am in a group I am a shy person (R) I find it easy talking to people my age	0.68

Table 32 (continued)

## ARQ-Rev2 scales and Cronbach Alpha coefficients

Scale	Items	Reliability ( $\alpha$ )
Empathy 8 items	I am patient with people who can't do things as well as I can I get frustrated when people make mistakes (R) I am easily frustrated with people (R) I expect people to live up to my standards (R) I push myself too hard to do what everyone else does (R) I am able to let go of things I can't control <i>I think about other peoples feelings before I say things</i> <i>Other peoples feelings are easy for me to understand</i>	0.66
Family Connectedness 8 items	I do fun things with my family We do things together as a family My family understands my needs I enjoy spending time with my family My family helps me to believe in myself and my abilities I get to spend enough time with my family My family listens to me <i>People in my family expect too much of me (R)</i>	0.87
Family Availability 3 items	There is someone in my family I can talk to about anything If I have a problem there is someone in my family I can talk to There is someone in my family that I feel particularly close to	0.79
Peer Connectedness 7 items	When I am down I have friends that help cheer me up I have a group of friends that I keep in touch with regularly I have a friend I can trust with my private thoughts and feelings I have friends who make me laugh I enjoy being around people my age I get to spend enough time with my friends I feel confident around people my age	0.81

Table 32 (continued)

## ARQ-Rev2 scales and Cronbach Alpha coefficients

Scale	Items	Reliability ( $\alpha$ )
Peer Availability 8 items	I feel left out of things (R) I wish I had more friends I felt close to (R) I find it hard making friends (R) <i>Making new friends is easy</i> <i>I prefer to do things on my own (R)</i> <i>I find it hard to stay friends with people (R)</i> <i>I am happy with my friendship group</i> <i>I feel shy around people my age (R)</i>	0.64
Supportive school environment 8 items	My teachers are caring and supportive of me My teachers provide me with extra help if I need it I have a teacher that I feel looks out for me My teachers notice when I am doing a good job and let me know I feel that what I say counts at school There is an adult at school who I could talk to if I had a personal problem I get involved with school activities At school students help to decide and plan things like school activities and events	0.81
School connectedness 8 items	I hate going to school (R) I am bored at school (R) I try hard in school My teachers expect too much of me (R) <i>I join in class discussions</i> <i>I enjoy going to school</i> <i>I participate in class</i> <i>Getting good marks is important to me</i>	0.65
Community connectedness 6 items	I trust the people in my neighbourhood People in my neighbourhood are caring The people in my neighbourhood treat other people fairly I like my neighbourhood The people in my neighbourhood look out for me There is an adult in my neighbourhood I could talk to if I had a problem	0.88

Note. Items in italics are new items therefore reliability scores calculated using non-italicised items only.

Similarly, the ARQ-Rev1 *problem-solving* scale was not supported by the factor analysis, with problem solving items dispersed across the two factors labelled *social skills* and *emotional insight*. Problem solving skills have been identified as promoting resilient outcomes in a range of adverse situations (e.g. Buckner et al., 2003; Dumont & Provost, 1999; Egeland, 1997; Beardslee, 1989). However, it may be that for adolescents, rather than being a unique competency, problem solving skills may manifest within other competencies. For example, in this case problem solving skills appear to exist both within the regulation of emotion (*emotional insight* scale) and in relation to their social world (*social skills* scale). So adolescents could conceivably exhibit social problem solving skills but not have problem solving skills in relation to emotion regulation. It is impossible to draw any conclusions from the current study, but importantly, items related to problem solving skills continue to contribute to the resilience measure: one problem-solving item was included in the *social skills* scale and two items were incorporated into the *emotional insight* scale.

As can be seen in Table 32, the scale reliability of the *negative cognition*, *confidence (self and future)* and *emotional insight* scales reached the target range of 0.7 – 0.9. However the reliability of the *empathy* and *social skills* scales were just below target with coefficients of 0.66 and 0.68 respectively. Accordingly, two new items were added to each scale to take the item totals to eight items, with the intention of improving scale reliabilities and reaching the target range. The new items were written according to the guiding principals described by T. Kline (2005) and Streiner and Norman (1996), drawing on the conceptual focus of the scale for content and taking into account items that had failed to perform in the previous revisions. The two new *empathy* items were ‘I think about other people’s feelings before I say things’ and ‘Other peoples’ feelings are easy for me to understand’. The two new *social skills* items were ‘I am a shy person’ (reversed) and ‘I find it easy talking to people my age’. The performance of these items and whether they improve scale reliability will be examined in subsequent psychometric testing of the ARQ.

#### **7.4.2 Family domain**

The two ARQ-Rev2 family domain scales, *connectedness* and *availability*, closely replicated the ARQ-Rev1 scales. These scales contained items describing being nurtured by and involved with family and the availability of close and trusted



family members. As shown in Table 32, both scales recorded excellent reliability, with alpha coefficients in the target range.

The two family scales were highly correlated ( $r = 0.66$ ) indicating that adolescents' scores on family *connectedness* will generally correspond to their scores on the *availability* scale. That is, adolescents who report low connectedness to their family are also likely to report low availability of family support. It may therefore be preferable to use only one of these two scales. However, the items loaded cleanly on separate factors in the analysis, suggesting the items in the two scales tapped into different constructs. Further investigation, including tests of construct validity, will allow an informed decision to be made as to whether to retain both scales with revision to increase differentiation; or to retain one scale and decrease the length of the measure – a desirable goal in scale development (Streiner & Norman, 1996).

#### 7.4.3 *Peer domain*

As with the family domain, the two ARQ-Rev2 peer *connectedness* and *availability* scales replicated the ARQ-Rev1 scales. The *connectedness* scale covers feeling connected to friends and confident with peers, while the *availability* scale (reversed) taps into the ability to form and maintain friendships.

The *connectedness* scale had excellent reliability; however, the reliability of the three item *availability* scale fell below the target range of 0.7 to 0.9 (see Table 32). Therefore five new items were written to create an eight-item scale with the intention of improving reliability. The items were written following the guiding principals elaborated by T. Kline (2005) and Streiner and Norman (1996), drawing on the conceptual underpinning of the scale and taking into account items that had failed to perform in the previous two revisions. The five new items added were: 'Making new friends is easy'; 'I find it hard to stay friends with people' (reversed); 'I am happy with my friendship group'; 'I feel shy around people my age' (reversed); and 'I prefer to do things on my own' (reversed). The performance of this scale and the new items will be examined in subsequent psychometric testing of the ARQ.

#### 7.4.4 School domain

The ARQ-Rev2 school scales *supportive environment* and *connectedness* closely replicated the ARQ-Rev1 scales. Items in the *supportive environment* scale refer to student and staff factors that impact on the general school environment. The *connectedness* scale (reversed) contains items related to an adolescents' feelings of commitment and positive connection to school, both social and academically.

The reliability coefficient of the four item *connectedness* scale did not reach the target range of 0.7 to 0.9 (see Table 32). Therefore four new items were added to make an eight-item scale, with the intention of improving the reliability coefficient and balancing the scale with positive items. The process of developing new items was the same as that in previous domains. The four items added to the scale were: 'I join in class discussions'; 'I enjoy being at school'; 'Getting good marks is important to me' and 'I participate in class'.

As might be expected, the two school scales were moderately correlated ( $r = 0.48$ ), indicating that students who felt the school environment was supportive, generally also felt connected socially and academically to school. Models of school engagement support this association between school environment and connectedness (e.g. Finn, 1989; Newmann, Wehlage, & Lamborn, 1992; Tinto, 1993). Further analysis, including construct validation, is required to identify whether the two scales add unique information to the resilience measure or whether the inclusion of one scale will prove sufficient for the measurement of resilience in the school domain.

#### 7.4.5 Community domain

A single ARQ-Rev2 *Connectedness* scale was developed in the community domain, comprised of items addressing an adolescent's sense of liking, trust and care within their community. Efforts to address the multiple facets of community support and belonging as explored in the Sense of Community and Social Capital literature (see Section 6.6.11) failed to be convincingly supported in the analysis of the community items. The data collected for the first and second revision processes, as described in Chapters 6 and 7, consistently identified a single factor, seemingly addressing general community connectedness. Development of a single scale has

resulted in a six-item community *connectedness* scale with excellent reliability (see Table 32).

#### **7.4.6 Summary of the ARQ-Rev2**

At the conclusion of this second revision process, the ARQ-Rev2 comprised of 12 scales and 80 items. Due to four scales having less than adequate reliability, a number of new items were added, as shown in Table 32, bringing the total number of items to 93. The ARQ-Rev2 scales and items are presented in Appendix H. It can be seen that, unlike the current resilience measures available, the newly developed ARQ covers not only individual level resilience factors, but also includes resilience factors in an adolescent's family, school, peer and community domains.

#### **7.4.7 Limitations and future research**

Data collection with both versions of the ARQ (ARQ-Pilot detailed in Chapter 6 and ARQ-Rev1 described in this chapter) suffered from low response rates (approximately 45% overall in both studies). The response rates at individual schools and clinics varied dramatically from a low of 12% to a high of 82%. Thus, while the samples were representative of the population of students attending particular schools or clinics, the samples overall cannot be considered representative of the adolescent population or the chronically ill adolescent population. As such, the scale development may be based on an adolescent population with particular characteristics, rather than being fully representative of the general population of adolescents. In common with other studies involving small cross section samples, the population on which the measure was developed is likely to be over-representative of adolescents from stable, higher educated, higher income families, and less representative of other groups – for example adolescents from non-English speaking or indigenous backgrounds, troubled family backgrounds and the homeless population. However, the resilience factors identified and incorporated into the ARQ have been extensively researched and identified as relevant to 'at-risk' adolescent populations such as those who are homeless or from disadvantaged backgrounds. Thus while the content should remain relevant for most 'at risk' adolescent populations, the suitability of the ARQ in terms of administration and wording for adolescents from specific populations has not been tested. Use of the ARQ with

adolescents from populations such as non-English speaking or indigenous backgrounds should be undertaken with an understanding that the ARQ may have culturally specific limitations.

A number of factors were identified that may have contributed to the different response rates at schools, primarily linked to the active parental consent requirement. For example, few parents refused consent for their child to participate in the study ( $n = 69$  or 8% in this current sample) but large numbers failed to return the signed consent form to the school. Not surprisingly, it appeared that the mode of distribution of information and the efforts made by school personnel were reflected in the response rates. The majority of school principals chose to distribute consent forms directly to students (to take home to parents). Reminder telephone calls to parents made it clear that many students had failed to pass on the information and consent forms to their parents. Tellingly, the two schools with the highest response rates in the sample described in this chapter, elected to send the information letter and consent form directly to parents. Thus direct contact with parents may be a more effective recruitment approach for adolescent samples where active guardian consent is required.

A second issue was also illuminated when conducting reminder telephone calls. Many of the parents spoken to were from non-English speaking backgrounds. A high proportion of these parents reported difficulties understanding the information provided and were unclear as to what was required. Budget constraints prohibited the translation of the information letter and consent form into other languages and there was limited capacity to work with schools to more successfully recruit students from non-English speaking backgrounds. Such methods could be expected to improve response rates.

Time and budget constraints, combined with the lack of established resilience measures, limited the scope of the current study. It would have been informative to have been able to explore construct validity, in addition to the scale development. This would have required comparison of the ARQ-Rev1 data with a 'gold standard' measure of resilience (or the use of multiple measures in order to compare ARQ scales against measures of similar constructs). As established in Chapter 3, there is no gold standard measure of resilience available. The few resilience measurement tools

currently available are limited on a number of levels - lacking a theoretical underpinning, flawed development, limited in breadth or having inadequate psychometric properties. Most notably, the measures were not appropriate for the adolescent population. In planning this Professional Doctorate project, it became readily apparent that there would not be the time nor capacity to enable construct validation by incorporating multiple measures in this study or conducting a third study examining construct validity specifically. This remains the necessary next step in the development of the ARQ. Further psychometric testing is also required to examine the performance of the new items that were added to improve the reliability of the four scales with reliabilities of less than 0.70. Having undergone two major revisions, the ARQ remains at a relatively early stage of development and requires further psychometric testing.

The ARQ was developed from information derived from focus groups and an extensive review of the resilience literature. Efforts were made to include the range of factors utilised by adolescents in successfully navigating adversity, to ensure development of a comprehensive measure. The ARQ is unique among the few resilience measures currently available in that, based on a nested ecological model of resilience, the measure includes not only individual characteristics, but factors from all the social domains relevant to adolescents – their family, peers, school and community.

The ARQ has undergone two processes of revision incorporating three samples of adolescents to date - two samples of students (one a random population sample) and a sample of adolescents living with a chronic illness. The factors identified in the data analysis have been very consistent across the three samples, supporting the validity of the scale structure. The scales developed based on the factor analysis contained items relevant to a broad range of factors identified as important in facilitating resilient outcomes including empathy, confidence (self and future), social skills and connectedness to family, peers, school and community. Eight of the 12 ARQ scales presented in this chapter had excellent reliability, while four scales had new items added with the aim of achieving the target reliability range.

It is anticipated that the availability of a theoretically grounded, statistically valid multi domain measure of resilience will contribute to further developments in

resilience research. Unravelling the complex process of resilience will be facilitated by the use of a standard, multi domain measures like the ARQ-Rev2. With further psychometric testing, this new measure of resilience will provide researchers and clinicians with a comprehensive instrument to measure a young person's capacity to achieve positive outcomes despite life stressors. It is expected that the Adolescent Resilience Questionnaire will prove a valuable tool and contribute to greater rigour in resilience research.

## CHAPTER 8. CONCLUSION

*What began as a quest to understand the extraordinary has revealed the power of the ordinary. Resilience does not come from rare and special qualities, but from the everyday magic of ordinary, normative human resources in the minds, brains, and bodies of children, in their families and relationships, and in their communities. (Masten, 2001, p. 238).*

### 8.1 Introduction

The objective of the research described in this thesis is to develop a measure of resilience in adolescents. Firstly, the history and growth of resilience research was explored (Chapter 2), including a definition and model of resilience upon which the subsequent research was based. The need for a new measure of resilience was established in Chapter 3, with the limitations of the current resilience measures explored. The resilience factors to be covered in the new measure were then established through an extensive review of resilience research (Chapter 4) and focus groups with adolescents living with a chronic illness (Chapter 5). Resilience factors identified in the literature review and the focus groups as contributing to resilient outcomes guided the development of conceptual scales (Chapter 6). An item pool was written for each conceptual scale and a new measure of adolescent resilience created and titled the Adolescent Resilience Questionnaire (ARQ-Pilot). Focus groups were employed to review the pilot questionnaire and ensure the measure was appropriate for the adolescent population.

The ARQ-Pilot was then administered to a sample of 330 secondary school students and 247 adolescents living with a chronic illness (Chapter 6). The questionnaire was revised through item, factor and scale analysis to produce the Adolescent Resilience Questionnaire-Revision 1 (ARQ-Rev1). This revised measure was then administered to a random sample of 451 secondary school students and a similar process of revision undertaken to create the ARQ-Rev2, as detailed in Chapter 7. At the conclusion of these two revisions, the ARQ-Rev2 is presented as a new

measure of resilience in adolescents. The target population for questionnaire is young people aged between 10 and 18 years of age. The ARQ-Rev2 covers resilience factors both within the individual and factors in the environment identified as important for adolescents – their family, peers, school and community.

In this concluding chapter, the process of developing the ARQ will be examined, tracking the changes in the ARQ across the revision process and assessing whether the ARQ-Rev2 adequately covers the range of resilience factors identified as being of primary importance in Chapters 4 and 5. The ARQ-Rev2 will then be examined with reference to the ecological transactional model of resilience (Section 2.6), exploring how the ARQ-Rev2 scales could contribute to advancing understanding of resilience processes in adolescents. The limitations of this study, the measure and the implications for further research will then be addressed.

## **8.2 The development of the ARQ-Rev2**

The development of the ARQ involved two extensive revisions with data collected from adolescents in the general population (school samples) and adolescents known to be facing adversity in the form of a chronic illness. Two important questions arise in any multi stage revision process: firstly, was there consistency across the revision process and results; secondly, does the revised questionnaire adequately reflect the original constructs identified in the development phase. These will be discussed in turn.

### ***8.2.1 Consistency in the revision process and stability of results***

Prior to conducting the current research, an analysis plan was developed detailing the processes to be followed for revision of the ARQ (Section 6.5.5). This analysis plan was adhered to for each data sample, domain, scale and item. In addition, identical analyses were conducted at the two time points, ensuring a consistent approach throughout the revision process. Following the analysis plan assisted in avoiding decisions being made ‘on the run’, providing a clear decision making process for each step of the process.



Establishing an analysis plan was especially important due to the use of factor analysis. As discussed in Section 6.2.2.4, factor analysis consists of a number of steps, with multiple options available at each step, creating the potential for numerous different factor solutions. Moreover, there are no external or objective criteria to test or judge a chosen factor solution (Tabachnick & Fidell, 2007). Thus there is potential for enormous variability both in method and results, generally navigated by using established approaches and ‘rules of thumb’ for guidance (Comrey & Lee, 1992; Gorsuch, 1983; T. Kline, 2005; Tabachnick & Fidell, 2007). This flexibility does not reduce the usefulness of this statistical method, but does necessitate careful consideration and justification of the decision making steps employed, both to support the decisions made and to facilitate replication in other studies if required. While the factor analysis criteria were carefully considered, as described in Sections 6.3.1 and 6.5.5, the author recognises the ‘art’ of factor analysis and acknowledges that other researchers may have made different choices. It is hoped that the transparency of the current analyses and decision making processes will allow these results to be compared across studies and methods if required.

The results of the factor analyses showed considerable stability across the three data samples (a sample of catholic secondary students, a random sample of public secondary school students, and a group of adolescents with a chronic illness). Core factors were stable across different solutions and were remarkably clean, with numerous high loading items within each factor and few items loading across factors. The factor analyses were generally statistically and conceptually convincing across the three different data samples, although the proportion of variance explained by some solutions was less than ideal. This builds evidence for the validity of the underlying structure of the questionnaire (T. Kline, 2005) and the scales subsequently developed from the factor solutions.

### ***8.2.2 Remaining true to the conceptual basis of the ARQ***

At the conclusion of the two rounds of data collection and revision, scales in the ARQ-Rev2 remained consistent with the original conceptually developed scales of the ARQ-Pilot. Tracking of the scales across the two revision processes is presented in Figure 4. All the original themes remain identifiable as scales in the

final measure, with the exception of *problem solving skills* in the individual domain and the *availability* scale in the community domain.

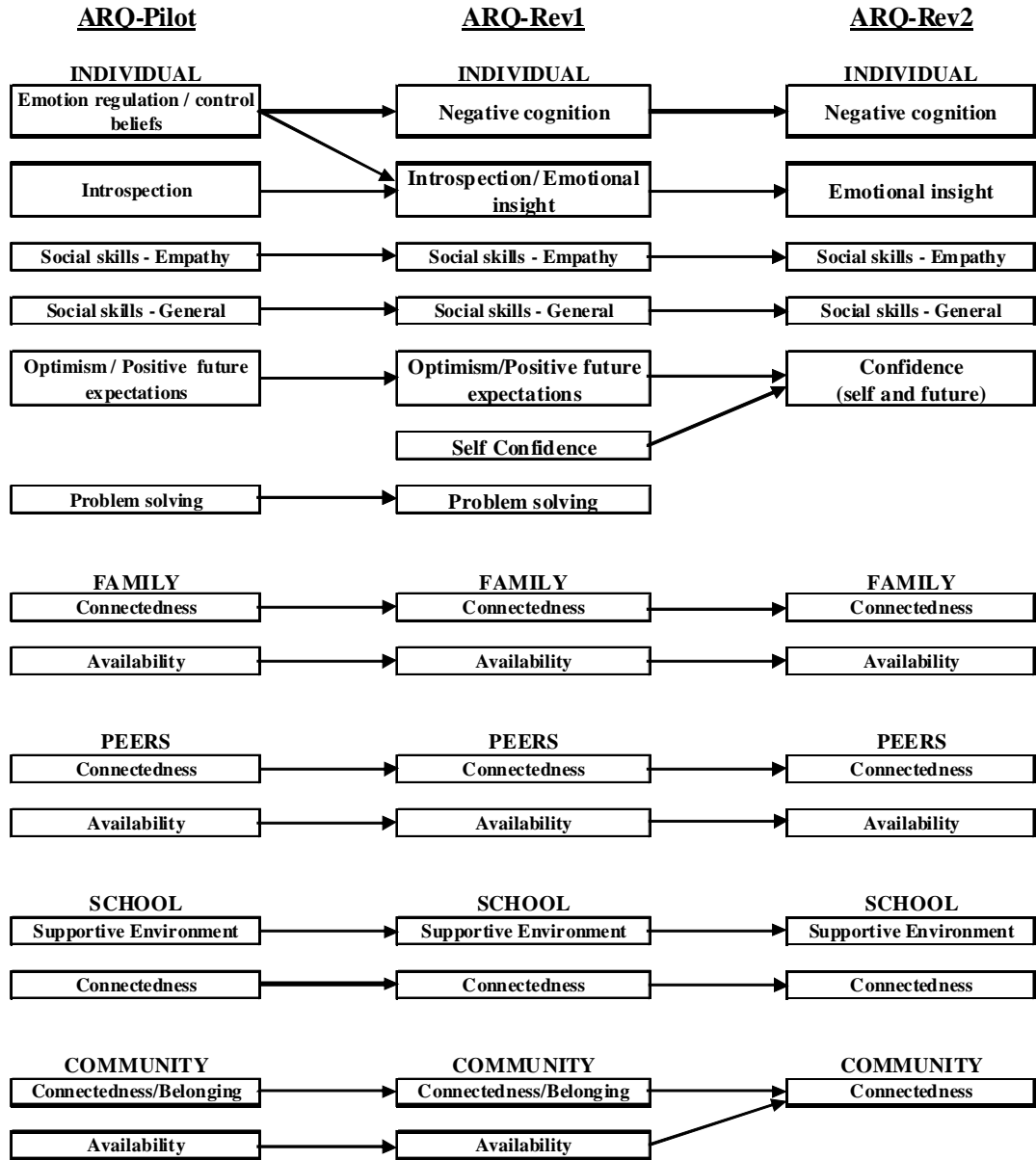


Figure 4. Tracking scales through the revision process

Items from the *problem solving* scale failed to form a unique factor in either revision process, despite efforts to strengthen the scale in the ARQ-Rev1. Problem

solving has been shown to contribute to resilient outcomes (Cowen et al., 1997; Garnezy, 1987; Werner & Smith, 1992) and therefore is likely to play a role in the assessment of resilience. However problem-solving items loaded on the *emotional insight* and *social skills* factors in factor analyses of both the ARQ-Pilot and ARQ-Rev1 data. This may indicate inadequate operationalisation of the construct or be a true reflection of the experience of adolescents. As two attempts to create a unique problem-solving scale produced the same outcome across two data sets, it may be the latter. That is, problem-solving skills could underlie other resilience factors or be context specific rather than operating as a singular competency. In the current research, factor analysis grouped problem-solving items with the regulation of emotion items (in the *emotional insight* scale) and social skill items (in the *social skills* scale). This association of problem solving with emotion regulation and social skills would certainly fit with resilience literature, where problem solving skills have been significantly positively associated with both social skills and emotion regulation in childhood, adolescence and adulthood (Buckner et al., 2003; Cicchetti, Ackerman, & Izard, 1995; Schwartz & Proctor, 2000; Shields & Cicchetti, 1998; Wilson & Gottman, 1996). If problem solving skills are specific to particular contexts, adolescents could conceivably exhibit one type of problem-solving (e.g. good problem solving in relation to social skills) but not another (e.g. poor problem solving with respect to emotion regulation). This could explain why the problem-solving items failed to cluster into a unique factor. Adolescents may not respond similarly to the problem-solving items, rather their responses to specific problem-solving items may more closely reflect the context - emotion regulation and/or social skills. Thus having problem solving items sit within other resilience scales may more closely replicate the adolescent experience.

It is impossible to draw any conclusions as to the impact of not having a unique problem-solving scale in the ARQ without conducting further investigations, including examination of construct validity. Currently, problem-solving items remain a part of the ARQ-Rev2 individual domain, contributing to the assessment of resilience, albeit in a limited fashion: one problem-solving item is contained in the *emotional insight* scale and two items remain in the *social skills* scale. If, during construct validation, significant negative differences are observed when comparing ARQ individual scale scores with measures of problem solving skills with an

alternative means of classifying resilience, the development of a unique problem solving scale may need to be revisited. This appears unlikely given the support in the literature for positive associations between problem solving skills and emotion regulation and social skills. It seems more likely that the five scales in the individual domain will prove sufficient to assess resilience in terms of adolescent characteristics, and that these scores are likely to be positively correlated with adolescents' problem-solving skills.

The second area in which the revised ARQ scales differed from the original conceptually developed scales was the community *availability* scale. Despite repeated attempts to subdivide the community domain, firstly into connectedness and availability of support (Chapter 7), and secondly into connectedness and supportive community (Chapter 8), the statistical analysis of community items supported a single factor structure.

There are two possible explanations for the identification of the single factor structure in the community domain. Firstly, in constructing the questionnaire the two scales may not have been sufficiently defined or differentiated and the single factor may be a function of operationalisation issues rather than a true reflection of community resilience factors. This is possible, particularly given the dearth of research investigating community resilience factors from which the conceptual scales were developed (explored in Section 4.6).

Alternatively, the single factor structure may realistically reflect a one-dimensional community construct. This appears more likely given the ecological-transactional model of resilience underlying this research and the target population of the measure being adolescents. In terms of the ecological-transactional model of resilience, community is one of the most distal nested environments surrounding the individual (Cicchetti & Lynch, 1993). Depending on the definition of community applied, and in comparison to adults, adolescents may have more limited interaction and/or interest in their community. It may be that a general sense of a positive, caring, warm community is sufficient for adolescents to feel supported in times of adversity. Community factors may not be seen as key resources, and may only come into play when more proximal resources are unavailable.

A previous study of 1500 Australian adolescents provides some support for the proposition that community factors may not be central for adolescents (Fuller, McGraw, & Goodyear, 1999). Fuller and colleagues conducted 45 focus groups with students and identified ten resilience factors that were consistent across all the groups. Over a thousand students were then asked to identify which of the ten resilience factors applied to them and to rank the importance of each factor to young people generally. The two community factors 'feeling you belong to your local area' and 'being involved in a sporting club' were ranked as eighth and ninth in importance (followed only by 'having spiritual or religious beliefs' ranked tenth), less important than family, friends and school factors. However, over half the adolescents indicated that these two community factors applied to them (57.9% and 52.9% respectively). Thus community factors appeared relevant to Australian adolescents but were less important than more proximal factors. The community factors would therefore be likely to be less differentiated for Australian adolescents than more proximal factors such as personal characteristics or school environment.

While further investigation is required to clarify the adequacy of having a single community scale, it appears likely that the scale adequately covers community resilience factors for adolescents. The *connectedness* scale had excellent reliability and covers the community factors supported by the resilience literature (as described in Section 4.6.4), such as feelings of belonging and caring and the availability of supportive adult.

It should be noted that the importance of particular domains and resilience factors may differ across cultures. As discussed above, community factors were not ranked highly in terms of resilience by Australian adolescents. However community factors may be more important for adolescents living in countries where there is a greater focus on community, or for Australian adolescents with parents from such countries, than in the more 'individualised' Australian context. Similarly, the low ranking of the importance of religious and spiritual beliefs to resilience by Australian adolescents (Fuller et al., 1999) may not reflect the experience of adolescents raised in countries with a stronger religious focus or Australian adolescents with parents from such countries. Thus the ARQ must be considered an instrument attuned to the Australian context, with the potential for cultural specificity.

Thus the ARQ-Rev2 appeared to retain fidelity to the original conceptual scales developed from the review of the resilience literature and focus groups. Whilst three of the 15 conceptual scales were not supported by the factor structure, the resulting ARQ-Rev2 scales appear to have sufficiently incorporated the three relevant concepts of individual self-confidence and problem solving and community availability to compensate for the loss of these three scales. The revision process was applied consistently across data samples and analyses, and the factor structure was stable across the three data samples, supporting the validity of the factor structure. The resulting ARQ-Rev2 scales will now be briefly summarised.

### **8.3 Summary of the ARQ-Rev2 scales**

The ARQ-Rev2 scales will be briefly summarised under the resilience factors identified in the Chapter 4 literature review for each domain.

#### ***8.3.1 Individual domain scale summary***

The five scales in the individual domain make this section the most extensive in the ARQ-Rev2. This reflects the importance of individual characteristics in the process of resilience. It has been shown that even in infancy, individual temperament impacts on both an individual's interaction with their environment, and their caregivers' responsiveness and style of interaction with them (Luthar & Zigler, 1991; Smith & Prior, 1995; Sroufe, Egeland, Carlson, & Collins, 2005). Similarly, as described in Section 4.2, personal characteristics such as positive self-perception, control beliefs and social skills have been shown to be vital in the development of resilient responses to adversity (e.g. Bolger & Patterson, 2001; Borman & Overman, 2004; Cicchetti et al., 1993; Gore & Aseltine, 1995). The ARQ-Rev2 scales include such personal characteristics and skills, for example: positive self perception and expectations for the future (*confidence - self and future* scale); cognitive skills including control beliefs and emotion regulation (*emotional insight* and *negative cognition* scales); and social skills (*social skills* and *empathy* scales). The ARQ-Rev2 scales will be briefly reviewed with reference to individual characteristics or skills associated with resilience.

### 8.3.1.1 Positive self-perception and positive expectations for the future

Positive self-perception and optimism were combined into the *confidence (self and future)* scale. The focus of the *confidence (self and future)* scale is an adolescent's confidence in their own abilities and a positive view of the future. These characteristics of optimism, self esteem and a positive sense of the future have been identified as facilitating resilient outcomes in a range of at-risk situations including depression, maltreatment, alcohol abuse, poverty and institutionalised care (Carbonell et al., 1998; Cicchetti et al., 1993; Costa et al., 1999; Fergusson & Horwood, 2003; Losel & Bliesner, 2000; Rutter et al., 1990; Werner & Smith, 1992; Wyman et al., 1992). As shown in Table 33, the *confidence (self and future)* scale includes items regarding optimism (I feel hopeful about my life), self-esteem (I feel good about myself), a positive sense of the future (My life has a sense of purpose) and self-confidence (I feel confident I can achieve what I set out to do). These items form a scale with excellent reliability.

Table 33

Items in the Confidence (self and future) scale

---

Items
I feel hopeful about my life
I am confident that I can achieve what I set out to do
I feel confident that I can handle whatever comes my way
I feel good about myself
My life has a sense of purpose
I am a person who can go with the flow
I feel confident to do things by myself
If I have a problem I can work it out

---

### 8.3.1.2 Social Skills

The *social skills* and *empathy* scales contain items assessing an adolescent's communication skills, ability to develop connections with others and capacity to understand and consider another's perspective. Social skills, including empathy, have been commonly identified as facilitating successful outcomes for young people exposed to risk situations. Resilient adolescents have been identified as having better

social skills and higher levels of empathy than non-resilient adolescents (e.g. Born et al., 1997; Cowen et al., 1992; Parker et al., 1990; Werner & Smith, 1992). Items in the *social skills* and *empathy* scales are shown in Table 34 and cover the ability to: communicate effectively (I can share my personal thoughts with others); develop connections with others (I find it easy talking to people my age); and the capacity to understand and be considerate of others' perspective (I am patient with people who can't do things as well as I can). Such skills will shape an adolescent's ability to form and maintain positive and supportive relationships. Such skills obviously have far ranging repercussions for building relationships with family, peers and in the wider social environment. Such relationships are central to human development (Hartup, 1983; Heaven, 1994) and to resilient outcomes in the face of adversity (Bolger et al., 1998; Masten et al., 1988; Werner & Smith, 1992; Work et al., 1990).

Table 34  
Items in the social skills and empathy scales

Scale	Items
Social skills	<p>I find it hard to express myself to others (R)</p> <p>I feel helpless when faced with a problem (R)</p> <p>I can share my personal thoughts with others</p> <p>I find it hard to make important decisions (R)</p> <p>I have trouble explaining how I am feeling (R)</p> <p>I can express my opinions when I am in a group</p> <p><i>I am a shy person* (R)</i></p> <p><i>I find it easy talking to people my age</i></p>
Empathy	<p>I am patient with people who can't do things as well as I can</p> <p>I get frustrated when people make mistakes (R)</p> <p>I am easily frustrated with people (R)</p> <p>I expect people to live up to my standards (R)</p> <p>I push myself too hard to do what everyone else does (R)</p> <p>I am able to let go of things I can't control (R)</p> <p><i>I think about other peoples feelings before I say things</i></p> <p><i>Other peoples feelings are easy for me to understand</i></p>

Note. New items in italics



The *social skills* and *empathy* scales had adequate reliability scores (Streiner & Norman, 1996) but did not reach the analysis plan target of 0.70 (established in Section 6.5.5). Therefore, as shown in Table 34, two new items were written for each scale with the intention of improving the reliability and to take the number of items per scale to eight. The performance of these new items and related changes in scale reliability will not be known until subsequent psychometric testing is conducted. Given that the items were written to closely reflect the underlying concepts and accord with existing items in the scales, it is expected that increasing the number of items will improve, rather than decrease, the reliability score (T. Kline, 2005; Streiner & Norman, 1996).

#### 8.3.1.3 *Cognitive skills*

Cognitive skills such as attention, control beliefs and emotion regulation underlie individuals' adaptive functioning in a number of key domains, including self-development, academic achievement, and interpersonal relationships (Cicchetti, 1989; Egeland et al., 2002; Herman-Stahl & Petersen, 1999; Masten & Coatsworth, 1998; Wilson & Gottman, 1996). Cognitive skills are the focus of *emotional insight* and *negative cognition* scales. The *emotional insight* and *negative cognition* scales relate to the cognitive styles that underpin an adolescent's understanding and control of their experiences and emotions. Items are presented in Table 35.

An individual's cognitive style has been shown to impact on resilient outcomes including: control beliefs (e.g. Bolger & Patterson, 2003; Born et al., 1997; Felsman & Vaillant, 1987; Finn & Rock, 1997; Werner & Smith, 1992); controlled and rational thinking (Cicchetti & Rogosch, 1997); and an optimistic outlook or positive interpretation of events (Beardslee, 1989; Floyd, 1996; Losel & Bliesner, 2000; Scheier & Carver, 1993; Werner & Smith, 1992). The *negative cognition* scale contains items relating to control beliefs (I can't stop worrying about my problems) and an optimistic outlook (I tend to think the worst is going to happen (R)). The *emotional insight* scale includes items assessing controlled and rational thinking (I think things through carefully before making decisions) and understanding and regulation of emotion (I can change my feelings by changing the way I see things). These items form two scales with excellent reliability.

Table 35

Items in the emotional insight and negative cognition scales

Scale	Items
Emotional insight	When I am feeling down, I take extra special care of myself I look for what I can learn out of bad things that happen I think things through carefully before making decisions I take it easy on myself when I am not feeling well If I have a problem, I know there is someone I can talk to If I can't handle something I find help I can change my feelings by changing the way I see things I try to find meaning in the things that happen to me
Negative Cognition	When things go wrong, I tend to give myself a hard time (R) I just can't let go of bad feelings (R) I can't stop worrying about my problems (R) If something upsets me it affects how I feel about everything (R) I tend to think the worst is going to happen (R) I worry about the future (R) I dwell on the bad things that happen (R) My feelings are out of my control (R)

While emotion regulation and cognitive styles have been shown to be associated with key areas of adolescent development and resilient outcomes (Buckner et al., 2003; Greenberg, 2006; Masten, 2004), they have not been widely examined. The development of a resilience measure that specifically addresses emotion regulation and cognition will support investigation of this relatively new and promising area of resilience research.

### **8.3.2 Family domain scale summary**

The developmental focus of adolescence includes increasing independence from family and a closer affiliation with peers (Hartup, 1983; Heaven, 1994). However, the family remains a central force in adolescents' lives, both generally and in fostering resilient outcomes for adolescents (Masten et al., 1988; Rutter, 1985a;

Sameroff et al., 1998). Positive family characteristics have been shown to be a key factor in resilient outcomes across a range of risk situations including poverty, mentally ill parents, family conflict, institutionalised care and sexual abuse (Garmezy, 1987; LaFromboise et al., 2006; Legault et al., 2006; Marta, 1997; Miliotis et al., 1999; Rodgers & Rose, 2002; Spaccarelli & Kim, 1995), from infancy through to adolescence (Masten et al., 1988; Rutter, 1985a), and across social, behavioural, developmental and academic outcomes (Brennan, 1993; Herman-Stahl & Petersen, 1999; Masten et al., 1988; Rutter, 1985a, 1985b; Wentzel, 1994; Wyman et al., 1992). Family characteristics are therefore a critical part of any adolescent resilience measure.

Positive family characteristics are covered in the *connectedness* scale with items related to nurturing (My family understands my needs), enjoyment (I enjoy spending time with my family) and involvement (We do things together as a family). The family domain *availability* scale provides information about the availability of a close trusted family member for support in times of need. A full list of items is presented in Table 36. These items combined to form two scales with excellent reliability scores.

Table 36

Items in the family connectedness and availability scales

Scale	Items
Connectedness	I do fun things with my family
	We do things together as a family
	My family understands my needs
	I enjoy spending time with my family
	My family helps me to believe in myself and my abilities
	I get to spend enough time with my family
	My family listens to me
	People in my family expect too much of me (R)
Availability	There is someone in my family I can talk to about anything
	If I have a problem there is someone in my family I can talk to
	There is someone in my family that I feel particularly close to

Obviously the concepts of family connectedness and availability are likely to be interrelated. Indeed, as discussed in Section 7.3.2, the two factors on which the scales were developed were highly correlated indicating that adolescents' scores on family *connectedness* will generally correspond to their scores on the *availability* scale. Therefore, it may be feasible to include only the connectedness scale for the family domain. However, as family characteristics are a key resilience factor, and it is conceivable that adolescents could feel connected to family but desire greater availability of family members, it seemed prudent to retain the two scales. Further investigation, including tests of construct validity, will allow a more informed decision to be made as to whether to retain both scales (perhaps with revision to increase differentiation); or to retain one scale and decrease the length of the measure – a desirable goal in scale development (Streiner & Norman, 1996). At this point in time, the ARQ family domain comprises two scales with excellent reliability that cover the family characteristics identified as important in resilient outcomes for adolescents.

### **8.3.3 Peer domain scale summary**

Developing and maintaining friendships with peers is an important developmental task of adolescence (Havighurst, 1972) and the positive impact of adolescent peer relationships on a range of outcomes including self-esteem, behaviour problems, depression and school achievement has been clearly established (e.g. Thomas J. Berndt, 1999; Cauce et al., 1982; Costa et al., 1999; Seidman & Pederson, 2003; Wentzel, 1998; Werner & Smith, 1992). However, it is important to acknowledge that peer *groups* have been associated with both positive and negative outcomes and that context matters. For this reason, items in the peer domain focus on individual relationships rather than being part of a wider peer group per se. Items are shown in Table 37.

The peer connectedness scale is made up of items concerning connections to friends and having confidence around peers (When I am down I have friends that help cheer me up). Having close friends and connectedness to peers has been shown to increase the likelihood of resilient outcomes across a range of adverse situations including poverty and family breakdown (Werner & Smith, 1992), maltreatment (Bolger et al., 1998) and having a parent with a mental illness (Beardslee & Podorefsky, 1988). The

availability scale included negative items related to adolescents' ability to make and maintain friendships (I wish I had more friends I felt close to) and requires reverse scoring. This scale had adequate reliability but did not reach the target range set in the analysis section. Therefore four new items were added (see Table 37) in the hope of improving the scale reliability in future studies. The success of the new items in the *peer availability* scale will not be known until further psychometric testing is conducted. It is anticipated that increasing the length of the scale with items written to accord with existing items and closely reflecting the underlying concept of availability of friends will improve the reliability (T. Kline, 2005; Streiner & Norman, 1996).

Table 37

Items in the peer connectedness and availability scales

Scale	Items
Connectedness	When I am down I have friends that help cheer me up
	I have a group of friends that I keep in touch with regularly
	I have a friend I can trust with my private thoughts and feelings
	I have friends who make me laugh
	I enjoy being around people my age
	I get to spend enough time with my friends
	I feel confident around people my age
Availability	I feel left out of things (R)
	I wish I had more friends I felt close to (R)
	I find it hard making friends (R)
	Making new friends is easy
	<i>I prefer to do things on my own (R)*</i>
	<i>I find it hard to stay friends with people (R)</i>
	<i>I am happy with my friendship group</i>
<i>I feel shy around people my age (R)</i>	

Note. Items in italics are new items

As established in Section 4.2.3, social skills positively impact on an adolescent's ability to achieve positive outcomes despite exposure to adversity. An obvious mechanism by which this may occur is influencing an adolescent's ability to make and maintain friendships, as explored in the peer *connectedness* and *availability* scales. The development of a measure of resilience which differentiates between social skills as an individual characteristic and an adolescent's connectedness to and availability of peers has the potential to enhance understanding of the underlying mechanisms by which such resilience factors influence an adolescent's capacity to positively accommodate adversity.

#### **8.3.4 School domain scale summary**

The majority of Australian adolescents spend a significant period of each weekday at school, with the Australian Bureau of Statistics (2007) reporting that 74.3% of Australian adolescents complete the full six years of secondary school. Social ties to school and involvement in school activities have been found to result in better academic outcomes and reduced behaviour problems and dropping out (Bryk & Thum, 1989; Farmer et al., 2003; Finn & Rock, 1997; Floyd, 1996; Mahoney & Cairns, 1997; Maughan, 1988; Rodgers & Rose, 2002; Rumberger, 1995). Obviously, completing school has important implications for adolescents, with those who fail to complete schooling shown to be more likely to suffer from lower earning capacity, decreased employment opportunities, poor health and an increased likelihood of criminal activity (Rumberger, 1995). School connectedness therefore has important implications for adolescents, and unsurprisingly has been shown to facilitate resilient outcomes. In the face of adversity, students who are connected to school academically and socially are significantly more likely to show resilient outcomes than those with poor school connectedness (e.g. Brody et al., 2002; Finn & Rock, 1997; O'Donnell et al., 2002; Rutter & Quinton, 1984a), over and above the impact on academic achievement (Rutter & Quinton, 1984a). The ARQ contains two scales addressing school resilience factors – school connectedness and supportive school environment. Assessment of resilience factors in the school domain is not possible with the only other adolescent resilience measure currently available (Jew et al (1999) discussed in Section 3.5.2), making the ARQ a more comprehensive assessment of resilience in adolescents.

Adolescents' engagement with school socially and academically is the focus of the ARQ school *connectedness* scale. Items are detailed in Table 38 and include an adolescent's general engagement with school (I am bored at school (R)) and their academic engagement (I try hard in school). Due to a Cronbach alpha reliability score of 0.65 being below the specified target of 0.70 (as established in 6.5.5), this scale contains four new items (shown in italics in Table 38) intended to improve the scale reliability in future research. The new items were written to incorporate social connectedness (I enjoy being at school) and some more specific aspects of academic connectedness (I participate in class). Similar to the peer scales (Section 8.3.3), the increase in the length of the school connectedness scale with items written to accord with existing items and the concept underlying the scale, is expected to enhance the reliability of the scale, but this requires confirmation through further psychometric testing.

The *supportive environment* scale pertains to factors that contribute to adolescents' experience of school (items shown in Table 38). Teachers have a key role in shaping adolescents' positive (or negative!) experience and engagement with school and in creating the school ethos (Bryk & Thum, 1989; Rumberger, 1995; Rutter, 1994; Wentzel, 1997). Specific aspects of positive teacher-student relations and school environment that have been identified as important in resilient outcomes are covered in the supportive environment scale, including opportunity for student involvement (At school students help to decide and plan things like school activities and events), social ties (My teachers are caring and supportive of me) and a caring and involved teaching style (My teachers notice when I am doing a good job and let me know about it). The *supportive environment scale* items form a scale with excellent reliability.

As might be expected, the two school scales of connectedness and positive school environment were moderately correlated ( $r = 0.48$ ), indicating that students who felt the school environment was supportive, generally also felt connected to school. Models of school engagement support this association between school environment and connectedness (e.g. Finn, 1989; Newmann et al., 1992; Tinto, 1993).

Table 38

Items in the school connectedness and supportive environment scales

Scales	Items
Connectedness	I hate going to school (R)
	I am bored at school (R)
	I try hard in school
	My teachers expect too much of me (R)
	<i>I join in class discussions</i>
	<i>I enjoy being at school</i>
	<i>I participate in class</i>
	<i>Getting good marks is important to me</i>
Supportive environment	My teachers are caring and supportive of me
	My teachers provide me with extra help if I need it
	I have a teacher that I feel looks out for me
	My teachers notice when I am doing a good job and let me know
	I feel that what I say counts at school
	There is an adult at school who I could talk to if I had a personal problem
	I get involved with school activities
	At school students help to decide and plan things like school activities and events

Note. Items in italics are new items

Research findings supports the importance of both connectedness to school (Finn & Rock, 1997; Rutter, 1994) and the school environment (Crosnoe & Elder, 2004; Wentzel, 1998) in facilitating positive outcomes for adolescents identified as 'at-risk'. Mechanisms underlying resilient responses to adversity have the potential to differ with respect to these two aspects of school experience, therefore inclusion of both scales will allow greater depth of examination and understanding of the impact of school resilience factors on adolescent outcomes.



### 8.3.5 *Community domain*

There is a lack of consensus in the definition of community within community research (McMillan & Chavis, 1986). Approaches vary in examining community as a multi- or uni-dimensional concept and definitions range from physical localities to groups united by a common purpose (see Bess, 2002; Long & Perkins, 2003; McMillan & Chavis, 1986). As established in Section 4.6, an understanding of community as the local geographic area was adopted in this study. Accordingly, the preamble for the ARQ community section states “About the area you live in, your neighbourhood or community...” which allowed respondents to define the limits within which they answered the questions.

Community resilience factors identified in the scant literature available (Section 4.5) and focus groups (Section 5.3.5) primarily included: having supportive adults available outside the family including neighbours or community leaders (Dubas & Snider, 1993; Rodgers & Rose, 2002; Werner & Smith, 1992); and feeling a sense of belonging to a community (Clark, 1983; LaFromboise et al., 2006). These community characteristics have been covered in the community *connectedness* scale with items such as ‘There is an adult in my neighbourhood I could talk to if I had a problem’, ‘I trust the people in my neighbourhood’ and ‘I like my neighbourhood’. The community scale items are presented in Table 39. The community items formed a scale with excellent reliability.

There is a scarcity of resilience research addressing community factors, particularly research pertaining to adolescents (as discussed in Section 4.5). While community factors appear to be less significant for adolescents than more proximal factors (as discussed in Section 8.1.2), community characteristics may become more salient in certain contexts and/or risk situations. For example, in communities where there is significant and ongoing violence, parents may be more limited in their ability to foster positive outcomes for their children (Luthar & Goldstein, 2004). Conversely, where family life is significantly impaired, community resources may gain salience. Therefore it is important to include community factors in this new measure of resilience to expand knowledge of this largely uncharted area of research. The inclusion of community factors makes the ARQ unique among currently

available resilience measures by providing an assessment of resilience factors across multiple domains.

Table 39

Items in the community connectedness scale

---

Items
I trust the people in my neighbourhood
People in my neighbourhood are caring
The people in my neighbourhood treat other people fairly
I like my neighbourhood
The people in my neighbourhood look out for me
There is an adult in my neighbourhood I could talk to if I had a problem

---

This summary of the community connectedness scale concludes this section detailing the final ARQ scales. The ARQ is truly a multidimensional measure, covering resilience factors within the individual and in their surrounding environments – family, peers, school and community. Limitations in the development of the ARQ and the ‘next steps’ in psychometric testing of the ARQ will now be explored, followed by practical applications of the ARQ and the measures potential for contributing to ongoing research endeavours.

#### **8.4 Limitations and further psychometric testing of the ARQ**

Methodological and statistical aspects related to the development of the ARQ must be taken into account when considering the efficacy of this new measure of resilience. As discussed in Chapter 7, data collection at both time points (ARQ-Pilot and ARQ-Rev1) was marred by less than optimal response rates (approximately 45% overall in both studies), limiting the appropriateness of generalising from the study results to adolescents in general. No data was available to compare nonparticipants with participants and therefore it is not known whether the two groups were systematically different. Examination of the sample characteristics was conducted to check the appropriateness of generalising from the study results to the general population (Sections 6.2.2.1 and 7.1.1). When compared to the general Victorian

adolescent population, a slightly higher proportion of study participants came from higher educated and intact families. It is possible that vulnerable or stress-affected adolescents were less likely to participate in a study about resilience, or indeed any research. Therefore the sample of adolescents contributing to the revision of the ARQ may not be representative of the general adolescent population. However, as the focus of these studies was the revision of a measurement tool which was developed from broader resilience research, rather than identifying population characteristics or resilience factors in this sample, the slightly higher socio-demographic background of the sample may not be so problematic.

Further psychometric testing is also required to support the efficacy of the ARQ. Focus groups and administration of the questionnaire to over 500 adolescents in total have shown the questionnaire to be easy for adolescents to understand and complete. The factor and scale analyses revealed a stable factor structure that was conceptually convincing and true to the original intent of the measure. However, while the ARQ is presented as a functional measure of resilience in adolescents, evidence of scale and test-retest reliability, criterion validity and sensitivity to change will enhance understanding of and confidence in the measure's psychometric properties.

#### ***8.4.1 Scale and test-retest reliability***

As described in Section 7.3, four of the ARQ scales failed to reach the target set for scale reliability and accordingly underwent further development with the addition of new items. Examination of the performance of these items and scales will require repeating the revision process reported in Chapters 6 and 7, (i.e. factor, scale and item analysis). The stability of the factor solution to date suggests that the scale structure is unlikely to change, but the new items would need to load on the relevant scale and improve the scale reliability to the target levels in order to finalise the questionnaire content.

Test-retest is another measure of questionnaire performance (T. Kline, 2005; Streiner & Norman, 1996) yet to be conducted. Excluding the experience of a significant assault to normative developmental process (Masten, 2001), resilience could be expected to be relatively stable across a limited time period. Therefore

assessment of test-retest reliability would be appropriate and would provide an indication of the stability of ARQ scores over time. Conducting test-retest reliability analysis was not possible within the time constraints of this thesis, but will be conducted in the future.

#### **8.4.2 Criterion Validity**

The vital step in measure development is to assess whether the ARQ reliably measures resilience, a process known as testing criterion or construct validity. Criterion validity can best be established by direct comparison with gold standard measures of the same or similar constructs (Streiner & Norman, 1996). Given the lack of suitable gold standard resilience measures, alternative approaches to identifying resilience will need to be employed. For example, quantitative and semi structured interviews with adolescents and parents/guardians could be used to examine a range of factors and comparison with ARQ scores could contribute to assessment of criterion validity. For example, gathering data on an adolescents' experience of negative life events, personal characteristics, resilience factors available in each domain and outcomes including behaviour problems, academic achievement, depression, anxiety and self- and parent-ratings of resilience. Then adolescents with high exposure to negative life events and positive outcomes could be categorised as *resilient*, while those with high exposure to negative life events and negative outcomes could be categorised as *vulnerable*. Criterion validity would be supported if adolescents in the resilient group had significantly higher ARQ scores than those in the vulnerable group.

Criterion validity could also be examined by correlating ARQ sub scale scores with relevant, psychometrically valid measures, for example, scales measuring empathy, family or peer support. Correlations between ARQ scales and comparison scales of 0.4 – 0.8 would support criterion validity (Streiner & Norman, 1996). To establish that the ARQ reliably measures resilience is obviously the most important step towards contributing meaningfully to resilience research.

#### **8.4.3 Sensitivity to change**

To support the use of the ARQ for evaluation of intervention programs or in clinic settings, examination of sensitivity to change would also need to be established.

This could be achieved in an intervention study (with a control group) through comparison of pre- and post-intervention ARQ scores with other indicators of resilience. Evidence of sensitivity to change would require ARQ scores to improve for individuals identified by other indicators to have improved, stay the same for participants showing no change and decrease for any participants who deteriorated over the intervention. Participants in the control group would be expected to show minimal change over time compared to the intervention group. Evidence of sensitivity to change would greatly enhance the practical applications of the ARQ, supporting use of the measure for evaluation of group or individual clinical intervention programs focussed on reducing risk and/or promoting protective factors in adolescents as well as in their cultural ecologies such family, school or community level activities.

The aim of the present study was to develop a new measure of resilience in adolescents. Establishment of construct validity, test-retest reliability and examination of sensitivity to change require different research methods and samples and are beyond the scope of this thesis. Further psychometric testing of all these aspects are currently in the planning stages.

## **8.5 Characteristics of the ARQ and potential applications**

The ARQ is a multidimensional measure of resilience in adolescents covering the domains of self, family, peers, school and community. The questionnaire language was limited to a Grade 6 (12 year old) reading level, and as such is appropriate for individuals aged between 12 and 18 years of age. Scoring the questionnaire is simple, requiring reversing of negative items as directed, and summing the items within each scale. Total scores are achieved by averaging across scales. The ARQ is an easily administered, brief, self-report tool that can be readily utilised by practitioners or researchers as required.

In contrast to the majority of resilience measures currently available, the ARQ is a multidimensional measure of resilience. As explored in Chapter 2, research indicates that resilience is multidimensional and that resilience in one domain does not necessarily infer resilience in other areas (Farber & Egeland, 1987; Luthar et al., 1993). Therefore, a comprehensive assessment of resilience would need to cover all

relevant domains, both individual and their environment. However, as established in Chapter 3, all but one of the current resilience measures available examines individual factors only. In contrast, the ARQ-Rev2 covers all ecologies identified as significant for adolescents, namely family, peers, school and community, and has the potential to provide a more comprehensive assessment of adolescent resilience than other measures currently available. The opportunity for a more accurate assessment of resilience across numerous ecological domains allows a more fine-grained examination of adolescent resilience and the processes underlying competence in specific situations (Masten & Coatsworth, 1998). The ARQ and subscales allow examination of specific resilience factors across different individuals, developmental stages and risk and protective contexts in detail not previously available in a single resilience measure. The ARQ thus has the potential to increase understanding of adolescent resilience.

The ARQ was developed from a strong theoretical background. A structure for the measure was derived from an ecological-transactional model proposed by Cicchetti and Lynch (1993; Lynch & Cicchetti, 1998). In this model, the process by which resilience factors interact both within and across environments and the individual to produce resilient or vulnerable outcomes is elaborated. Drawing on this model, the adolescent is seen as an active participant, both shaping their environment and being influenced by it. Such a model can provide a springboard for research, guiding investigations into the complex processes by which the factors covered in the ARQ influence resilience. Examination of interactions between specific resilience factors such as social skills or family connectedness both within (e.g. family outcomes) and across environments (examination of family and school outcomes) may be facilitated by utilising the multidimensional ARQ.

There is a shifting emphasis, both in research, health promotion and intervention, to models that encompass multiple systems and multiple levels (Cowen & Work, 1988; Curtis & Cicchetti, 2003; Masten, 2004). Over time health promotion strategies have moved from simple teaching of skills in a particular area (e.g. self esteem), to the enhancing of numerous skills while taking into account individual development and context, and finally to complex interventions targeting the individual and their ecological settings (Masten & Coatsworth, 1998). Resilience

models support complex interventions that encompass both risk reduction and competence enhancement across individuals and relevant ecologies (Alvord & Grados, 2005; Cowen, 1994; Masten & Coatsworth, 1998). Evaluation of such approaches can only be assisted by the availability of comprehensive, multidimensional resilience measures. For example, Alvord & Grados (2005) propose a range of intervention strategies based on strengthening assets and protective factors for 'individual and family clinical interventions'. Many of the strategies suggested, such as teaching optimistic thinking and perspective taking, emotion regulation and control, fostering self-esteem and realistic control beliefs have obvious correspondence with ARQ scales in the individual and family domains. Inclusion of the ARQ in an evaluation study of this proposed intervention could be an efficient and inexpensive approach. The availability of a brief measure of resilience with which a researcher can examine a range of specific resilience factors over five ecological domains has wide ranging applications in research, health promotion and intervention studies.

Interventions acknowledging the complexity of individuals and their ecologies appear to be the way of the future where it is hoped that the motto "*preventing, not repairing*" (Cowen & Work, 1988) will resound ever more strongly. Resilience is an attractive construct for practitioners, and for policy makers gradually accommodating the notion that "promoting wellness is likely to be more humane, efficient and (ultimately) more cost-effective than struggling to undo dysfunction" (Cowen, 1994). However there remains the apprehension that concepts such as resilience have not been adequately supported by scientific and rigorous empirical and theoretical development (Cowen, 1994; Kaplan, 1999; Luthar et al., 2000a) including standard measurement approaches. The creation of a theoretically based, comprehensive, multidimensional measure of resilience is one small contribution to ongoing development of research and practice.

## **8.6 Conclusions**

The ARQ is a brief, functional and simple questionnaire to administer to adolescents. It is truly a multi-domain measure and it is anticipated that use of this

measure can expand understanding of resilience and the processes involved in successfully negotiating adversity.

... society and parents share a stake in the development of competence and in understanding the processes that facilitate and undermine it. ... Moreover, when large numbers of a society's children must overcome hazards or disadvantage to become competent, it becomes particularly important to understand how competence is achieved in the context of adversity. (Masten & Coatsworth, 1998, p. 205).

The ARQ was developed in response to a distinct lack of measurement tools in resilience research generally and for adolescents in particular. Greater scientific rigour and consistency in measurement tools and approaches will contribute to improved understanding of the complex processes involved in resilient responses to adversity. The availability of standard measures such as the ARQ in resilience research will make comparisons across studies and risk groups possible, thus contributing to the formulation of general laws and principals and increasing knowledge of the processes involved in resilient functioning. It is proposed that, following further psychometric testing, this new measure of resilience will provide researchers and clinicians with a comprehensive and developmentally appropriate instrument to measure a young person's capacity to achieve positive outcomes despite life stressors.



## REFERENCES

- Alvord, M. K., & Grados, J. J. (2005). Enhancing Resilience in Children: A Proactive Approach. *Professional Psychology: Research & Practice, 36*(3), 238.
- American Psychological Association. (1921). *Mental development in man*. Paper presented at the Psychological Bulletin, US.
- Anthony, E. J. (1987). Children at high risk for psychosis growing up successfully. In E. J. Anthony & B. J. Cohler (Eds.), *The invulnerable child* (pp. 147-184). New York: The Guilford Press.
- Anthony, E. J., & Cohler, B. J. (Eds.). (1987). *The invulnerable child*. New York: The Guilford Press.
- Anthony, E. J., & Kopernik, C. (1974). *The child in his family* (Vol. 3). New York: Wiley.
- Aroian, K., Schappler-Morris, N., Neary, S., Spitzer, A., & Tran, T. (1997). Psychometric evaluation of the Russian language version of the Resilience Scale. *Journal of Nursing Measurement, 5*, 151-164.
- Australian Bureau of Statistics. (2004). *Family and Community: State Summary*: Australian Bureau of Statistics.
- Baldwin, A., Baldwin, C., & Cole, R. (1990). Stress-resistant families and stress-resistant children. In J. Rolf, A. S. Masten, D. Cicchetti, K. Nuechterlein & S. Weintraub (Eds.), *Risk and protective factors in the development of psychopathology* (pp. 236-256). New York: Cambridge University Press.
- Bandura, A. (1995). *Self-efficacy in changing societies*. Cambridge: Cambridge University Press.
- Bartelt, D. W. (1994). On resilience: Questions of validity. In M. C. Wang (Ed.), *Educational resilience in inner-city America: Challenges and prospects* (pp. 97-108). Hillsdale, NJ, US: Lawrence Erlbaum Associates.
- Basic Behavioural Science Task Force. (1996). Basic Behavioural Science Research for Mental Health: Vulnerability and Resilience. *American Psychologist, 51*(1), 22-28.
- Beardslee, W. R. (1989). The role of self-understanding in resilient individuals: the development of a perspective. *American Journal of Orthopsychiatry, 59*(2), 266-278.
- Beardslee, W. R., & Podorefsky, D. (1988). Resilient adolescents whose parents have serious affective and other psychiatric disorders: importance of self-understanding and relationships. *American Journal of Psychiatry, 145*(1), 63-69.
- Bender, D., & Losel, F. (1997). Protective and risk effects of peer relations and social support on antisocial behaviour in adolescents from multi-problem milieus. *Journal of Adolescence, 20*(6), 661-678.
- Bennett, D. S. (1994). Depression among children with chronic medical problems: a meta-analysis. *Journal of Pediatric Psychology, 19*(2), 149-169.
- Berndt, T. J. (1979). Developmental changes in conformity to peers and parents. *Developmental Psychology, 15*(6), 608.
- Berndt, T. J. (1999). Friends' influence on students' adjustment to school. *Educational Psychologist, 34*(1), 15.

- Bess, K. D. (2002). Psychological sense of community: Theory, research, and application. In A. T. Fisher, C. C. Sonn & B. J. Bishop (Eds.), *Psychological sense of community: research, applications, and implications* (pp. 3-22). New York, NY, US: Kluwer Academic/Plenum Publishers.
- Billings, A. G., Moos, R. H., Miller, J. J., & Gottlieb, J. E. (1987). Psychosocial adaptation in juvenile rheumatic disease: A controlled evaluation. *Health Psychology, 11*(4), 463-485.
- Block, J., & Kremen, A. M. (1996). IQ and ego-resiliency: Conceptual and empirical connections and separateness. *Journal of Personality and Social Psychology, 70*(2), 349-361.
- Blum, R. (1998). Healthy youth development as a model for youth health promotion. *Journal of Adolescent Health, 22*, 368-375.
- Bohman, M. (1996). Predisposition to criminality: Swedish adoption studies in retrospect. In G. R. Bock & J. A. Goode (Eds.), *Genetics of criminal and antisocial behaviour* (pp. 99-114). New York: Wiley.
- Bolger, K. E., & Patterson, C. J. (2001). Pathways from child maltreatment to internalising problems: Perceptions of control as mediators and moderators. *Development and Psychopathology, 13*(4), 913-940.
- Bolger, K. E., & Patterson, C. J. (2003). Sequelae of child maltreatment: Vulnerability and resilience. In S. Luthar (Ed.), *Resilience and Vulnerability: Adaptation in the context of childhood adversities* (pp. 156-181). New York, NY, US: Cambridge University Press.
- Bolger, K. E., Patterson, C. J., & Kupersmidt, J. B. (1998). Peer relationships and self-esteem among children who have been maltreated. *Child Development, 69*(4), 1171-1197.
- Bond, L., Butler, H., Thomas, L., Carlin, J., Glover, S., Bowes, G., et al. (2007). Social and School Connectedness in Early Secondary School as Predictors of Late Teenage Substance Use, Mental Health, and Academic Outcomes.(Author abstract) Author abstract. *Journal of Adolescent Health, 40*(4), 357.e359.
- Bond, L., Patton, G., Glover, S., Carlin, J. B., Butler, H., Thomas, L., et al. (2004). The Gatehouse Project: Can a multilevel school intervention affect emotional wellbeing and health risk behaviours? *Journal of Epidemiology & Community Health, 58*(12), 997.
- Bond, L., Thomas, L., Toumbourou, J., Patton, G., & Catalano, R. (2000). *Improving the Lives of Young Victorians*. Melbourne, Vic: Dept. of Human Services, Victorian Government.
- Borman, G. D., & Overman, L. T. (2004). Academic Resilience in Mathematics among Poor and Minority Students. *Elementary School Journal, 104*(3), 177.
- Born, M., Chevalier, V., & Humblet, I. (1997). Resilience, desistance and delinquent career of adolescent offenders. *Journal of Adolescence, 20*(6), 679-694.
- Bowlby, J. (1997). *Attachment and loss*. London: Pimlico.
- Brennan, J. L. (1993). Family relationships and the development of social competence in adolescence. *Journal of Paediatrics and Child Health, 29*(Suppl 1), S37-S41.
- Brody, G. H., Dorsey, S., Forehand, R., & Armistead, L. (2002). Unique and Protective Contributions of Parenting and Classroom Processes to the Adjustment of African

- American Children Living in Single-Parent Families. *Child Development*, 73(1), 274.
- Brody, G. H., Murry, V., Ge, X., Kim, S., Simons, R., Gibbons, F., et al. (2003). Neighborhood Disadvantage Moderates Associations of Parenting and Older Sibling Problem Attitudes and Behavior With Conduct Disorders in African American Children. *Journal of Consulting & Clinical Psychology*, 71(2), 211.
- Brody, G. H., Stoneman, Z., & Flor, D. (1996). Parental religiosity, family processes, and youth competence in rural, two-parent African American families. *Developmental Psychology*(Special Issue: Development, Transitions, and Adjustment in Adolescence), 696-706.
- Bronfenbrenner, U. (1979). *The ecology of human development*. Cambridge, MA: Harvard University Press.
- Bryk, A. S., & Thum, Y. M. (1989). The effects of high school organisation on dropping out: An exploratory investigation. *American Educational Research Journal*, 26(3), 353-383.
- Buckner, J. C., Mezzacappa, E., & Beardslee, W. R. (2003). Characteristics of resilient youths living in poverty: the role of self-regulatory processes. *Development & Psychopathology*, 15(1), 139-162.
- Buysse, W. (1997). Behaviour problems and relationships with family and peers during adolescence. *Journal of Adolescence*(6), 645.
- Cadman, D., Boyle, M., Szatmari, P., & Offord, D. R. (1987). Chronic Illness, Disability, and Mental and Social Well-Being: Findings of the Ontario Child Health Study. *Pediatrics*, 79(5), 805-813.
- Campbell-Sills, L., Cohan, S. L., & Stein, M. B. (2006). Relationship of resilience to personality, coping, and psychiatric symptoms in young adults. *Behaviour Research and Therapy*, 44(4), 585-599.
- Carbonell, D. M., Reinherz, H. Z., & Giaconia, R. M. (1998). Risk and resilience in late adolescence. *Child and Adolescent Social Work Journal*, 15(4), 251-272.
- Carlson, E., & Sroufe, A. (1995). Contribution of attachment theory to developmental psychology. In D. Cicchetti & D. Cohen (Eds.), *Developmental psychopathology: Vol. 1. Theory and methods* (pp. 149-197). New York: Wiley.
- Carver, C. S., Reynolds, S. L., & Scheier, M. F. (1994). The possible selves of optimists and pessimists. *Journal of Research in Personality*, 28(2), 133-141.
- Cauce, A. M., Felner, R. D., & Primavera, J. (1982). Social support in high-risk adolescents: structural components and adaptive impact. *American Journal of Community Psychology*, 10(4), 417-428.
- Champion, L. A., Goodall, G., & Rutter, M. (1995). Behaviour problems in childhood and stressors in early adult life: A 20 year follow-up of London school children. *Psychological Medicine*, 25(2), 231-246.
- Christopher, K. A. (2000). Determinants of psychological well-being in Irish immigrants. *Western Journal of Nursing Research*, 22(2), 123-140.
- Cicchetti, D. (1989). How research on child maltreatment has informed the study of child development: Perspectives from developmental psychopathology. In D. Cicchetti & V. Carlson (Eds.), *Child maltreatment: Theory and research on the causes and consequences of child abuse and neglect* (pp. 377-431). New York: Cambridge University Press.

- Cicchetti, D. (2003). Foreward. In S. Luthar (Ed.), *Resilience and Vulnerability: Adaptation in the context of childhood adversities* (pp. xix-xvii). Cambridge: Cambridge University Press.
- Cicchetti, D., Ackerman, B., & Izard, C. (1995). Emotions and emotion regulation in developmental psychopathology. *Development and Psychopathology*, 7(1), 1-10.
- Cicchetti, D., & Garmezy, N. (1993). Prospects and promises in the study of resilience. *Development and Psychopathology*, 5, 497-502.
- Cicchetti, D., & Lynch, M. (1993). Toward an ecological/transactional model of community violence and child maltreatment: consequences for children's development. *Psychiatry*, 56(1), 96-118.
- Cicchetti, D., Rappaport, J., Sandler, I. N., & Weissberg, R. (2000). *The promotion of wellness in children and adolescents*. Washington, DC: CWLA Press.
- Cicchetti, D., & Rogosch, F. A. (1997). The role of self-organization in the promotion of resilience in maltreated children. *Development and Psychopathology*, 9(4), 797-815.
- Cicchetti, D., & Rogosch, F. A. (1999). Psychopathology as risk for adolescent substance use disorders: a developmental psychopathology perspective. *Journal of Clinical Child Psychology*, 28(3), 355-365.
- Cicchetti, D., Rogosch, F. A., Lynch, M., & Holt, K. (1993). Resilience in maltreated children: Processes leading to adaptive outcome. *Development and Psychopathology*, 5(4), 629-647.
- Cicchetti, D., Toth, S., & Rogosch, F. (2000). The development of psychological wellness in maltreated children. In D. Cicchetti, J. Rappaport, I. N. Sandler & R. Weissberg (Eds.), *The promotion of wellness in children and adolescents* (pp. 395-426). Washington, DC: CWLA Press.
- Cicchetti, D., Toth, S. L., Bush, M. A., & Gillespie, J. F. (1988). Stage-salient issues: a transactional model of intervention. *New Directions in Child Development*(39), 123-145.
- Cicchetti, D., & Tucker, D. (1994). Development and self-regulatory structures of the mind. *Development and Psychopathology*, 6(4), 533-549.
- Clark, R. (1983). *Family life and school achievement: Why poor Black children succeed or fail*. Chicago: University of Chicago Press.
- Cohen, R. (2005). *Psychological testing and assessment: an introduction to tests and measurement* (6th ed.). Boston: McGraw-Hill.
- Cohen, R., Swerdlik, M. E., & Phillips, S. (1996). Test development. In *Psychological testing and assessment: An introduction to tests and measurement* (3 ed., pp. 218-254). Boston: McGraw-Hill.
- Coleman, J. S. (1988). Social capital in the creation of human capital. *The American Journal of Sociology*, 94(SUPP), S95.
- Colin, H. (1921). Mental Hygiene and Prophylaxis in France. *Journal of Mental Science*, 459-470.
- Comrey, A. L., & Lee, H. B. (1992). *A first course in Factor analysis* (2nd ed.). Hillsdale, NJ: Lawrence Erlbaum Associates.
- Conger, R., Lorenz, F., Elder, G., Melby, J., Simons, R., & Conger, K. (1991). A process model of family economic pressure and early adolescent alcohol use. *Journal of Early Adolescence*, 11(4), 430-449.

- Connor, K. M., & Davidson, J. R. (2003). Development of a new resilience scale: the Connor-Davidson Resilience Scale (CD-RISC). *Depression and Anxiety, 18*(2), 76-82.
- Costa, F. M., Jessor, R., & Turbin, M. S. (1999). Transition into adolescent problem drinking: The role of psychosocial risk and protective factors. *Journal of Studies on Alcohol, 60*(4), 480-490.
- Cowan, P., Cowan, C., & Schulz, M. (1996). Thinking about risk and resilience in families. In E. M. Hertherington & E. Blechman (Eds.), *Stress, coping and resiliency in children and families* (pp. 245). Hillsdale, NJ: Lawrence Erlbaum Associates.
- Cowen, E. (1994). The enhancement of psychological wellness: challenges and opportunities. *American Journal of Community Psychology, 22*(2), 149-180.
- Cowen, E., & Work, W. (1988). Resilient children, psychological wellness, and primary prevention. *American Journal of Community Psychology, 16*(4), 591-607.
- Cowen, E., Work, W., Hightower, A., Wyman, P., Parker, G., & Lotyczewski, B. (1991). Toward the Development of a Measure of Perceived Self-Efficacy in Children. *Journal of Clinical Child Psychology, 20*(2), 169.
- Cowen, E., Work, W., Wyman, P., Parker, G., Wannon, M., & Gribble, P. (1992). Test comparisons among stress affected, stress resilient and non-classified fourth-through sixth-grade urban children. *Journal of Community Psychology, 20*(July), 200-214.
- Cowen, E., Wyman, P., Work, W., Kim, J., Fagen, D., & Magnus, K. (1997). Follow-up of young stress-affected and stress-resilient urban children. *Development and Psychopathology, 9*(3), 565-577.
- Criss, M. M., Pettit, G. S., Bates, J. E., Dodge, K. A., & Lapp, A. L. (2002). Family adversity, positive peer relationships, and children's externalizing behaviour: A longitudinal perspective on risk and resilience. *Child Development, 73*(4), 1220-1237.
- Cronbach, L. (1990). *Essentials of psychological testing*.
- Crosnoe, R., & Elder, G. H. (2004). Family Dynamics, Supportive Relationships, and Educational Resilience During Adolescence. *Journal of Family Issues, 25*(5), 571.
- Curtis, W. J., & Cicchetti, D. (2003). Moving research on resilience into the 21st century: Theoretical and methodological considerations in examining the biological contributors to resilience. *Development and Psychopathology, 15*(3), 773.
- D'Imperio, R. L., Dubow, E. F., & Ippolito, M. F. (2000). Resilient and stress-affected adolescents in an urban setting. *Journal of Clinical Child Psychology, 29*(1), 129-142.
- Dearden, J. (2004). Resilience: A study of risk and protective factors from the perspective of young people with experience of local authority care. *Support for Learning, 19*(4), 187-193.
- Deatrick, J. A., & Faux, S. A. (1991). Conducting qualitative studies with children and adolescents. In J. M. Morse (Ed.), *Qualitative nursing research : a contemporary dialogue* (pp. 203-223). Thousand Oaks, CA, US: Sage Publications, Inc.
- Dodge, K. A., & Pettit, G. S. (2003). A Biopsychosocial Model of the Development of Chronic Conduct Problems in Adolescence. *Developmental Psychology, 39*(2), 349.

- Dubas, J. S., & Snider, B. A. (1993). The role of community-based youth groups in enhancing learning and achievement through nonformal education. In R. M. Lerner. (Ed.), *Early adolescence: perspectives on research, policy, and intervention* (pp. 159-174). Hillsdale, NJ, England: Lawrence Erlbaum Associates, Inc.
- Dubow, E. F., Arnett, M., Smith, K., & Ippolito, M. F. (2001). Predictors of future expectations of inner-city children: A 9-month prospective study. *The Journal of Early Adolescence, 21*(1), 5.
- Dubow, E. F., Edwards, S., & Ippolito, M. F. (1997). Life stressors, neighborhood disadvantage, and resources: A focus on inner-city children's adjustment. *Journal of Clinical Child Psychology, 26*(2), 130.
- Dubow, E. F., & Ippolito, M. F. (1994). Effects of Poverty and Quality of the Home Environment on Changes in the Academic and Behavioral Adjustment of Elementary School-Age Children. *Journal of Clinical Child Psychology; Hillsdale, 23*(4), 401.
- Dubow, E. F., & Luster, T. (1990). Adjustment of children born to teenage mothers: The contribution of risk and protective factors. *Journal of Marriage & the Family, 52*(2), 393-404.
- Dumont, M., & Provost, M. A. (1999). Resilience in adolescents: Protective role of social support, coping strategies, self-esteem, and social activities on experience of stress and depression. *Journal of Youth and Adolescence, 28*(3), 343-363.
- Eccles, J. S., & Barber, B. L. (1999). Student council, volunteering, basketball, or marching band: What kind of extracurricular involvement matters? *Journal of Adolescent Research, 14*(1), 10.
- Egeland, B. (1997). Mediators of the effects of child maltreatment on developmental adaptation in adolescence. In D. Cicchetti & S. L. Toth (Eds.), *Developmental Perspectives On Trauma : Theory, Research, And Intervention* (pp. 403-434). Rochester, NY, US: University of Rochester Press.
- Egeland, B., Carlson, E., & Sroufe, L. A. (1993). Resilience as process. *Development and Psychopathology, 5*(4), 517-528.
- Egeland, B., & Farber, E. A. (1984). Infant-mother attachment: factors related to its development and changes over time. *Child Development, 55*(3), 753-771.
- Egeland, B., Jacobvitz, D., & Sroufe, L. A. (1988). Breaking the cycle of abuse. *Child Development, 59*(4), 1080-1088.
- Egeland, B., & Kreutzer, T. (1991). A longitudinal study of the effects of maternal stress and protective factors on the development of high-risk children. In E. M. Cummings & A. L. Greene (Eds.), *Life span developmental psychology: Perspectives on stress and coping* (pp. 151-174). Hillsdale, NJ, US: Lawrence Erlbaum Associates, Inc.
- Egeland, B., Yates, T., Appleyard, K., & van Dulmen, M. (2002). The long-term consequences of maltreatment in the early years: A developmental pathway model to antisocial behavior. *Children's Services: Social Policy, Research, & Practice, 5*(4), 249-260.
- Eisenberg, N., Guthrie, I. K., Fabes, R. A., Reiser, M., Murphy, B. C., Holgren, R., et al. (1997). The relations of regulation and emotionality to resiliency and competent social functioning in elementary school children. *Child Development, 68*(2), 295-311.

- Farber, E. A., & Egeland, B. (1987). Invulnerability among abused and neglected children. In E. J. Anthony & B. J. Cohler (Eds.), *The invulnerable child* (pp. 253-288). New York: The Guildford Press.
- Farber, E. A., Vaughn, B., & Egeland, B. (1981). The relationship of prenatal maternal anxiety to infant behavior and mother-infant interaction during the first six months of life. *Early Human Development*, 5(3), 267-277.
- Farmer, T. W., Estell, D. B., Leung, M.-C., Trott, H., Bishop, J., & Cairns, B. D. (2003). Individual characteristics, early adolescent peer affiliations, and school dropout: An examination of aggressive and popular group types. *Journal of School Psychology*, 41(3), 217-232.
- Felsman, J., & Vaillant, G. E. (1987). Resilient children as adults: A 40-year study. In E. J. Anthony & B. J. Cohler (Eds.), *The invulnerable child* (pp. 289-314). New York: The Guildford Press.
- Fergusson, D., & Horwood, L. J. (2003). Resilience to childhood adversity: Results of a 21-year study. In S. Luthar (Ed.), *Resilience and Vulnerability: Adaptation in the context of childhood adversities* (pp. 130-155). Cambridge: Cambridge University Press.
- Fergusson, D., & Lynskey, M. (1996). Adolescent resiliency to family adversity. *Journal of Child Psychology and Psychiatry*, 37(3), 281-292.
- Finn, J. D. (1989). Withdrawing from school. *Review of Educational Research*, 59(2), 117-142.
- Finn, J. D., & Rock, D. A. (1997). Academic success among students at risk for school failure. *Journal of Applied Psychology*, 221.
- Floyd, C. (1996). Achieving despite the odds: A study of resilience among a group of African American high school seniors. *Journal of Negro Education*, 65(2), 181-189.
- Friborg, O., Barlaug, D., Martinussen, M., Rosenvinge, J. H., & Hjemdal, O. (2005). Resilience in relation to personality and intelligence. *International Journal of Methods in Psychiatric Research*, 14(1), 29.
- Friborg, O., Hjemdal, O., Rosenvinge, J. H., & Martinussen, M. (2003). A new rating scale for adult resilience: what are the central protective resources behind healthy adjustment? *International Journal of Methods in Psychiatric Research*, 12(2), 65-76.
- Fuller, A., McGraw, K., & Goodyear, M. (1999). Bungy jumping through life: What young people say promotes their well-being and resilience. *Australian Journal of Guidance and Counselling*, 9(1), 159-167.
- Furstenberg, F., & Hughes, M. E. (1995). Social Capital and Successful Development Among At-Risk Youth. *Journal of Marriage and Family*, 57(3), 580.
- Garity, J. (1997). Stress, learning style, resilience factors, and ways of coping in Alzheimer family caregivers. *American Journal of Alzheimer's Disease*, 12(4), 171-178.
- Garnezy, N. (1971). Vulnerability research and the issue of primary prevention. *American Journal of Orthopsychiatry*, 41(1), 101-116.
- Garnezy, N. (1974a). Children at risk: The search for the antecedents of schizophrenia: II. Ongoing research programs, issues, and intervention. *Schizophrenia Bulletin*(9), 55-125.

- Garnezy, N. (1974b). The study of competence in children at risk for severe psychopathology. In E. Anthony & C. Kopernik (Eds.), *The child in his family* (Vol. 3). New York: Wiley.
- Garnezy, N. (1985). Stress resistant children: The search for protective factors. In J. E. Stevenson (Ed.), *Recent research in developmental psychopathology* (pp. 213-233). Oxford: Pergamon Press.
- Garnezy, N. (1987). Stress, competence, and development: continuities in the study of schizophrenic adults, children vulnerable to psychopathology, and the search for stress-resistant children. *American Journal of Orthopsychiatry*, 57(2), 159-174.
- Garnezy, N. (1991). Resilience in children's adaptation to negative life events and stressed environments. *Pediatric Annals*, 20(9), 459-456.
- Garnezy, N. (1993). Children in poverty: resilience despite risk. *Psychiatry*, 56(1), 127-136.
- Garnezy, N., & Masten, A. S. (1986). Stress, competence, and resilience: Common frontiers for therapist and psychopathologist. *Behavior Therapy*, 17(5), 500-521.
- Garnezy, N., & Streitman, S. (1974). Children at risk: The search for the antecedents of schizophrenia: I. Conceptual models and research methods. *Schizophrenia Bulletin*(8), 14-90.
- Garrison, W. T., & McQuiston, S. (1989). *Chronic illness during childhood and adolescence: Psychological aspects*. Newbury Park: Sage Publications.
- Glantz, M. D., & Sloboda, Z. (1999). Analysis and reconceptualisation of resilience. In M. D. Glantz & J. L. Johnson (Eds.), *Resilience and Development: Positive Life Adaptations* (pp. 109-126). New York: Kluwer Academic/Plenum Publishers.
- Gore, S., & Aseltine, R. H. (1995). Protective processes in adolescence: Matching stressors with social resources. *American Journal of Community Psychology*, 23(3), 301-327.
- Gore, S., & Eckenrode, J. (1996). Context and process in research on risk and resilience. In R. Haggerty, L. Sherrod, N. Garnezy & M. Rutter (Eds.), *Stress, risk and resilience in children and adolescents: Processes, mechanisms and interventions* (pp. 19-63). Cambridge: Cambridge University Press.
- Gorsuch, R. L. (1983). *Factor Analysis* (2nd ed.). London: Lawrence Erlbaum Associates.
- Greenberg, M. (2006). Promoting resilience in children and youth: Preventative interventions and their interface with neuroscience. *Annals New York Academy of Science*, 1094, 139-150.
- Gribble, P., Cowen, E., Wyman, P., Work, W., Wannon, M., & Raof, A. (1993). Parent and child views of parent-child relationship qualities and resilient outcomes among urban children. *Journal of Child Psychology and Psychiatry and Allied Disciplines*, 34(4), 507-519.
- Hanson, C. L., & Onikul-Ross, S. R. (1990). Developmental issues in the lives of youths with insulin-dependent diabetes mellitus. In S. Morgan, T. Okwumabua & e. al (Eds.), *Child and adolescent disorders: Developmental and health psychology perspectives*. (pp. 201-240). Hillsdale, NJ: Lawrence Erlbaum Associates.
- Hartup, W. W. (1983). Peer relations. In E. M. Hetherington (Ed.), *Socialisation, personality and social development* (Vol. 4, pp. 103-196). New York: Wiley.
- Harvey, J., & Delfabbro, P. (2004). Psychological resilience in disadvantaged youth: A critical overview. *Australian Psychologist*, 39(1), 3-13.



- Havighurst, R. J. (1972). *Developmental tasks and education*. New York: D. McKay Co.
- Hawkins, J. D., Van Horn, M. L., & Arthur, M. W. (2004). Community variation in risk and protective factors and substance use outcomes. *Prevention Science, 5*(4), 213-220.
- Heaven, P. (1994). *Contemporary adolescence: a social psychological approach*. South Melbourne: Macmillan Education Australia.
- Herman-Stahl, M., & Petersen, A. C. (1996). The protective role of coping and social resources for depressive symptoms among young adolescents. *Journal of Youth & Adolescence, 25*(6), 733.
- Herman-Stahl, M., & Petersen, A. C. (1999). Depressive symptoms during adolescence: Direct and stress-buffering effects of coping, control beliefs, and family relationships. *Journal of Applied Developmental Psychology, 20*(1), 45-62.
- Hetherington, E. M., Bridges, M., & Insabella, G. M. (1998). What matters? What does not? *American Psychologist, 53*(2), 167.
- Horner, S. D. (2000). Focus on research methods: Using focus group methods with middle school children. *Research in Nursing & Health, 23*(6), 510-517.
- Horton, L. H. (1920). Why nerves fail--two reviews. *The Journal of Abnormal Psychology, 15*(2), 198-207.
- Hoyt-Meyers, L., Cowen, E. L., Work, W. C., Wyman, P. A., Magnus, K. B., Fagen, D. B., et al. (1995). Test correlates of resilient outcomes among highly stressed second- and third-grade urban children. *Journal of Community Psychology, 23*(4), 326-338.
- Humphreys, J. (2003). Resilience in sheltered battered women. *Issues in Mental Health Nursing, 24*(2), 137-152.
- Hunter, A. J., & Chandler, G. E. (1999). Adolescent resilience. *Image - the Journal of Nursing Scholarship, 31*(3), 243-247.
- Jew, C. L., Green, K. E., & Kroger, J. (1999). Development and validation of a measure of resiliency. *Measurement and Evaluation in Counselling and Development, 32*(2), 75-89.
- John, O., & Benet-Martinez, V. (2000). Measurement: Reliability, Construct Validation, and Scale Construction. In H. Reis & C. Judd (Eds.), *Handbook of research methods in social and personality psychology* (pp. 339-369). Cambridge: Cambridge University Press.
- Kaplan, H. (1999). Toward an understanding of resilience: A critical review of definitions and models. In M. D. Glantz & J. L. Johnson (Eds.), *Resilience and Development: Positive Life Adaptations* (pp. 17-83). New York: Kluwer Academic/Plenum Publishers.
- Kaufman, J., Cook, A., Arny, L., Jones, B., & Pittinsky, T. (1994). Problems defining resiliency: Illustrations from the study of maltreated children. *Development & Psychopathology, 6*, 215-229.
- Kim, K. J., Conger, R. D., Elder, G. H. J., & Lorenz, F. O. (2003). Reciprocal influences between stressful life events and adolescent internalizing and externalizing problems. *Child Development, 74*(1), 127-143.
- Kitzinger, J. (1995). Qualitative Research: Introducing focus groups. *British Medical Journal, 311*(7000), 299-302.
- Kleiber, P. B. (2004). Focus groups: More than a method of qualitative inquiry. In K. deMarrais & S. D. Lapan (Eds.), *Foundations for research: methods of inquiry in*

*education and the social sciences* (pp. 87-102). Mahwah, NJ, US: Lawrence Erlbaum Associates, Publishers.

- Kliewer, W. (1997). Children's coping with chronic illness. In S. A. Wolchik, I. N. Sandler & et-al (Eds.), *Handbook of children's coping: Linking theory and intervention. Issues in clinical child psychology*. (pp. 275-300). New York: Plenum Press.
- Kline, P. (2003). *The new psychometrics*. London: Routledge.
- Kline, T. (2005). *Psychological Testing: A Practical Approach to Design and Evaluation*. London: SAGE Publications.
- Kogan, S. M., Luo, Z., Murry, V. M., & Brody, G. H. (2005). Risk and Protective Factors for Substance Use Among African American High School Dropouts. *Psychology of Addictive Behaviors*, 19(4), 382-391.
- Kumpfer, K. (1999). Factors and processes contributing to resilience: The resilience framework. In M. D. Glantz & J. L. Johnson (Eds.), *Resilience and Development: Positive Life Adaptations* (pp. 179-224). New York: Kluwer Academic/Plenum Publishers.
- Kumpfer, K. (2004). Parent/Child Transactional Processes Predictive of Resilience or Vulnerability to "Substance Abuse Disorders". *Substance Use and Misuse*, 39(5), 671-.
- LaFromboise, T. D., Hoyt, D. R., Oliver, L., & Whitbeck, L. B. (2006). Family, community, and school influences on resilience among American Indian adolescents in the upper midwest. *Journal of Community Psychology*, 34(2), 193-209.
- Lansford, J. E., Criss, M. M., Pettit, G. S., Dodge, K. A., & Bates, J. E. (2003). Friendship Quality, Peer Group Affiliation, and Peer Antisocial Behavior as Moderators of the Link Between Negative Parenting and Adolescent Externalizing Behavior. *Journal of Research on Adolescence (Blackwell Publishing Limited)*, 13(2), 161.
- Lavigne, J. V., & Faier-Routman, J. (1992). Psychological adjustment to pediatric physical disorders: a meta-analytic review. *Journal of Pediatric Psychology*, 17(2), 133-157.
- Legault, L., Anawati, M., & Flynn, R. (2006). Factors favouring psychological resilience among fostered young people. *Children & Youth Services Review*, 28(9), 1024.
- Long, D. A., & Perkins, D. D. (2003). Confirmatory factor analysis of the Sense of Community Index and development of a Brief SCI. *Journal of Community Psychology*, 31(3), 279.
- Lopez, S. J., & Snyder, C. R. (Eds.). (2003). *Positive psychological assessment : a handbook of models and measures*. Washington DC.
- Losel, F., & Bliesner, T. (2000). Some High-Risk Adolescents do not Develop Conduct Problems: A Study of Protective Factors. *International Journal of Behavioural Development*, 17(4), 753-777.
- Luthar, S. (1991). Vulnerability and resilience: A study of high-risk adolescents. *Child Development*, 62(3), 600-616.
- Luthar, S. (1993). Annotation: methodological and conceptual issues in research on childhood resilience. *Journal of Child Psychology and Psychiatry*, 34(4), 441-453.
- Luthar, S. (1997). Sociodemographic disadvantage and psychosocial adjustment: Perspectives from developmental psychology. In S. Luthar, J. Burack, D. Cicchetti & J. Weisz (Eds.), *Developmental Psychopathology: Perspectives on adjustment, risk and disorder* (pp. 459-485). Cambridge: Cambridge University Press.

- Luthar, S., Cicchetti, D., & Becker, B. (2000a). The construct of resilience: A critical evaluation and guidelines for future work. *Child Development, 71*(3), 543-562.
- Luthar, S., Cicchetti, D., & Becker, B. (2000b). Research on resilience: Response to commentaries. *Child Development, 71*(3), 573-575.
- Luthar, S., & Cushing, G. (1999). Measurement issues in the empirical study of resilience: An overview. In M. D. Glantz & J. L. Johnson (Eds.), *Resilience and Development: Positive Life Adaptations* (pp. 129-160). New York: Plenum Publishers.
- Luthar, S., Doernberger, C. H., & Zigler, E. (1993). Resilience is not a uni-dimensional construct: Insights from a prospective study of inner-city adolescents. *Development and Psychopathology, 5*(4), 703-717.
- Luthar, S., & Goldstein, A. (2004). Children's Exposure to Community Violence: Implications for Understanding Risk and Resilience. *Journal of Clinical Child & Adolescent Psychology, 33*(3), 499.
- Luthar, S., & Zigler, E. (1991). Vulnerability and competence: A review of research on resilience in childhood. *American Journal of Orthopsychiatry, 61*(1), 6-22.
- Lynch, M., & Cicchetti, D. (1998). An ecological-transactional analysis of children and contexts: The longitudinal interplay among child maltreatment, community violence and children's symptomatology. *Development and Psychopathology, 10*, 235-257.
- Maccoby, E. E. (1992). The role of parents in the socialization of children: An historical overview. *Developmental Psychology, 28*(6), 1006.
- Madan-Swain, A., & Brown, R. T. (1991). Cognitive and psychosocial sequelae for children with acute lymphocytic leukemia and their families. *Clinical Psychology Review, 11*(3), 267-294.
- Mahoney, J. L., & Cairns, R. B. (1997). Do extracurricular activities protect against early school dropout? *Developmental Psychology, 33*(2), 241-253.
- Mahoney, J. L., & Stattin, H. (2000). Leisure activities and adolescent antisocial behavior: The role of structure and social context. *Journal of Adolescence, 23*(2), 113.
- Marta, E. (1997). Parent-adolescent interactions and psychosocial risk in adolescents: An analysis of communication, support and gender. *Journal of Adolescence, 20*(5), 473-487.
- Masten, A. S. (1994). Resilience in individual development: Successful adaptation despite risk and adversity. In M. C. Wang & E. W. Gordon (Eds.), *Educational resilience in inner-city America: Challenges and prospects*. Hillsdale, NJ, US: Lawrence Erlbaum Associates, Publishers.
- Masten, A. S. (2001). Ordinary magic: Resilience processes in development. *American Psychologist, 56*(3), 227-238.
- Masten, A. S. (2004). Regulatory processes, risk, and resilience in adolescent development. *Annals New York Academy of Sciences, 1021*, 310-319.
- Masten, A. S., Best, K. M., & Garmezy, N. (1990). Resilience and development: Contributions from the study of children who overcome adversity. *Development and Psychopathology, 2*(4), 425-444.
- Masten, A. S., & Coatsworth, J. D. (1998). The development of competence in favourable and unfavourable environments: Lessons from research on successful children. *American Psychologist, 53*(2), 205-220.

- Masten, A. S., Coatsworth, J. D., Neemann, J., Gest, S. D., Tellegen, A., & Garmezy, N. (1995). The structure and coherence of competence from childhood through adolescence. *Child Development, 66*(6), 1635-1659.
- Masten, A. S., & Curtis, W. J. (2000). Integrating competence and psychopathology: pathways toward a comprehensive science of adaptation in development. *Development and Psychopathology, 12*(3), 529-550.
- Masten, A. S., Garmezy, N., Tellegen, A., Pellegrini, D. S., & et al. (1988). Competence and stress in school children: The moderating effects of individual and family qualities. *Journal of Child Psychology and Psychiatry and Allied Disciplines, 29*(6), 745-764.
- Masten, A. S., Hubbard, J. J., Gest, S. D., Tellegen, A., Garmezy, N., & Ramirez, M. (1999). Competence in the context of adversity: pathways to resilience and maladaptation from childhood to late adolescence. *Development and Psychopathology, 11*(1), 143-169.
- Masten, A. S., & Powell, J. (2003). A resilience framework for policy and practice. In S. Luthar (Ed.), *Resilience and Vulnerability: Adaptation in the context of childhood adversities* (pp. 1-25). Cambridge: Cambridge University Press.
- Maughan, B. (1988). School experiences as risk/protective factors. In M. Rutter (Ed.), *Studies of psychosocial risk: the power of longitudinal data* (pp. 200-220). New York, NY, US: Cambridge University Press.
- McMillan, D. W., & Chavis, D. M. (1986). Sense of community: A definition and theory. *Journal of Community Psychology, 14*(1), 6-23.
- Menzies, W. F. (1920). Mechanism of Involutionary Melancholia. *Journal of Mental Science, 355*-414.
- Miliotis, D., Sesma, A., Jr., & Masten, A. S. (1999). Parenting as a protective process for school success in children from homeless families. *Early Education & Development, 10*(2), 111-133.
- Millward, L. J. (2000). Focus groups. In G. M. Breakwell, S. Hammond & C. Fife-Schaw (Eds.), *Research methods in psychology* (pp. 303-324). Thousand Oaks, CA,: Sage Publications Ltd.
- Mrazek, P. J., & Mrazek, D. A. (1987). Resilience in child maltreatment victims: a conceptual exploration. *Child Abuse and Neglect, 11*(3), 357-366.
- Mroczek, D. K., & Little, T. D. (Eds.). (2006). *Handbook of Personality Development*: Lawrence Erlbaum Associates.
- Munro, B., & Connell, W. (2005). *Statistical Methods for Health Care Research* (5th ed.). London: Lippincott Williams & Wilkins.
- Murry, V. M., & Brody, G. H. (1999). Self-regulation and self-worth of black children reared in economically stressed, rural, single mother-headed families: the contribution of risk and protective factors. (Special Issue: Single Mothers, Single Fathers). *Journal of Family Issues, 20*(4), 458.
- Newmann, F. M., Wehlage, G. G., & Lamborn, S. D. (1992). Student engagement and achievement in American secondary schools. In F. M. Newmann (Ed.), *Student engagement and achievement in American secondary schools*. New York: Teachers College Press.
- Nowicki, S., & Strickland, B. (1973). A locus of control scale for children. *Journal of Consulting and Clinical Psychology, 40*, 148-154.

- Nuechterlein, K. H., Phipps-Yonas, S., Driscoll, R., & Garnezy, N. (1990). Vulnerability factors in children at risk: Anomalies in attentional functioning and social behavior. In J. Rolf, A. S. Masten, D. Cicchetti, K. Nuechterlein & S. Weintraub (Eds.), *Risk and protective factors in the development of psychopathology* (pp. 445-479). New York,: Cambridge University Press.
- Nygren, B., Alex, L., Jonsen, E., Gustafson, Y., Norberg, A., & Lundman, B. (2005). Resilience, sense of coherence, purpose in life and self-transcendence in relation to perceived physical and mental health among the oldest old. *Aging & Mental Health*, 9(4), 354-362.
- O'Donnell, D. A., Schwab-Stone, M. E., & Muyeed, A. Z. (2002). Multidimensional Resilience in Urban Children Exposed to Community Violence. *Child Development*, 73(4), 1265.
- Olsson, C., Bond, L., Burns, J., Vella-Broderick, D., & Sawyer, S. (2003). Adolescent resilience: A concept analysis. *Journal of Adolescence*, 26(1), 1-11.
- Osterman, K. F. (2000). Students' Need for Belonging in the School Community. *Review of Educational Research*, 70(3), 323.
- Owens, E. B., Shaw, D. S., Giovannelli, J., Garcia, M. M., & Yaggi, K. (1999). Factors associated with behavioral competence at school among young boys from multi-problem low-income families. *Early Education and Development*, 10(2), 135-162.
- Parke, R. D. (2004). Development in the family. *Annual Review of Psychology*, 55, 365-399.
- Parker, G., Cowen, E., Work, W., & Wyman, P. (1990). Test correlates of stress-resilience among urban school children. *Journal of Primary Prevention*, 11(1), 19-35.
- Patton, G., Glover, S., Bond, L., Butler, H., Godfrey, C., Pietro, G. D., et al. (2000). The Gatehouse Project: a systematic approach to mental health promotion in secondary schools. *Australian & New Zealand Journal of Psychiatry*, 34(4), 586.
- Perkins, D. D., & Long, D. A. (2002). Neighborhood sense of community and social capital: A multi-level analysis. In Adrian T. Fisher, Christopher C. Sonn & B. J. Bishop (Eds.), *Psychological sense of community: Research, applications and implications* (pp. 291-318). New York, US: Kluwer Academic/Plenum Publishers.
- Pooley, J. A., Cohen, L., & Pike, L. T. (2005). Can sense of community inform social capital? *Social Science Journal*, 42(1), 71.
- Prior, M., Smart, D., Sanson, A., & Oberklaid, F. (2001). Longitudinal predictors of behavioural adjustment in pre-adolescent children. *Australian and New Zealand Journal of Psychiatry*, 35(3), 297-307.
- Regnerus, M. D., & Elder, G. H. (2003). Staying on Track in School: Religious Influences in High- and Low-Risk Settings. *Journal for the Scientific Study of Religion*, 42(4), 633.
- Rew, L., Taylor-Seehafer, M., Thomas, N. Y., & Yockey, R. D. (2001). Correlates of Resilience in Homeless Adolescents. *Journal of Nursing Scholarship*, 33(1), 33.
- Richardson, G. E., Neiger, B., Jensen, S., & Kumpfer, K. (1990). The resiliency model. *Health Education*, 21, 33-39.
- Rodgers, K. B., & Rose, H. A. (2002). Risk and Resiliency Factors Among Adolescents Who Experience Marital Transitions. *Journal of Marriage and Family*, 64(4), 1024-1037.

- Rumberger, R. W. (1995). Dropping out of middle school: A multilevel analysis of students and schools. *American Educational Research Journal*, 32(3), 583-625.
- Rutter, M. (1979). Protective factors in children's responses to stress and disadvantage. In M. Kent & J. Rolf (Eds.), *Primary Prevention of Psychopathology* (Vol. 3). Hanover, NH: University Press of New England.
- Rutter, M. (1985a). Family and school influences on behavioural development. *Journal of Child Psychology and Psychiatry and Allied Disciplines*, 26(3), 349.
- Rutter, M. (1985b). Family and school influences on cognitive development. *Journal of Child Psychology and Psychiatry*, 26(5), 683-704.
- Rutter, M. (1985c). Resilience in the face of adversity. Protective factors and resistance to psychiatric disorder. *British Journal of Psychiatry*, 147, 598-611.
- Rutter, M. (1987). Psychosocial resilience and protective mechanisms. *American Journal of Orthopsychiatry*, 57(3), 316-331.
- Rutter, M. (1993). Resilience: some conceptual considerations. *Journal of Adolescent Health*, 14(8), 626-626.
- Rutter, M. (1994). *Fifteen thousand hours: Secondary schools and their effects on children*. London: P.Chapman Publishers.
- Rutter, M. (1999). Resilience concepts and findings: Implications for family therapy. *The Association for Family Therapy and Systemic Practice*, 21, 119-144.
- Rutter, M. (2000). Psychosocial influences: Critiques, findings and research needs. *Development and Psychopathology*, 12, 375-405.
- Rutter, M., & Quinton, D. (1984a). Long-term follow-up of women institutionalised in childhood: Factors promoting good functioning in adult life. *British Journal of Developmental Psychology*, 2(3), 191-204.
- Rutter, M., & Quinton, D. (1984b). Parental psychiatric disorder: Effects on children. *Psychological Medicine*, 14(4), 853-880.
- Rutter, M., Quinton, D., & Hill, J. (1990). Adult outcome of institution-reared children: Males and females compared. In L. N. Robins & M. Rutter (Eds.), *Straight and devious pathways from childhood to adulthood*. (pp. 135-157). New York: Cambridge University Press.
- Rutter, M., & Sroufe, A. (2000). Developmental psychopathology: Concepts and challenges. *Reflecting on the past and planning for the future of developmental psychopathology*  
*Development and Psychopathology*, 12(3), 265-296.
- Ryan, A. M. (2000). Peer groups as a context for the socialisation of adolescents' motivation, engagement and achievement in school. *Educational Psychologist*, 35(2), 101-111.
- Sameroff, A. J. (2000). Developmental systems and psychopathology. *Development and Psychopathology*, 12(3), 297-312.
- Sameroff, A. J., Bartko, W. T., Baldwin, A., Baldwin, C., & Seifer, R. (1998). Family and social influences on the development of child competence. In M. Lewis & C. Feiring (Eds.), *Families, risk, and competence* (pp. 161-185). Mahwah, NJ: Lawrence Erlbaum Associates.

- Sameroff, A. J., & Mackenzie, M. (2003). Research strategies for capturing transactional models of development: The limits of the possible. *Development and Psychopathology, 15*(3), 613-640.
- Sameroff, A. J., & Seifer, R. (1995). Accumulation of environmental risk and child mental health. In H. E. Fitzgerald & B. M. Lester (Eds.), *Children of poverty: Research, health, and policy issues*. (Vol. 23, pp. 233-258). New York, NY, US: Garland Publishing, Inc.
- Sameroff, A. J., Seifer, R., & Barocas, R. (1983). Impact of parental psychopathology: Diagnosis, severity, or social status effects. *Infant Mental Health Journal, 4*(3), 236-249.
- Sameroff, A. J., Seifer, R., Zax, M., & Barocas, R. (1987). Early indicators of developmental risk: Rochester Longitudinal Study. *Schizophrenia Bulletin, 13*(3), 383-394.
- Sandler, I., Wolchik, S., Davis, C., Haine, R., & Ayers, T. (2003). Correlational and experimental study of resilience in children of divorce and parentally bereaved children. In S. Luthar (Ed.), *Resilience and Vulnerability: Adaptation in the context of childhood adversities* (pp. 213-240). Cambridge: Cambridge University Press.
- Sanson, A., Oberklaid, F., Pedlow, R., & Prior, M. (1991). Risk indicators: Assessment of infancy predictors of pre-school behavioural maladjustment. *Journal of Child Psychology and Psychiatry, 32*(4), 609-626.
- Sanson, A., Smart, D., Prior, M., & Oberklaid, F. (1993). Precursors of hyperactivity and aggression. *Journal of the American Academy of Child & Adolescent Psychiatry, 32*(6), 1207-1216.
- Scaramella, L., Conger, R., Spoth, R., & Simons, R. (2002). Evaluation of a Social Contextual Model of Delinquency: A Cross-Study Replication. *Child Development, 73*(1), 175.
- Scheier, M. F., & Carver, C. S. (1993). On the Power of Positive Thinking: The Benefits of Being Optimistic. *Current Directions in Psychological Science, 2*(1), 26.
- Schwartz, D., & Proctor, L. J. (2000). Community Violence Exposure and Children's Social Adjustment in the School Peer Group : The Mediating Roles of Emotion Regulation and Social Cognition. *Journal of Consulting and Clinical Psychology, 68*(4), 670.
- Seidman, E., & Pederson, S. (2003). Holistic contextual perspectives on risk, protection and competence among low-income urban adolescents. In S. Luthar (Ed.), *Resilience and Vulnerability: Adaptation in the context of childhood adversities* (pp. 318-342). Cambridge: Cambridge University Press.
- Seifer, R., & Sameroff, A. J. (1987). Multiple determinants of risk and invulnerability. In E. J. Anthony & B. J. Cohler (Eds.), *The invulnerable child* (pp. 51-69). New York: The Guilford Press.
- Seifer, R., Sameroff, A. J., Baldwin, C. P., & Baldwin, A. (1992). Child and family factors that ameliorate risk between 4 and 13 years of age. *Journal of the American Academy of Child and Adolescent Psychiatry, 31*(5), 893-903.
- Shields, A., & Cicchetti, D. (1998). Reactive aggression among maltreated children: The contributions of attention and emotion dysregulation. *Journal of Clinical Child Psychology, 27*(4), 381-395.

- Shiner, R. L., Masten, A. S., & Tellegen, A. (2002). A developmental perspective on personality in emerging adulthood: Childhood antecedents and concurrent adaptation. *Journal of Personality and Social Psychology*, 83(5), 1165-1177.
- Shucksmith, J., & Hendry, L. B. (1998). *Health issues and adolescents: growing up, speaking out*. London: Routledge.
- Simons, L., Simons, R., & Conger, R. (2004). Identifying the Mechanisms whereby Family Religiosity Influences the Probability of Adolescent Antisocial Behavior. *Journal of Comparative Family Studies*, 35(4), 547.
- Simons, R., Lin, K.-H., Gordon, L., Conger, R., & Lorenz, F. (1999). Explaining the Higher Incidence of Adjustment Problems Among Children of Divorce Compared with Those in Two-Parent Families. *Journal of Marriage and Family*, 61(4), 1020.
- Simons, R., Wu, C.-I., Conger, R., & Lorenz, F. (1994). Two routes to delinquency: Difference between early and late starters in the impact of parenting and deviant peers. *Criminology*, 32(2), 247.
- Smith, J., & Prior, M. (1995). Temperament and stress resilience in school-age children: A within-families study. *Journal of the American Academy of Child and Adolescent Psychiatry*, 34(2), 168-179.
- Sonn, C. C., & Fisher, A. T. (1998). Sense of community: Community resilient responses to oppression and change. *Journal of Community Psychology*, 26(5), 457-472.
- Spaccarelli, S., & Kim, S. (1995). Resilience criteria and factors associated with resiliency in sexually abused girls. *Child Abuse and Neglect*, 19(9), 1171-1182.
- Springer, S. A., & Gastfriend, D. R. (1995). A pilot study of factors associated with resilience to substance abuse in adolescent sons of alcoholic fathers. *Journal of Addictive Diseases*, 14(2), 53-66.
- Sroufe, L. A., Egeland, B., Carlson, E. A., & Collins, W. A. (2005). *The development of the person: The Minnesota study of risk and adaptation from birth to adulthood*. New York, US: Guilford Publications, Inc.
- Sroufe, L. A., Egeland, B. R., & Carlson, E. (1999). One social world: The integrated development of parent-child and peer relationships. In W. A. Collins & B. Laursen (Eds.), *Relationships as developmental contexts: The Minnesota Symposia on child psychology* (Vol. 30, pp. 241-261). New Jersey: Lawrence Erlbaum Associates, Publishers.
- Steinberg, L. (2000). The family at adolescence: Transition and transformation. *Journal of Adolescent Health*, 27(3), 170.
- Steinberg, L., & Silverberg, S. B. (1986). The vicissitudes of autonomy in early adolescence. *Child development*, 57(4), 841.
- Stewart, D., & Sun, J. (2004). How can we Build Resilience in Primary School Aged Children? The Importance of Social Support from Adults and Peers in Family, School and Community Settings. *Asia-Pacific Journal of Public Health*, 16(Suppl), S37-S41.
- Streiner, D., & Norman, G. (1996). *Health measurement scales: A practical guide to their development and use* (2nd ed.). Oxford: Oxford University Press.
- Surtees, P. G. (1980). Social support, residual adversity and depressive outcome. *Social Psychiatry*, 15(2), 71-80.



- Surtees, P. G. (1997). Adversity, vulnerability and depression. *Stress Medicine*, 13(3), 185-191.
- Tabachnick, B., & Fidell, L. (2007). *Using Multivariate Statistics* (5th ed.). New York: Pearson.
- Thomas, C. B. (1968). *Temperament and Behavior Disorders in Children*. New York: New York University Press.
- Tiet, Q. Q., Bird, H. R., Davies, M., Hoven, C., Cohen, P., Jensen, P. S., et al. (1998). Adverse life events and resilience. *Journal of the American Academy of Child and Adolescent Psychiatry*, 37(11), 1191-1200.
- Tinto, V. (1993). Leaving college rethinking the causes and cures of student attrition. *Leaving college, 2nd ed.*
- Tolan, P. T. (1996). How resilient is the concept of resilience. *The Community Psychologist*, 29, 12-13.
- Turner, R., Frankel, B., & Levin, D. (1983). Social Support: Conceptualisation, measurement and implications for mental health. *Research in Community and Mental Health*, 3, 67-111.
- Vaillant, G. E., & Davis, J. T. (2000). Social/emotional intelligence and midlife resilience in schoolboys with low tested intelligence. *American Journal of Orthopsychiatry*, 70(2), 215-222.
- Wagnild, G. M., & Young, H. M. (1990). Resilience among older women. *Journal of Nursing Scholarship*, 22, 252-255.
- Wagnild, G. M., & Young, H. M. (1993). Development and psychometric evaluation of the Resilience Scale. *Journal of Nursing Measurement*, 1(2), 165-178.
- Wentzel, K. R. (1994). Family functioning and academic achievement in middle school. *Journal of Early Adolescence*, 14(2), 268.
- Wentzel, K. R. (1997). Student motivation in middle school: The role of perceived pedagogical caring. *Journal of Educational Psychology*, 89(3), 411.
- Wentzel, K. R. (1998). Social relationships and motivation in middle school: The role of parents, teachers, and peers. *Journal of Educational Psychology*, 90(2), 202-209.
- Werner, E. E. (1986). The concept of risk from a developmental perspective. *Advances in Special Education*, 5, 1-23.
- Werner, E. E. (1987). Vulnerability and resiliency in children at risk for delinquency: A longitudinal study from birth to young adulthood. In J. D. Burchard & S. N. Burchard (Eds.), *Prevention of delinquent behavior*. (Vol. 10, pp. 16-43). Thousand Oaks, CA: Sage Publications.
- Werner, E. E. (1988). Individual differences, universal needs: A 30-year study of resilient high risk infants. *Zero to Three*, 8(4), 1-5.
- Werner, E. E. (1990). High-risk children in young adulthood: A longitudinal study from birth to 32 years. *Annual Progress in Child Psychiatry and Child Development*, 180-193.
- Werner, E. E. (1995). Resilience in development. *American Psychological Society*.
- Werner, E. E. (1996). Vulnerable but invincible: High risk children from birth to adulthood. *European Child and Adolescent Psychiatry*, 5(Suppl 1), 47-51.

- Werner, E. E., & Smith, R. S. (1992). *Overcoming the odds: High risk children from birth to adulthood*. Ithaca, NY, US: Cornell University Press.
- Werner, E. E., & Smith, R. S. (2001). Journeys from childhood to midlife: Risk, resilience, and recovery., 2001.
- Wilkinson, S. (2005). Using focus groups: Exploring the meanings of health and illness. In J. Miles & P. Gilbert (Eds.), *A handbook of research methods for clinical and health psychology*. New York: Oxford University Press.
- Wilson, B. J., & Gottman, J. M. (1996). Attention - the shuttle between emotion and cognition: Risk, resiliency, and physiological bases. In E. M. Hertherington & E. Blechman (Eds.), *Stress, coping and resiliency in children and families* (pp. 245). Hillsdale, NJ: Lawrence Erlbaum Associates.
- Windle, M. (1999). Critical conceptual and measurement issues in the study of resilience. In M. D. Glantz & J. L. Johnson (Eds.), *Resilience and Development: Positive Life Adaptations* (pp. 160-176). New York: Kluwer Academic/Plenum Publishers.
- Wolfe, S. (1995). The concept of resilience. *Australian and New Zealand Journal of Psychiatry*, 29(4), 565-574.
- Work, W., Cowen, E., Parker, G., & Wyman, P. (1990). Stress resilient children in an urban setting. *Journal of Primary Prevention*, 11(1), 3-17.
- Wyman, P. (2003). Emerging perspectives on context specificity of children's adaptation and resilience: Evidence from a decade of research with urban children in adversity. In S. Luthar (Ed.), *Resilience and Vulnerability: Adaptation in the context of childhood adversities* (pp. 292-317). Cambridge: Cambridge University Press.
- Wyman, P., Cowen, E., Work, W., Hoyt Meyers, L., Magnus, K., & Fagen, D. (1999). Caregiving and developmental factors differentiating young at-risk urban children showing resilient versus stress-affected outcomes: A replication and extension. *Child Development*, 70(3), 645-659.
- Wyman, P., Cowen, E., Work, W., & Kerley, J. (1993). The role of children's future expectations in self esteem functioning and adjustment to life stress: A prospective study of urban at-risk children. *Development and Psychopathology*, 5(4), 649-661.
- Wyman, P., Cowen, E., Work, W., Raoof, A., Gribble, P., Parker, G., et al. (1992). Interviews with children who experienced major life stress: Family and child attributes that predict resilient outcomes. *Journal of the American Academy of Child and Adolescent Psychiatry*, 31(5), 904-910.
- Yates, T., Egeland, B. R., & Sroufe, L. A. (2003). Rethinking resilience: A developmental process perspective. In S. Luthar (Ed.), *Resilience and Vulnerability: Adaptation in the context of childhood adversities* (pp. 243-266). Cambridge: Cambridge University Press.

## **APPENDICES**

## A. Focus group information letters and consent forms

### A.1 Parent information letter

Dear parent,

The Chronic Illness Peer Support (ChIPS) program has been running at the Centre for Adolescent Health since 1992. The ChIPS program gives young people with a chronic illness an opportunity to talk about it with the other young people.

The Centre for Adolescent Health continues to look at how best to support young people living with a chronic illness. This year we are developing a questionnaire to find out how having a chronic illness might affect friendships, family and school life. This questionnaire will help health professionals and others working with the young people to better understand how to support them.

We would like to invite your son/daughter to help us to develop the 'new' questionnaire by participating in a discussion group with 6-8 other young people. The group will discuss what it is like to have a chronic illness and how this may affect them, their friendships, family and school life. Your son/daughter's contribution to the project will be confidential. Your child will not be identified by name in any part of the project.

If your son or daughter is less than 18 years of age we need your written permission for them to take part in the project. Please fill out and return the consent form showing whether you DO or DO NOT wish them to take part in this study. We have also asked your son/daughter to give their consent if they wish to take part.

Your son/daughter is free to withdraw from the project at any time without giving a reason. If you do not want your child to take part in this study, your decision will not affect your child's care at the Centre for Adolescent Health, the Royal Children's Hospital or participation in the ChIPS program.

If you have any concerns or questions please call Craig Olsson on 9345 6250 or Deirdre Gartland on 9345 6902. We look forward to hearing from you.

Craig Olsson

ChIPS Program leader

Mark Boyce

ChIPS Coordinator

Deirdre Gartland

Researcher

Dr Susan Sawyer

Senior Researcher

### What are my child's rights as a Participant?

- I am informed that no information regarding my child's medical history will be released. This is subject to legal requirements.
- I am informed that all of my child's answers to the questionnaire will be kept confidential and anonymous. No information from the discussion groups will be reported so that my child can be identified.
- I understand that the purpose of this research project is to improve the understanding of how best to support young people with a chronic illness and may not be of any direct benefit to my child personally.
- I understand that this project follows the guidelines of the National Health and Medical Research Council Statement on Human Experimentation (1992).
- I understand that this research project has been approved by the Royal Children's Hospital Ethics in Human Research Committee on behalf of the Women's and Children's Health Care Network Board.
- I have received a copy of this document.

If you require any more information or have concerns related to this study, please contact:

Deirdre Gartland or Craig Olsson  
Centre for Adolescent Health  
Phone: 9345 6250 or 9345 7922

If you have an enquiry regarding patient rights contact:

The Secretariat  
RCH Ethics in Human Research Committee  
Phone: 9345 5044



Centre for  
**ADOLESCENT  
HEALTH**

## A.2 Participant information letter

Dear ChIPS participant,

This year we are developing a questionnaire to look at how having a chronic illness might affect you, friendships, family and school life. The questionnaire will help health professionals and others working with chronically ill young people to better understand what it means to live with a chronic medical condition.

We want your help to develop a questionnaire that works! We would like some young people to participate in small discussion groups of 6-8 adolescents to tell us about what it is like to have a chronic illness and how this may affect you, your friendships, family and school life.

Your contribution to the project will be confidential. You will not be identified by name in any part of the project.

If you want to participate, we will need written permission from you and your parent/guardian (unless you are over 18 years of age). Please return the consent form showing whether you DO or DO NOT wish to take part in the project. Please give the enclosed *parent* letter and consent form to your parent to sign and return both consent forms in the enclosed reply paid envelope.

You are free to withdraw from the project at any time without giving a reason. If you do not want to take part in this study, your decision will not affect your care at the Centre for Adolescent Health, the Royal Children's Hospital or your participation in ChIPS.

If you have any concerns or questions please call Craig Olsson on 9345 6250 or Deirdre Gartland on 9345 7922 at the Centre for Adolescent Health.

We look forward to hearing from you.

Craig Olsson

ChIPS Program leader

Mark Boyce

ChIPS Coordinator

Deirdre Gartland

Researcher

Dr Susan Sawyer

Senior Researcher

### What are my rights as a Participant?

- I am informed that no information regarding my medical history will be released. This is subject to legal requirements.
- I am informed that all of my answers to the questionnaire will be kept confidential and anonymous. No information from the discussion groups will be reported so that I could be identified.
- I understand that the purpose of this research project is to improve the understanding of how best to support young people with a chronic illness and that this may not directly benefit me personally.
- I understand that this project follows the guidelines of the National Health and Medical Research Council Statement on Human Experimentation (1992).
- I understand that this research project has been approved by the Royal Children's Hospital Ethics in Human Research Committee on behalf of the Women's and Children's Health Care Network Board.
- I have received a copy of this document.

If you require any more information or have any concerns related to this study, please contact:

Craig Olsson or Deirdre Gartland  
Centre for Adolescent Health  
Phone: 9345 6250 or 9345 7922

If you have an enquiry regarding patient rights contact:

The Secretariat  
RCH Ethics in Human Research Committee  
Phone: 9345 5044



A.3 *Parent Consent Form*

I \_\_\_\_\_ (Your full name)

parent/guardian of \_\_\_\_\_ (Name of child)

Please tick:

DO CONSENT

DO NOT CONSENT

to him/her taking part in the development of the Adolescent Resilience Questionnaire (ARQ) which has been explained to me in the attached letter.

I understand that I am free to withdraw my child from the study at any time without explanation and that nonparticipation in this study will not in any way affect my child's access to the best available treatment and care at the Centre for Adolescent Health or the Royal Children's Hospital.

Signature: \_\_\_\_\_ Date: \_\_\_\_\_



A.4 Participant Consent Form

I \_\_\_\_\_  
(Your full name)

Please tick:

DO CONSENT

DO NOT CONSENT

to taking part in the development of the ARQ-Pilot which has been explained to me in the attached letter. I

understand that I am free to withdraw from the study at any time without explanation and that non-participation in this study will not in any way affect my access to the best available treatment and care at the Centre for Adolescent Health or the Royal Children's Hospital.

Signature

Date

If wanting to participate please indicate your preferred time(s):

- 4:30 - 6pm or  5:30 - 7pm on 19<sup>th</sup> October  
 4:30 - 6pm or  5:30 - 7pm on 14<sup>th</sup> November  
 4:30 - 6pm or  5:30 - 7pm on 18<sup>th</sup> November  
 4:30 - 6pm or  5:30 - 7pm on 19<sup>th</sup> November

**Thank-you**

B. The Pilot Adolescent Resilience Questionnaire.

**Adolescent Resilience Questionnaire**



- ❖ Your answers to this questionnaire are confidential. **YOU DO NOT NEED TO WRITE YOUR NAME.**
- ❖ There are no right or wrong answers. We are interested in your experiences.
- ❖ Please be as truthful as you can.
- ❖ Please read each line carefully and circle the number that most closely tells us how often each statement is true for you.

For example, if you like the hot weather *some of the time* you should circle number 2.

	All the time	Some of the time	Most of the time	Not often	Never
I like hot weather	1	2	3	4	5

If you don't like hot weather at all, you should circle 5 (*Never*).

**Thank you very much for taking the time to complete this questionnaire.**

The following statements are about you, your family, friends, school and neighbourhood. The statements may or may not be true for you. Please circle the number that is closest to **how it is for you**.

About you...	All the time	Most of the time	Some times	Not often	Never
1. I enjoy meeting new people.....	1	2	3	4	5
2. I try to live a healthy life.....	1	2	3	4	5
3. I have trouble explaining how I am feeling.....	1	2	3	4	5
4. I enjoy spending time by myself.....	1	2	3	4	5
5. I feel helpless when faced with a problem.....	1	2	3	4	5
6. I try to find meaning in the things that happen to me.....	1	2	3	4	5
7. People who know me think that I am understanding.....	1	2	3	4	5
8. I am not happy unless things are perfect.....	1	2	3	4	5
9. I keep my problems to myself.....	1	2	3	4	5
10. I think about what things might be like for other people.....	1	2	3	4	5
11. I can stand up for myself when there is a problem.....	1	2	3	4	5
12. When things go wrong I give myself a hard time.....	1	2	3	4	5
13. I try to make the best out of situations.....	1	2	3	4	5
14. If something upsets me it affects how I feel about everything	1	2	3	4	5
15. I am a private person when it comes to how I feel.....	1	2	3	4	5
16. If I have a problem, I know there is someone I can talk to.....	1	2	3	4	5
17. I find it difficult to cope when things change unexpectedly.....	1	2	3	4	5
18. I feel hopeful about my life.....	1	2	3	4	5
19. If something is becoming a problem I try to ignore it.....	1	2	3	4	5
20. I push myself too hard to do what everyone else does.....	1	2	3	4	5
21. Seeing the funny side of situations helps me when things get bad	1	2	3	4	5
22. I feel obliged to do the right thing by others.....	1	2	3	4	5
23. I look for what I can learn from bad things that happen.....	1	2	3	4	5
24. I try to take a relaxed approach to things .....	1	2	3	4	5
25. I feel confident that I will have a romantic relationship.....	1	2	3	4	5
26. I have a hard time getting along with others.....	1	2	3	4	5
27. I listen carefully to my friends when they have problems.....	1	2	3	4	5
28. When people say nice things about me I find it hard to believe them.....	1	2	3	4	5
29. I like to think about why things happen the way they do.....	1	2	3	4	5
30. If I have a problem I deal with it by myself.....	1	2	3	4	5
31. I feel that I have little control over the things that happen to me	1	2	3	4	5
32. I worry about what people are thinking about me.....	1	2	3	4	5
33. I find it hard to express myself to others.....	1	2	3	4	5
34. I am a good listener.....	1	2	3	4	5
35. I carefully consider all options before making decisions.....	1	2	3	4	5

	All the time	Most of the time	Some times	Not often	Never
36. When I make a mistake I feel that I am a hopeless person.....	1	2	3	4	5
37. I am forgiving of other people.....	1	2	3	4	5
38. I tend to think the worst is going to happen.....	1	2	3	4	5
39. I understand why I feel the way I do.....	1	2	3	4	5
40. I make friends easily.....	1	2	3	4	5
41. I worry about the future.....	1	2	3	4	5
42. If I get upset, I know how to make myself feel better.....	1	2	3	4	5
43. If I can't handle something I find help.....	1	2	3	4	5
44. I find it easy to talk to people.....	1	2	3	4	5
45. If one approach to a problem doesn't work, I find it hard to think of other ideas.....	1	2	3	4	5
46. Even if it isn't clear to me I believe things happen for a reason	1	2	3	4	5
47. I easily get frustrated with people.....	1	2	3	4	5
48. I take it easy on myself when I am not feeling well.....	1	2	3	4	5

Please feel free to comment on any of these statements:

---



---

About family...	All the time	Most of the time	Some times	Not ofte	Never
1. I enjoy spending time with my family.....	1	2	3	4	5
2. My family is caring.....	1	2	3	4	5
3. My family understand my needs.....	1	2	3	4	5
4. My family is over-protective of me.....	1	2	3	4	5
5. I feel close to my family.....	1	2	3	4	5
6. My family puts me down.....	1	2	3	4	5
7. My family is there for me when I need them.....	1	2	3	4	5
8. I can be honest with my family about how I feel.....	1	2	3	4	5
9. My family listens to me.....	1	2	3	4	5
10. I have a say in family decisions.....	1	2	3	4	5
11. There is someone in my family that I feel very close too.....	1	2	3	4	5
12. If I have a problem there is someone in my family I can talk to	1	2	3	4	5
13. The amount of time I spend doing things with my family is.....	Too little	About right		Too much	

Please feel free to comment on any of these statements:

---



---

### About friends...

	All the time	Most of the time	Some times	Not often	Never
1. My friends are caring and supportive.....	1	2	3	4	5
2. I have fun with my friends.....	1	2	3	4	5
3. My friends like doing the same things as me.....	1	2	3	4	5
4. My friends leave me out of things.....	1	2	3	4	5
5. I have a group of friends that I keep in touch with.....	1	2	3	4	5
6. I have a friend(s) that I feel close to.....	1	2	3	4	5
7. I have a friend(s) that I can talk to about anything.....	1	2	3	4	5
8. The amount of time I spend with my friend(s) is.....	Too little		About right	Too much	

Please feel free to comment on any of these statements:

---



---



---

### About school or higher education...

If you are in higher education, please read 'university' for 'school'. (If you are not attending school or university/TAFE please go to the next section about your neighbourhood.)

	All the time	Most of the time	Some times	Not often	Never
1. I have a teacher that I feel looks out for me.....	1	2	3	4	5
2. My teachers are caring and supportive.....	1	2	3	4	5
3. My teachers expect too much of me.....	1	2	3	4	5
4. My teachers provide me with extra help if I need it.....	1	2	3	4	5
5. I feel left out at school.....	1	2	3	4	5
6. I get involved with school activities.....	1	2	3	4	5
7. Doing well at school is important to me.....	1	2	3	4	5
8. I feel safe at school.....	1	2	3	4	5
9. I get bullied or teased at school.....	1	2	3	4	5
10. I hate going to school.....	1	2	3	4	5
11. There is an adult at school that I could talk to if I had a personal problem.....	Yes	No			

Please feel free to comment on any of these statements:

---



---



---

**About the area you live in, your neighbourhood or community...**

	All the time	Most of the time	Some times	Not often	Never
1. I trust the people in my neighbourhood.....	1	2	3	4	5
2. I feel isolated in my neighbourhood.....	1	2	3	4	5
3. People in my neighbourhood go out of their way to help.....	1	2	3	4	5
4. People in my neighbourhood are caring.....	1	2	3	4	5
5. I like my neighbourhood.....	1	2	3	4	5
6. I like the people in my neighbourhood.....	1	2	3	4	5
7. I am part of a social group in my neighbourhood which is not run by my school (eg sports club, girl guides).....	<b>Yes</b>	<b>No</b>			
8. There is an adult in my neighbourhood that I could talk to if I had a personal problem (eg neighbour, family friend).....	<b>Yes</b>	<b>No</b>			

Please feel free to comment on any of these statements:

---



---



---

### Part III. Some questions about you...

1. How old are you? \_\_\_\_\_
2. Are you:
 

<input type="checkbox"/> Male	<input type="checkbox"/> Female
-------------------------------	---------------------------------
3. At this stage in your life what are you doing: (Tick as many as apply)
 

<input type="checkbox"/> Attending school	<input type="checkbox"/> Working part time
<input type="checkbox"/> Attending university/TAFE	<input type="checkbox"/> Working full time
<input type="checkbox"/> Unemployed	<input type="checkbox"/> Not working/at school due to illness
<input type="checkbox"/> Other _____	
4. Who do you live with? (Tick as many as apply)
 

<input type="checkbox"/> Mother	<input type="checkbox"/> Father
<input type="checkbox"/> Step mother	<input type="checkbox"/> Step father
<input type="checkbox"/> Sister(s) How many? _____	<input type="checkbox"/> Brother(s) How many? _____
<input type="checkbox"/> Partner	<input type="checkbox"/> Other _____
5. Your mothers highest level of education:
 

<input type="checkbox"/> Primary School	<input type="checkbox"/> Technical /TAFE
<input type="checkbox"/> Secondary School	<input type="checkbox"/> Apprenticeship
<input type="checkbox"/> University	<input type="checkbox"/> Other _____
<input type="checkbox"/> Don't know (What is your mum's job? _____)	
6. Your fathers highest level of education:
 

<input type="checkbox"/> Primary School	<input type="checkbox"/> Technical /TAFE
<input type="checkbox"/> Secondary School	<input type="checkbox"/> Apprenticeship
<input type="checkbox"/> University	<input type="checkbox"/> Other _____
<input type="checkbox"/> Don't know (What is your dad's job? _____)	

### If you have a chronic illness...

<ol style="list-style-type: none"> <li>1. What illness(es) do you have? _____</li> <li>2. How often does your illness:           <table style="width: 100%; border: none;"> <tr> <td style="width: 60%;">Cause difficulties in your daily life.....</td> <td style="width: 10%; text-align: center;">1</td> <td style="width: 10%; text-align: center;">2</td> <td style="width: 10%; text-align: center;">3</td> <td style="width: 10%; text-align: center;">4</td> <td style="width: 10%; text-align: center;">5</td> </tr> <tr> <td>Interfere with your enjoyment of life.....</td> <td style="text-align: center;">1</td> <td style="text-align: center;">2</td> <td style="text-align: center;">3</td> <td style="text-align: center;">4</td> <td style="text-align: center;">5</td> </tr> </table> </li> <li>3. Because of your illness:           <table style="width: 100%; border: none;"> <tr> <td style="width: 60%;">Do you need physical aids (e.g. crutches, wheelchair, braces)</td> <td style="width: 10%; text-align: center;">1</td> <td style="width: 10%; text-align: center;">2</td> <td style="width: 10%; text-align: center;">3</td> <td style="width: 10%; text-align: center;">4</td> <td style="width: 10%; text-align: center;">5</td> </tr> <tr> <td>Do you have special needs (eg places to inject, rest rooms)</td> <td style="text-align: center;">1</td> <td style="text-align: center;">2</td> <td style="text-align: center;">3</td> <td style="text-align: center;">4</td> <td style="text-align: center;">5</td> </tr> </table> </li> </ol>	Cause difficulties in your daily life.....	1	2	3	4	5	Interfere with your enjoyment of life.....	1	2	3	4	5	Do you need physical aids (e.g. crutches, wheelchair, braces)	1	2	3	4	5	Do you have special needs (eg places to inject, rest rooms)	1	2	3	4	5	<table style="width: 100%; border: none;"> <thead> <tr style="background-color: #e0e0e0;"> <th style="padding: 5px;">All the time</th> <th style="padding: 5px;">Most of the time</th> <th style="padding: 5px;">Some times</th> <th style="padding: 5px;">Not often</th> <th style="padding: 5px;">Never</th> </tr> </thead> <tbody> <tr> <td></td> <td></td> <td></td> <td></td> <td></td> </tr> </tbody> </table>	All the time	Most of the time	Some times	Not often	Never					
Cause difficulties in your daily life.....	1	2	3	4	5																														
Interfere with your enjoyment of life.....	1	2	3	4	5																														
Do you need physical aids (e.g. crutches, wheelchair, braces)	1	2	3	4	5																														
Do you have special needs (eg places to inject, rest rooms)	1	2	3	4	5																														
All the time	Most of the time	Some times	Not often	Never																															

Thank you



## C. School sample information statements and consent forms.

### *C.1 Parent information Letter*

Dear parent,

The Centre for Adolescent Health, Royal Children's Hospital is developing a resilience questionnaire. The questionnaire will help teachers and health professionals working with young people to better understand their needs during difficult times.

We would like your son or daughter to complete our questionnaire and give us their comments. This questionnaire looks at the strengths and skills that are important for young people in dealing with stressful life events. The questionnaire will take around 30 minutes to complete. Below are some examples of questions asked - students can circle '*Almost all the time*', '*Most of the time*', '*Sometimes*', '*Not often*', or '*Never*'.

Problem solving skills:	If I can't handle something I find help	I make quick decisions I regret later
Optimism:	I feel hopeful about my life	I worry about the future
Support from family:	I enjoy spending time with my family	I don't feel loved by my family

Your child's answers will be confidential and he/she will not be named in any part of the study. You are free to decide whether you want your child to take part in the study or to withdraw your child at any time without giving a reason.

We would greatly value your child's assistance with this important research. Please fill out the yellow consent form showing whether you DO or DO NOT wish your child to take part, and return the form to school within the next two weeks. Only young people who have returned the signed yellow parent consent form to their teacher will be able to complete the questionnaire. We will also ask your child to consent on the day of the study if they wish to participate.

If you have any concerns or questions please call Deirdre Gartland on 9345 7922. I look forward to hearing from you.

Susan Sawyer  
Director  
CAH

Dr Lyndal Bond  
Head of Research  
CAH

Craig Olsson  
Researcher  
CAH

Deirdre Gartland  
Researcher  
CAH & Swinburne Uni





This page has some important general information about taking part in research studies approved by the Royal Children's Hospital.

**Your rights as the parent of a child in a research project are:**

- To choose for your son / your daughter to take part or not to take part
- To withdraw your son / your daughter from the study at any time
- To have the study fully explained to you and your son / your daughter
- You and your child should feel free to ask the researchers any questions about the study.

**Other information you should know before consenting for your child to participate**

- Your son's/ daughter's answers to the questions on this study will be kept private. This is subject to legal requirements.
- Any information from this study will not reveal your son's/your daughter's identity.
- You should have been told what your son/your daughter needs to do for this study, and how long it will take.
- If you or your son/daughter do not wish to take part in this study, this will not affect your or your son's /daughter's relationship with the Royal Children's Hospital.
- This research project has been approved by the Royal Children's Hospital Ethics in Human Research Committee.

The person to contact first if you or your son/your daughter would like more information or have any questions about the study is:

Deirdre Gartland  
The Adolescent Resilience study  
Centre for Adolescent Health  
Tel: 9345 7922

If you have any concerns about the study, and would like to speak to someone independent, please contact during business hours:

The RCH Patient Representative  
RCH Hospital Support Unit  
Phone 9345 5676

I \_\_\_\_\_  
(Your full name)

Please tick:

DO CONSENT

DO NOT CONSENT

to my son/daughter taking part in the development of the ARQ-Pilot (ARQ-Pilot) which has been explained to me in the attached letter.

I understand that I am free to withdraw my son/daughter from the study at any time without explanation and that non-participation in this study will not in any way affect my access to the best available treatment and care at the Centre for Adolescent Health or the Royal Children's Hospital.

Signature

Date

**Thank you.**

*C.3 Student Information Letter*

**Adolescent Resilience Questionnaire**

Dear student,

The Centre for Adolescent Health, Royal Children's Hospital is developing a questionnaire and we want your help to develop a questionnaire that works!

The questionnaire looks at the strengths and skills that are important for young people in dealing with stressful life events (or 'resilience'). Once developed, the questionnaire will help teachers and health professionals working with young people to better understand their needs during difficult times.

We would like you to complete our questionnaire and give us your comments. The questionnaire will take around 30 minutes. Participation is completely voluntary and you are free to withdraw at any time.

Please fill in the consent form indicating whether you DO or DO NOT wish to take part. This will be kept separately from your questionnaire so that your responses will be private and confidential. You will not be identified by name in any part of the project. You do not need to put your name on the questionnaire.

If you have any concerns or questions please ask the researcher or your teacher.

Thank you

Susan Sawyer  
Director  
CAH

Dr Lyndal Bond  
Head of Research  
CAH

Craig Olsson  
Researcher  
CAH

Deirdre Gartland  
Researcher  
CAH & Swinburne University

This page has some important general information about taking part in research studies approved by the Royal Children's Hospital.

**Your rights as a participant in a research project are:**

- To choose to take part or not to take part
- To withdraw from the study at any time
- To have the study fully explained to you
- You should feel free to ask the researchers any questions about the study.
- Other information you should know before consenting to be part of this study
- Your answers to the questions on this study will be kept private. This is subject to legal requirements.
- Information from this study will not reveal your identity.
- You should have been told what you need to do for this study, and how long it will take.
- If you do not wish to take part in this study, this will not affect your relationship with the Royal Children's Hospital.
- This research project has been approved by the Royal Children's Hospital Ethics in Human Research Committee.

The person to contact first if you would like more information or have any questions about the study is:

Deirdre Gartland  
The Adolescent Resilience study  
Centre for Adolescent Health  
Tel: 9345 7922

If you have any concerns about the study, and would like to speak to someone independent, please contact during business hours:

The RCH Patient Representative  
RCH Hospital Support Unit  
Phone 9345 5676

C.4 Student Consent Form

I

---

(Your full name)

Please tick:

DO CONSENT

DO NOT CONSENT

to taking part in the development of the ARQ-Pilot (ARQ-Pilot) which has been explained to me in the attached letter.

I understand that I am free to withdraw from the study at any time without explanation and that non-participation in this study will not in any way affect my access to the best available treatment and care at the Centre for Adolescent Health or the Royal Children's Hospital.

Signature

Date

**Thank you.**



## D. Chronic illness sample information statements and consent forms.

### *D.1 Parent information letter*

#### **Adolescent Resilience Questionnaire**

Dear parent,

The Centre for Adolescent Health, Royal Children's Hospital, continues to look at how best to support young people. This year we are developing a questionnaire examining 'resiliency' or the strengths, skills and resources available to young people. We believe studying how to identify and encourage resiliency in our young people is vital. The questionnaire we are developing will help professionals working with young people to better understand how to support them.

We would like to invite your son/daughter to help us to develop the 'new' questionnaire. This would involve them completing the draft questionnaire and giving us their comments. The questionnaire will ask about living with a chronic illness and how this may affect the young person, friendships, family and school life and the resources young people draw on in dealing with the demands of their illness. We anticipate that the questionnaire will take around 20 minutes.

Your son/daughter's contribution to the project will be confidential. Your child will not be identified by name in any part of the project. Your son/daughter is free to withdraw from the project at any time without giving a reason. If you do not want your child to take part, your decision will not affect your child's care at the Centre for Adolescent Health, the Royal Children's Hospital or their participation in the ChIPS program (if relevant).

If your son or daughter is less than 18 years of age we need your written permission for them to take part. Please fill out and return the consent form showing whether you DO or DO NOT wish them to take part in this study. We have also asked your son/daughter to give their consent if they wish to take part.

If you have any concerns or questions please call Deirdre Gartland on 9345 7922. I look forward to hearing from you.

Susan Sawyer  
Director  
CAH

Dr Lyndal Bond  
Head of Research  
CAH

Craig Olsson  
Researcher  
CAH

Deirdre Gartland  
Researcher  
CAH & Swinburne University

This page has some important general information about taking part in research studies approved by the Royal Children's Hospital.

Your rights as the parent of a child in a research project are:

- To choose for your son / your daughter to take part or not to take part
- To withdraw your son / your daughter from the study at any time
- To have the study fully explained to you and your son / your daughter
- You and your child should feel free to ask the researchers any questions about the study.
- Other information you should know before consenting for your child to be part of this study
- Your son's/your daughter's answers to the questions on this study will be kept private. This is subject to legal requirements.
- Any information from this study will not reveal your son's/your daughter's identity.
- You should have been told what your son/your daughter needs to do for this study, and how long it will take.
- If you or your son/your daughter do not wish to take part in this study, this will not affect your or your son's / your daughter's relationship with the Royal Children's Hospital.
- This research project has been approved by the Royal Children's Hospital Ethics in Human Research Committee.

The person to contact first if you or your son/your daughter would like more information or have any questions about the study is:

Deirdre Gartland  
The Adolescent Resilience study  
Centre for Adolescent Health  
Tel: 9345 7922

If you have any concerns about the study, and would like to speak to someone independent, please contact during business hours:

The RCH Patient Representative  
RCH Hospital Support Unit  
Phone 9345 5676



*D.2 Parent Consent Form*

I \_\_\_\_\_  
(Your full name)

Please tick:

DO CONSENT

DO NOT CONSENT

to my son/daughter taking part in the development of the ARQ-Pilot(ARQ-Pilot) which has been explained to me in the attached letter.

I understand that I am free to withdraw my son/daughter from the study at any time without explanation and that non-participation in this study will not in any way affect my access to the best available treatment and care at the Centre for Adolescent Health or the Royal Children's Hospital.

Signature

Date

**Thank you.**





*D.3 Participant Information Letter*

**Adolescent Resilience Questionnaire (ARQ)**

Hi!

This year at the Centre for Adolescent Health (Royal Children's Hospital) we are developing a questionnaire and we want your help!

Over the last year we have been talking to young people with the aim of creating a questionnaire to look at the strengths and skills that help young people to deal with stressful life events such as chronic illness.

We are now sending the draft questionnaire to over 200 young people to complete and give feedback. These young people belong to groups such as Injectors, Chronic Illness Peer Support (ChIPS), Juvenile Diabetes Foundation, Epilepsy Foundation, CanTeen and Royal Children's Hospital out-patient clinics.

We want to include the experiences and comments of as many young people as possible.

We would greatly value your contribution to this project.

To participate we need you to sign the enclosed consent form. If you are under 18 years we also need your parent/guardian to sign a consent form - there is a letter for you to give to them explaining the project.

You are free to withdraw from the project at any time without giving a reason. If you do not want to take part in this study, your decision will not affect your care at the Centre for Adolescent Health or the Royal Children's Hospital.

Your answers and comments in the questionnaire will be confidential. You will not be identified by name in any part of the project.

The questionnaire will probably take around 20 minutes to complete. Please send it (and your consent forms!) back in the reply paid envelope provided (no stamp needed). It's that simple.

If you have any queries about the questionnaire please call Deirdre Gartland at the Centre for Adolescent Health on 9345 7922. I look forward to hearing from you.

Susan Sawyer  
Director  
CAH

Dr Lyndal Bond  
Head of Research  
CAH

Craig Olsson  
Researcher  
CAH

Deirdre Gartland  
Researcher  
CAH & Swinburne Uni

This page has some important general information about taking part in research studies approved by the Royal Children's Hospital.

Your rights as a participant in a research project are:

- To choose to take part or not to take part
- To withdraw from the study at any time
- To have the study fully explained to you
- You should feel free to ask the researchers any questions about the study.
- Other information you should know before consenting to be part of this study
- Your answers to the questions on this study will be kept private. This is subject to legal requirements.
- Information from this study will not reveal your identity.
- You should have been told what you need to do for this study, and how long it will take.
- If you do not wish to take part in this study, this will not affect your relationship with the Royal Children's Hospital.
- This research project has been approved by the Royal Children's Hospital Ethics in Human Research Committee.

The person to contact first if you would like more information or have any questions about the study is:

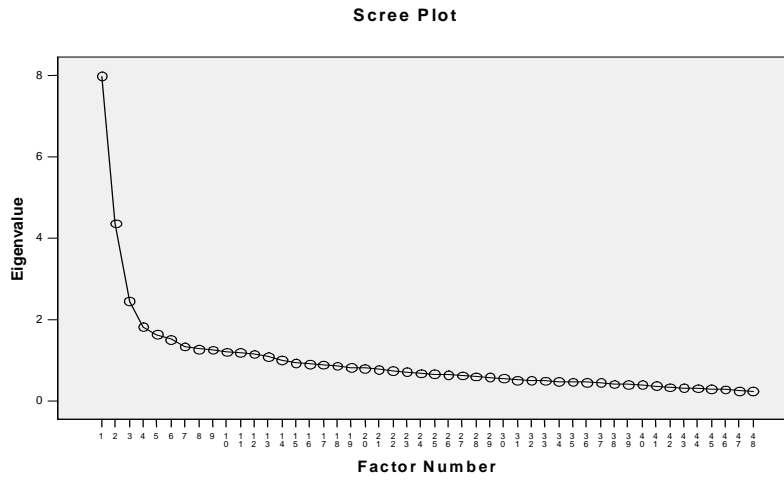
Deirdre Gartland  
The Adolescent Resilience study  
Centre for Adolescent Health  
Tel: 9345 7922

If you have any concerns about the study, and would like to speak to someone independent, please contact during business hours:

The RCH Patient Representative  
RCH Hospital Support Unit  
Phone 9345 5676

E. Individual domain: Factor analysis of student sample data (n = 330)

E.1 Scree plot (n = 330)



E.2 Initial statistics for 6-factor solution of individual items with oblimin rotation ( $n = 330$ )

Factor	Initial Eigenvalues			Rotation Sums of Squared Loadings(a)
	Total	% of Variance	Cumulative %	Total
1	7.98	16.63	16.63	5.26
2	4.36	9.09	25.72	2.74
3	2.45	5.10	30.82	3.49
4	1.82	3.78	34.61	3.86
5	1.63	3.40	38.01	3.19
6	1.51	3.14	41.16	3.42
7	1.33	2.78	43.93	
8	1.27	2.65	46.59	
9	1.25	2.61	49.20	
10	1.21	2.52	51.71	
11	1.19	2.47	54.19	
12	1.15	2.40	56.59	
13	1.09	2.27	58.85	
14	1.00	2.09	60.95	
15	0.93	1.94	62.89	
16	0.91	1.89	64.78	
17	0.89	1.85	66.63	
18	0.86	1.79	68.41	
19	0.82	1.71	70.13	
20	0.80	1.67	71.80	
21	0.78	1.62	73.41	
22	0.74	1.54	74.95	
23	0.71	1.49	76.44	
24	0.68	1.42	77.86	

E.3 (continued)

Initial statistics for 6-factor solution of individual items with oblimin rotation (n = 330)

Factor	Initial Eigenvalues			Rotation Sums of Squared Loadings(a) Total
	Total	% of Variance	Cumulative %	
25	0.66	1.37	79.23	
26	0.65	1.35	80.57	
27	0.62	1.30	81.87	
28	0.60	1.25	83.12	
29	0.58	1.20	84.32	
30	0.55	1.15	85.47	
31	0.51	1.07	86.54	
32	0.51	1.06	87.60	
33	0.49	1.03	88.63	
34	0.48	0.99	89.62	
35	0.46	0.97	90.59	
36	0.46	0.95	91.54	
37	0.45	0.94	92.47	
38	0.42	0.87	93.35	
39	0.41	0.85	94.20	
40	0.39	0.82	95.02	
41	0.37	0.77	95.79	
42	0.34	0.71	96.49	
43	0.32	0.67	97.16	
44	0.31	0.64	97.81	
45	0.29	0.61	98.41	
46	0.28	0.58	99.00	
47	0.25	0.51	99.51	
48	0.24	0.49	100.00	

(a) When factors are correlated, sums of squared loadings cannot be added to obtain a total variance.

E.4 Conceptual scales and pattern matrix of 6-factor solution of individual items (n = 330)

Conceptual scale <sup>a</sup>	Factor scale	Factor loading <sup>b</sup>					
		1	2	3	4	5	6
<b>Emotion regulation (negative)</b>							
Problem solving	I feel helpless when faced with a problem	0.61					
Emotion regulation	I find it difficult to cope when things change unexpectedly	0.55					
Emotion regulation	When things go wrong I give myself a hard time	0.50					
Optimism/ PFE <sup>c</sup>	I tend to think the worst is going to happen	0.49					
Emotion regulation	If something upsets me it affects how I feel about everything	0.48					
Communication	I have trouble explaining how I'm feeling	0.47					
Emotion regulation	I push myself too hard to do what everyone else does	0.47					
Problem solving	If one approach to a problem doesn't work I find it hard to ....	0.43					
Emotion regulation	When I make a mistake I feel that I am a hopeless person	0.42					
Emotion regulation	I'm not happy unless things are perfect	0.38					
Empathy	I get easily frustrated with people	0.36					
Emotion regulation	I feel that I have little control over the things that happen to me	0.35					
Emotion regulation	I worry about what people are thinking of me	0.34					
Emotion regulation	I carefully consider all options before making decisions						
Optimism/ PFE	I try to live a healthy life						
<b>Introspection/Meaning</b>							
Introspection/Meang <sup>c</sup>	I like to think about why things happen the way they do	0.62					
Introspection/Meang	I try to find meaning in the things that happen to me	0.54					
Introspection/Meang	Even if it isn't clear to me I believe things happen for a reason	0.50					
Introspection/Meang	I think about what things might be like for other people	0.41					
Optimism/ PFE	I worry about the future	0.34					
Introspection/Meang	I look for what I can learn from bad things that happen	0.34					
Emotion regulation	When people say nice things about me I find it hard to believe...	0.32					
<b>Problem solving</b>							
Problem solving	I keep problems to myself					0.72	
Problem solving	If I have a problem I deal with it by myself					0.64	
Communication	I am a private person when it comes to how I feel					0.62	
Problem solving	If I have a problem I know there is someone I can talk to					-0.44	
Problem solving	I find it hard to express myself to others					0.42	
Problem solving	If something is becoming a problem I try to ignore it						
<b>Social Skills - Agreeableness</b>							
Agreeableness	I make friends easily					0.63	
Agreeableness	I enjoy meeting new people					0.50	
Communication	I find it easy to talk to people			-0.33	0.46		
Agreeableness	I have a hard time getting along with others					-0.46	
Problem solving	I can stand up for myself when there is a problem					0.40	
Agreeableness	I feel confident that I will have a romantic relationship					0.38	
Agreeableness	I enjoy spending time by myself					-0.37	
<b>Empathy</b>							
Empathy	I am a good listener						-0.80
Empathy	I listen carefully to my friends when they have problems						-0.61
Empathy	People who know me think that I'm understanding						-0.44
Empathy	I feel obliged to do the right thing by others						
Empathy	I am forgiving of other people						
<b>Optimism/Positive future expectations</b>							
Problem solving	If I can't handle something I find help			-0.49			0.53
Emotion regulation	If I get upset, I know how to make myself feel better						0.47
Optimism/ PFE	I try to take a relaxed approach to things						0.36
Optimism/ PFE	I try to make the best out of situations						0.35
Optimism/ PFE	I feel hopeful about my life						0.34
Optimism/ PFE	Seeing the funny side of situations helps me when things get bad						0.31
Emotion regulation	I understand why I feel the way I do						
Optimism/ PFE	I take it easy on myself when I am not feeling well						

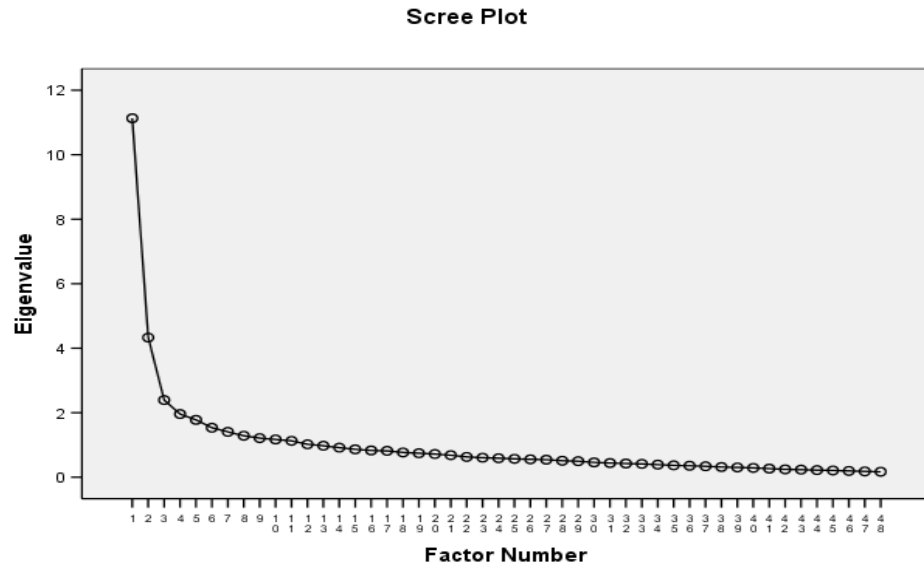
a. Column one identifies the conceptual scale each item was associated with.

b. Maximum Likelihood extraction and Oblimin rotation with Kaiser normalisation.

c. PFE =Positive future expectations Meang = Meaning.

F. Individual domain: Factor analysis of chronic illness data (n = 204)

F.1 Scree Plot



F.2 Initial statistics for 6-factor solution with oblimin rotation (n =204)

Factor	Initial Eigenvalues			Rotation Sums of Squared Loadings(a)
	Total	% of Var	Cum %	
1	11.13	23.19	23.19	8.01
2	4.33	9.02	32.21	3.95
3	2.39	4.99	37.20	3.82
4	1.96	4.08	41.28	5.75
5	1.78	3.71	44.99	3.36
6	1.53	3.20	48.18	3.46
7	1.41	2.93	51.11	
8	1.29	2.68	53.79	
9	1.21	2.52	56.32	
10	1.17	2.44	58.76	
11	1.13	2.35	61.11	
12	1.02	2.13	63.23	
13	0.98	2.03	65.27	
14	0.92	1.91	67.18	
15	0.86	1.80	68.98	
16	0.83	1.73	70.71	
17	0.82	1.70	72.41	
18	0.77	1.60	74.01	
19	0.74	1.55	75.57	
20	0.72	1.50	77.07	
21	0.68	1.42	78.49	
22	0.63	1.31	79.80	
23	0.61	1.26	81.06	
24	0.59	1.23	82.29	
25	0.57	1.19	83.48	
26	0.56	1.16	84.63	
27	0.54	1.13	85.77	
28	0.51	1.06	86.83	
29	0.50	1.04	87.87	
30	0.46	0.96	88.82	
31	0.44	0.92	89.74	
32	0.43	0.89	90.63	
33	0.41	0.86	91.49	
34	0.39	0.81	92.30	
35	0.37	0.77	93.07	
36	0.36	0.74	93.81	
37	0.34	0.71	94.52	
38	0.32	0.66	95.18	
39	0.30	0.63	95.81	
40	0.29	0.60	96.41	
41	0.27	0.56	96.97	
42	0.24	0.51	97.48	
43	0.24	0.49	97.97	

(a) When factors are correlated, sums of squared loadings cannot be added to obtain total variance.



F.3 Conceptual scales and pattern matrix of six-factor solution (n = 204)

Conceptual Scale <sup>a</sup>	Factor Scale	Factor loading <sup>b</sup>					
		1	2	3	4	5	6
<b>Emotion regulation (negative)</b>							
Problem	I feel helpless when faced with a problem	0.73					
Emotion	I feel that I have little control	0.69					
Problem	If one approach to a problem doesn't work, I find it hard ....	0.62					
Optimism	I tend to think the worst is going to happen	0.62					
Emotion	I find it difficult to cope when things change unexpectedly	0.57					
Optimism	<i>I worry about the future<sup>c</sup></i>	0.56					
Emotion	If something upsets me it affects how I feel about everything	0.51				0.32	
Emotion	When I make a mistake I feel that I am a hopeless person	0.50				0.31	
Empathy	I easily get frustrated with people	0.49	-0.31				
Communication	I have trouble explaining how I am feeling	0.46					-0.31
Emotion	When things go wrong I give myself a hard time	0.44				0.36	
Emotion	I am not happy unless things are perfect	0.44					
Emotion	I worry about what people are thinking about me	0.43					
Problem	<i>If something is becoming a problem I try to ignore it</i>	0.41					
Problem	<i>I can stand up for myself when there is a problem</i>	-0.40					
<b>Empathy</b>							
Empathy	I listen carefully to my friends when they have problems		0.63				
Empathy	People who know me think that I am understanding		0.53				
Empathy	I am a good listener		0.51				
Empathy	I am forgiving of other people		0.44				
Agreeableness	<i>I have a hard time getting along with others</i>		-0.44				-0.41
Optimism	<i>I try to live a healthy life</i>		0.40				
Introspection	<i>I carefully consider all options before making decisions</i>		0.38				
Empathy	I feel obliged to do the right thing by others		0.35				
<b>Problem solving</b>							
Problem	I keep my problems to myself			0.76			
Problem	If I have a problem I deal with it by myself			0.63			
Communication	I am a private person when it comes to how I feel			0.62			
Problem	If I have a problem, I know there is someone I can talk to			-0.49			
Communication	<i>I find it easy to talk to people</i>			-0.46			0.36
<b>Optimism / Positive future expectation</b>							
Optimism	I try to take a relaxed approach to things				0.64		
Optimism	I try to make the best out of situations				0.60		
Problem	If I cant handle something I find help			-0.41	0.59		
Emotion	If I get upset, I know how to make myself feel better				0.45		
Introspection	I look for what I can learn from bad things that happen				0.44		
Optimism	I feel hopeful about my life				0.44		
Emotion	I understand why I feel the way I do				0.42		
Optimism	Seeing the funny side of situations helps me when things ...				0.34		
Optimism	<i>I feel confident that I will have a romantic relationship</i>						
Optimism	I take it easy on myself when I am not feeling well						

F.3 (continued)

Conceptual scales and pattern matrix of six-factor solution (n = 204)

Conceptual Scale <sup>a</sup>	Factor Scale	Factor loading <sup>b</sup>					
		1	2	3	4	5	6
	<b>Introspection/Meaning</b>						
Introspection	I try to find meaning in the things that happen to me					0.55	
Empathy	I think about what things might be like for other people					0.53	
Introspection	I like to think about why things happen the way they do					0.52	
Agreeableness	<i>I enjoy spending time by myself</i>					0.36	
Emotion	When people say nice things about me					0.33	
Emotion	<i>I push myself too hard to do what everyone else does</i>					0.30	
Introspection	Even if it isn't clear to me I believe things happen for a reason						
	<b>Agreeableness</b>						
Agreeableness	I make friends easily						0.55
Communication	<i>I find it hard to express myself to others</i>	0.41		0.31			-0.42
Agreeableness	I enjoy meeting new people						0.31

a. Column one identifies the conceptual scale each item was associated with.

b. Maximum Likelihood extraction and Oblimin rotation with Kaiser normalisation.

c. Items loading on different factors compared to school data six-factor solution are italicised.

F.4 Conceptual scales and pattern matrix of six-factor solution of combined data (n=534)

Conceptual Scale <sup>a</sup>	Factor Scale	1	2	3	4	5	6
<b>Emotional insight (negative)</b>							
Optimism	I tend to think the worst is going to happen	0.61					
Emotion	I find it difficult to cope when things change unexpectedly	0.60					
Problem	I feel helpless when faced with a problem	0.60					
Problem	If one approach to a problem doesn't work, I find it hard to think of other ideas	0.52					
Emotion	If something upsets me it affects how I feel about everything	0.51					
Emotion	When things go wrong I give myself a hard time	0.50					
Emotion	I feel that I have little control	0.50					
Communication	I have trouble explaining how I am feeling	0.49					
Emotion	When I make a mistake I feel that I am a hopeless person	0.47					
Empathy	I easily get frustrated with people	0.46					
Optimism	I worry about the future	0.43					
Emotion	I am not happy unless things are perfect	0.41					
Emotion	I push myself too hard to do what everyone else does	0.40					
Emotion	I worry about what people are thinking about me	0.39					
Communication	I find it hard to express myself to others	0.35		0.32			
Problem	If something is becoming a problem I try to ignore it	0.31					
Emotion	When people say nice things about me						
<b>Introspection/Meaning</b>							
Introspection	I like to think about why things happen the way they do		0.62				
Introspection	I try to find meaning in the things that happen to me		0.56				
Empathy	I think about what things might be like for other people		0.46				
Introspection	Even if it isn't clear to me I believe things happen for a reason		0.40				
<b>Problem Solving/Help seeking</b>							
Problem	I keep my problems to myself			0.74			
Problem	If I have a problem I deal with it by myself			0.64			
Communication	I am a private person when it comes to how I feel			0.59			
Problem	If I have a problem, I know there is someone I can talk to			-0.47			
Problem	If I can't handle something I find help			-0.46	0.54		
<b>Optimism/Hope</b>							
Optimism	I try to take a relaxed approach to things				0.52		
Emotion	If I get upset, I know how to make myself feel better				0.49		
Optimism	I try to make the best out of situations				0.48		
Optimism	I feel hopeful about my life				0.45		
Optimism	Seeing the funny side of situations helps me when things get bad				0.38		
Emotion	I understand why I feel the way I do				0.36		
Introspection	I look for what I can learn from bad things that happen				0.32		
Optimism	I take it easy on myself when I am not feeling well						
<b>Social skills</b>							
Agreeableness	I make friends easily					0.66	
Agreeableness	I have a hard time getting along with others					-0.57	
Agreeableness	I enjoy meeting new people					0.43	
Communication	I find it easy to talk to people			-0.36	0.31	0.42	
Problem	I can stand up for myself when there is a problem					0.33	
Agreeableness	I enjoy spending time by myself					-0.30	
Optimism	I feel confident that I will have a romantic relationship						

F.4. (continued)

*Conceptual scales and pattern matrix of six-factor solution of combined data (n=524)*

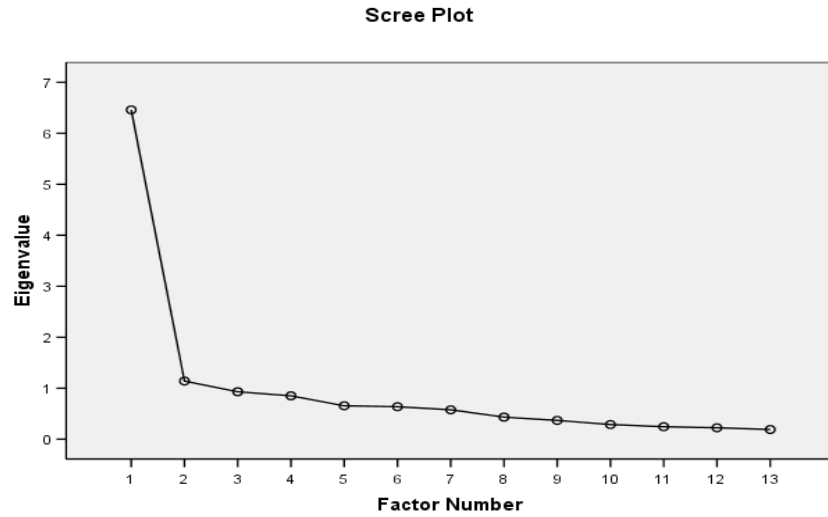
Conceptual Scale <sup>a</sup>	Factor Scale	1	2	3	4	5	6
	<b>Empathy</b>						
Empathy	I am a good listener						0.72
Empathy	I listen carefully to my friends when they have problems						0.62
Empathy	People who know me think that I am understanding						0.46
Optimism	I try to live a healthy life						0.30
Problem	I carefully consider all options before making decisions						0.30
Empathy	I feel obliged to do the right thing by others						
Empathy	I am forgiving of other people						

a. Column one identifies the conceptual scale each item was associated with.

b. Maximum Likelihood extraction and Oblimin rotation with Kaiser normalisation.

G. Family domain: Factor analysis of student sample data (n = 330)

G.1 Scree Plot



G.2 Initial statistics for a 2-factor solution with oblimin rotation (n = 330)

Factor	Initial Eigenvalues			Rotation Sums of Squared Loadings (a) Total
	Total	% of Variance	Cumulative %	
1	6.46	49.68	49.68	3.89
2	1.14	8.78	58.46	2.90
3	0.93	7.16	65.62	
4	0.85	6.54	72.16	
5	0.66	5.04	77.21	
6	0.64	4.90	82.11	
7	0.58	4.44	86.54	
8	0.43	3.33	89.88	
9	0.37	2.84	92.71	
10	0.29	2.21	94.93	
11	0.25	1.88	96.81	
12	0.22	1.72	98.54	
13	0.19	1.46	100.00	

(a) When factors are correlated, sums of squared loadings cannot be added to obtain a total variance.

G.3 Conceptual scales and pattern matrix of 2-factor solution (n = 330)

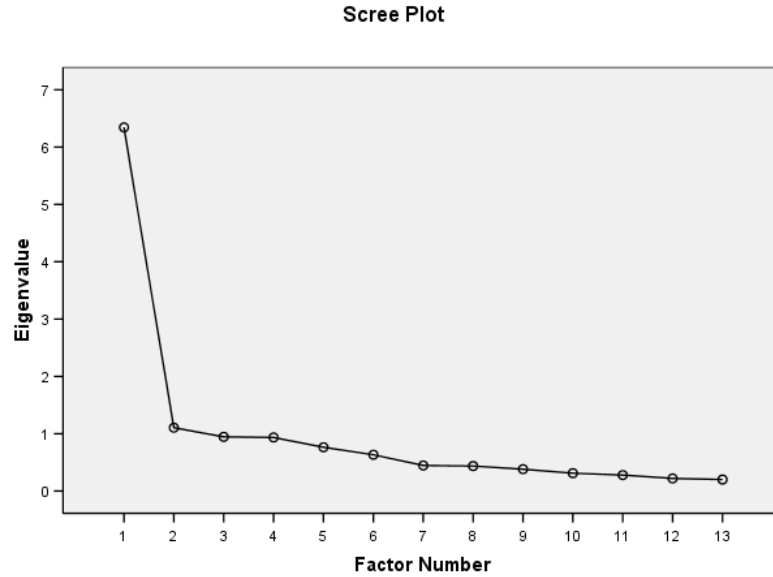
Conceptual scale <sup>a</sup>	Factor scale of family items	Factor loading <sup>b</sup>	
		1	2
	Availability		
Availability	There is someone in my family that I feel very close to	0.91	
Availability	If I have a problem there is someone in my family I can talk	0.48	0.45
	Connectedness		
Connectedness	My family listens to me		0.88
Connectedness	My family understands my needs		0.83
Availability	My family is there for me when I need them		0.78
Connectedness	I feel close to my family		0.74
Connectedness	My family is caring		0.71
Connectedness	I can be honest with my family about how I feel		0.69
Connectedness	My family puts me down		-0.62
Connectedness	I have a say in family decisions		0.62
Connectedness	I enjoy spending time with my family		0.56
Availability	The amount of time I spend doing things with my family is		
Connectedness	My family is over-protective of me		

a. Column one identifies the conceptual scale each item was associated with.

b. Maximum Likelihood extraction and Oblimin rotation with Kaiser normalisation.

## H. Family domain: Factor analysis of chronic illness sample data (n = 204)

### H.1 Scree Plot



### H.2 Initial statistics for a 2-factor solution with oblimin rotation (n = 204)

Factor	Initial Eigenvalues			Rotation Sums of Squared Loadings (a) Total
	Total	% of Variance	Cumulative %	
1	6.34	48.79	48.79	5.74
2	1.10	8.50	57.29	3.13
3	0.95	7.27	64.57	
4	0.94	7.19	71.76	
5	0.76	5.88	77.64	
6	0.63	4.87	82.51	
7	0.45	3.43	85.94	
8	0.44	3.36	89.29	
9	0.38	2.93	92.22	
10	0.31	2.40	94.62	
11	0.28	2.14	96.76	
12	0.22	1.69	98.45	
13	0.20	1.55	100.00	

(a) When factors are correlated, sums of squared loadings cannot be added to obtain a total variance.

*H.3 Conceptual scales and pattern matrix of 2-factor solution (n = 204)*

Conceptual scale <sup>a</sup>	Factor scale	Factor loading <sup>b</sup>	
		1	2
Connectedness	I can be honest with my family about how I feel	0.92	
Connectedness	My family listens to me	0.80	
Connectedness	I feel close to my family	0.74	
Connectedness	I have a say in family decisions	0.70	
Availability	There is someone in my family that I feel very close to	0.68	
Availability	If I have a problem there is someone in my family I can talk to	0.68	
Connectedness	I enjoy spending time with my family	0.62	
Availability	My family is there for me when I need them	0.58	
Connectedness	My family understand my needs	0.58	-0.33
Connectedness	My family puts me down	-0.36	0.30
Connectedness	My family is over-protective of me		
Availability	The amount of time I spend doing things with my family is		
Connectedness	My family is caring		-0.82

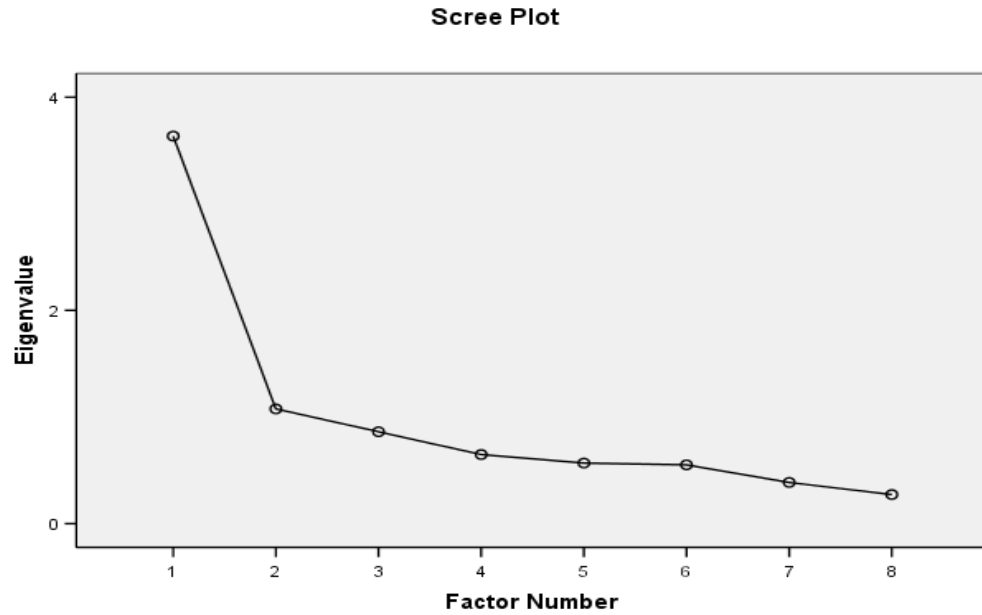
a. Column one identifies the conceptual scale each item was associated with.

b. Maximum Likelihood extraction and Oblimin rotation with Kaiser normalisation.



I. Peer domain: Factor analysis of student sample data (n = 330)

I.1 Scree Plot



I.2 Initial statistics for a 2-factor solution with oblimin rotation (n = 330)

Factor	Initial Eigenvalues			Rotation Sums of Squared Loadings (a)
	Total	% of Variance	Cumulative %	Total
1	3.63	45.43	45.43	2.80
2	1.08	13.45	58.88	2.41
3	0.86	10.78	69.66	
4	0.65	8.10	77.76	
5	0.57	7.10	84.86	
6	0.55	6.90	91.76	
7	0.39	4.83	96.59	
8	0.27	3.41	100.00	

(a) When factors are correlated, sums of squared loadings cannot be added to obtain a total variance.

*I.3 Conceptual scales and pattern matrix of 2-factor solution (n = 330)*

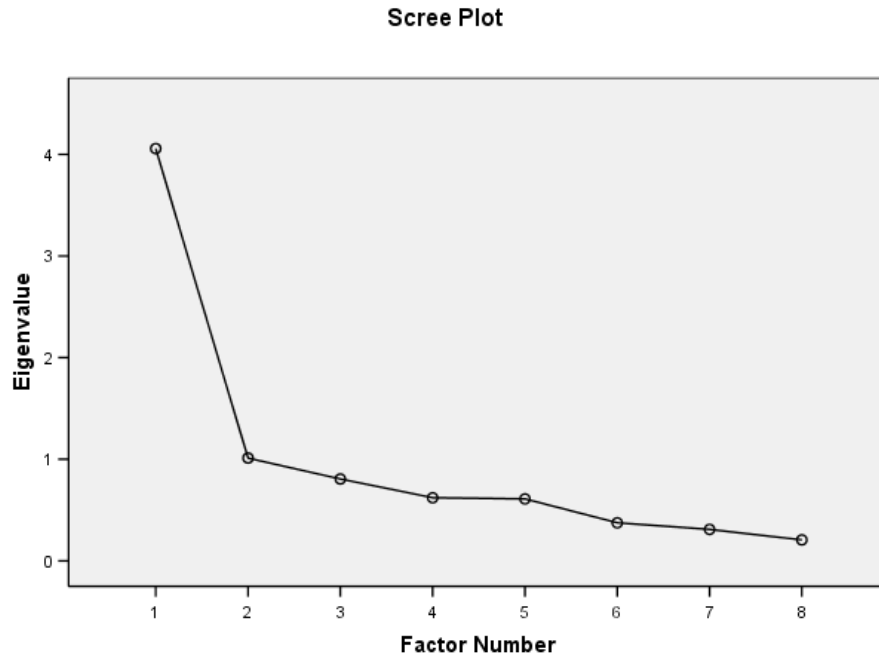
Conceptual scale <sup>a</sup>	Factor scale	Factor loading <sup>b</sup>	
		1	2
	Availability		
Availability	There is someone in my family that I feel very close to	0.91	
Availability	If I have a problem there is someone in my family I can talk to	0.48	0.45
	Connectedness		
Communication	My family listens to me		0.88
Connectedness	My family understands my needs		0.83
Availability	My family is there for me when I need them		0.78
Connectedness	I feel close to my family		0.74
Connectedness	My family is caring		0.71
Communication	I can be honest with my family about how I feel		0.69
Connectedness	My family puts me down		-0.62
Communication	I have a say in family decisions		0.62
Connectedness	I enjoy spending time with my family		0.56
Availability	The amount of time I spend doing things with my family is		
Connectedness	My family is over-protective of me		

a. Column one identifies the conceptual scale each item was associated with.

b. Maximum Likelihood extraction and Oblimin rotation with Kaiser normalisation.

J. Peer domain: Factor analysis of chronic illness sample data (n = 204)

J.1 Scree Plot



J.2 Initial statistics for a 2-factor solution with oblimin rotation (n = 204)

Factor	Initial Eigenvalues			Rotation Sums of Squared Loadings (a)
	Total	% of Variance	Cumulative %	Total
1	4.06	50.71	50.71	2.89
2	1.01	12.66	63.36	3.24
3	0.81	10.08	73.44	
4	0.62	7.77	81.21	
5	0.61	7.63	88.84	
6	0.38	4.69	93.53	
7	0.31	3.88	97.41	
8	0.21	2.59	100.00	

(a) When factors are correlated, sums of squared loadings cannot be added to obtain a total variance.

J.3 Conceptual scales and pattern matrix of 2-factor solution (n = 204)

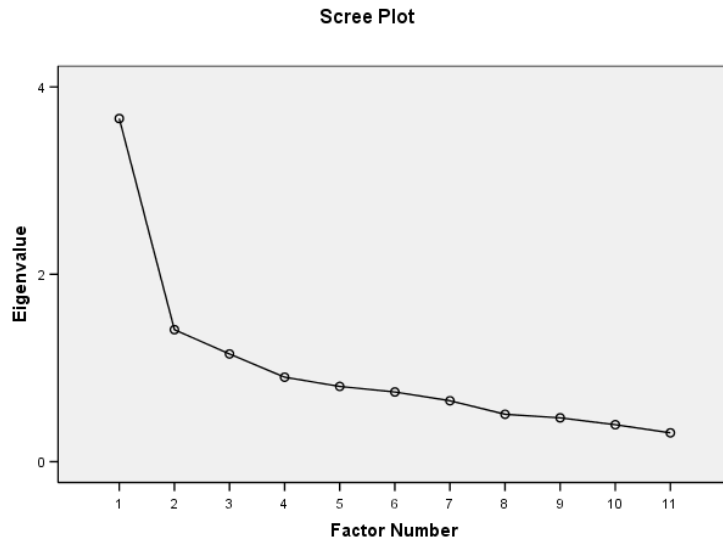
Conceptual scale <sup>a</sup>	Factor scale	Factor loading <sup>b</sup>	
		1	2
<b>Availability</b>			
Availability	I have a friend(s) that I feel close to	1.02	
Availability	I have a friend(s) that I can talk to about anything	0.72	
<b>Connectedness</b>			
Connectedness	I have fun with my friends		0.82
Connectedness	My friends like doing the same things as me		0.69
Connectedness	My friends leave me out of things		-0.62
Availability	I have a group of friends that I keep in touch with		0.56
Availability	The amount of time I spend with my friend(s) is		-0.45
Connectedness	My friends are caring and supportive		0.44

a. Column one identifies the conceptual scale each item was associated with.

b. Maximum Likelihood extraction and Oblimin rotation with Kaiser normalisation.

K. School domain: Factor analysis of student sample data (n = 330)

K.1 Scree Plot



K.2 Initial statistics for a 2-factor solution with oblimin rotation (n = 330)

Factor	Initial Eigenvalues			Rotation Sums of Squared Loadings (a)
	Total	% of Variance	Cumulative %	Total
1	3.63	45.43	45.43	2.80
2	1.08	13.45	58.88	2.41
3	0.86	10.78	69.66	
4	0.65	8.10	77.76	
5	0.57	7.10	84.86	
6	0.55	6.90	91.76	
7	0.39	4.83	96.59	
8	0.27	3.41	100.00	

(a) When factors are correlated, sums of squared loadings cannot be added to obtain a total variance.

K.3 Conceptual scales and pattern matrix of 2-factor solution (n = 330)

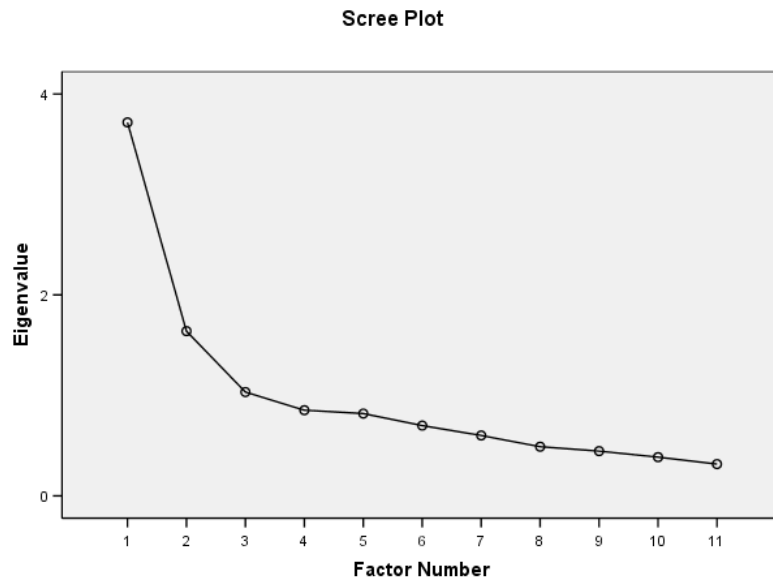
Conceptual scale <sup>a</sup>	Factor scale	Factor loading <sup>b</sup>	
		1	2
<b>School Environment</b>			
Environment	My teachers are caring and supportive	0.94	
Environment	My teachers provide me with extra help if I need it	0.67	
Environment	I have a teacher that I feel looks out for me	0.66	
Environment	My teachers expect too much of me	-0.42	
Environment	There is an adult at school that I could talk to if I had a personal problem	0.32	
Connectedness	Doing well at school is important to me		
<b>Connectedness</b>			
Environment	I feel safe at school		-0.65
Environment	I get bullied or teased at school		0.59
Connectedness	I feel left out at school		0.56
Connectedness	I hate going to school		0.37
Connectedness	I get involved with school activities		-0.35

a. Column one identifies the conceptual scale each item was associated with.

b. Maximum Likelihood extraction and Oblimin rotation with Kaiser normalisation.

L. School domain: Factor analysis of chronic illness sample data (n = 204)

L.1 Scree Plot



L.2 Initial statistics for a 2-factor solution with oblimin rotation (n = 204)

Factor	Initial Eigenvalues			Rotation Sums of Squared Loadings(a)
	Total	% of Variance	Cumulative %	Total
1	3.72	33.79	33.79	2.79
2	1.64	14.91	48.70	2.23
3	1.03	9.39	58.09	
4	0.85	7.75	65.84	
5	0.82	7.45	73.29	
6	0.70	6.36	79.65	
7	0.60	5.47	85.12	
8	0.49	4.45	89.57	
9	0.45	4.05	93.62	
10	0.39	3.51	97.12	
11	0.32	2.88	100.00	

(a) When factors are correlated, sums of squared loadings cannot be added to obtain a total variance.

L.3 Conceptual scales and pattern matrix of 2-factor solution (n = 204)

Conceptual scale <sup>a</sup>	Factor scale	Factor loading <sup>b</sup>	
		1	2
<b>Support</b>			
Environment	My teachers are caring and supportive	0.89	
Environment	I have a teacher that I feel looks out for me	0.78	
Environment	My teachers provide me with extra help if I need it	0.66	
Environment	My teachers expect too much of me	-0.42	
Environment	There is an adult at school that I could talk to if I had a personal problem	0.35	
<b>School connectedness</b>			
Connectedness	I hate going to school	-0.34	0.31
Connectedness	I feel left out at school		0.74
Environment	I get bullied or teased at school		0.64
Environment	I feel safe at school		-0.63
Connectedness	I get involved with school activities		
Connectedness	Doing well at school is important to me		

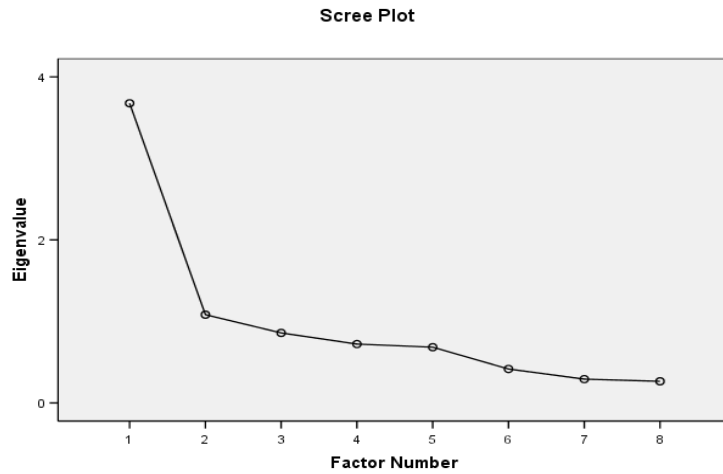
a. Column one identifies the conceptual scale each item was associated with.

b. Maximum Likelihood extraction and Oblimin rotation with Kaiser normalisation.



M. Community domain: Factor analysis of student sample data ( $n = 330$ )

M.1 Scree plot



M.2 Initial statistics for a 2-factor solution with oblimin rotation ( $n = 330$ )

Factor	Initial Eigenvalues			Rotation Sums of Squared Loadings (a)
	Total	% of Variance	Cumulative %	Total
1	3.68	45.97	45.97	3.00
2	1.08	13.51	59.49	2.64
3	0.86	10.74	70.22	
4	0.72	9.01	79.23	
5	0.69	8.58	87.81	
6	0.42	5.21	93.02	
7	0.29	3.66	96.68	
8	0.27	3.32	100.00	

(a) When factors are correlated, sums of squared loadings cannot be added to obtain a total variance.

M.3 Conceptual scales and pattern matrix of 2-factor solution (n = 330)

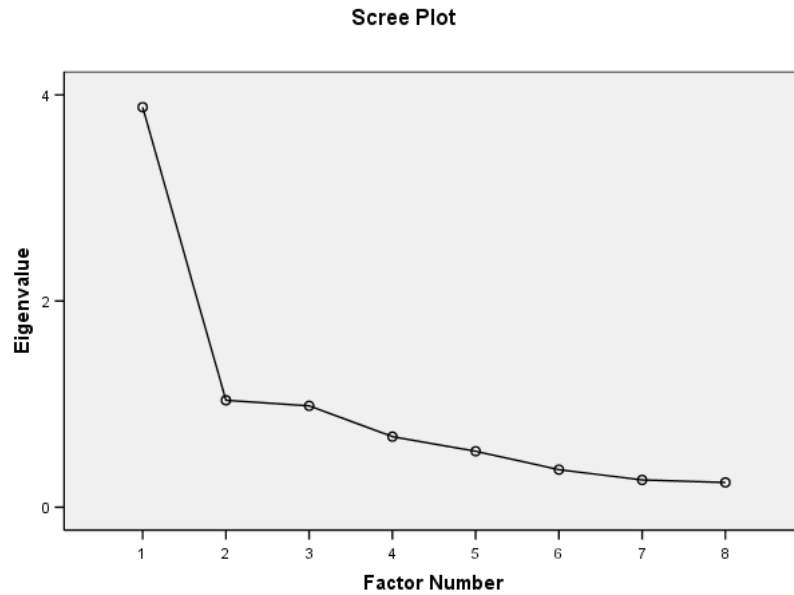
Conceptual scale <sup>a</sup>	Factor scale	Factor loading <sup>b</sup>	
		1	2
<b>Connectedness</b>			
Connectedness	I like my neighbourhood	0.88	
Connectedness	I like the people in my neighbourhood	0.83	
Connectedness	I trust the people in my neighbourhood	0.52	
Connectedness	I feel isolated in my neighbourhood	-0.32	
<b>Availability</b>			
Availability	People in my neighbourhood go out of their way to help		0.85
Availability	People in my neighbourhood are caring	0.34	0.59
Availability	There is an adult in my neighbourhood that I could talk to if I had a personal problem		0.31
Availability	I am part of a social group in my neighbourhood which is not run by my school		

a. Column one identifies the conceptual scale each item was associated with.

b. Maximum Likelihood extraction and Oblimin rotation with Kaiser normalisation.

N. Community domain: Factor analysis of chronic illness data (n=204)

N.1 Scree plot



N.2 Initial statistics for a 2-factor solution with oblimin rotation (n = 204)

Factor	Initial Eigenvalues			Rotation Sums of Squared Loadings(a)
	Total	% of Variance	Cumulative %	Total
1	3.88	48.50	48.50	3.03
2	1.04	12.97	61.47	2.68
3	0.98	12.29	73.76	
4	0.69	8.56	82.33	
5	0.54	6.79	89.12	
6	0.36	4.56	93.68	
7	0.27	3.31	96.99	
8	0.24	3.01	100.00	

(a) When factors are correlated, sums of squared loadings cannot be added to obtain a total variance.

N.3 *Conceptual scales and pattern matrix of 2-factor solution (n = 204)*

Conceptual scale <sup>a</sup>	Factor scale	Factor loading <sup>b</sup>	
		1	2
	Availability		
Availability	People in my neighbourhood go out of their way to help	0.93	
Availability	People in my neighbourhood are caring	0.67	
Availability	There is an adult in my neighbourhood that I could talk to if I had a personal problem	0.46	
Availability	I am part of a social group in my neighbourhood which is not run by my school		
	Connectedness		
Connectedness	I like my neighbourhood		-0.74
Connectedness	I like the people in my neighbourhood	0.40	-0.59
Connectedness	I feel isolated in my neighbourhood		0.48
Connectedness	I trust the people in my neighbourhood	0.42	-0.45

a. Column one identifies the conceptual scale each item was associated with.

b. Maximum Likelihood extraction and Oblimin rotation with Kaiser normalisation.

# Adolescent Resilience Questionnaire

Your answers to this questionnaire are confidential. YOU DO NOT NEED TO WRITE YOUR NAME.

There are no right or wrong answers. We are interested in your experiences.

Please be as truthful as you can.

Please read each line carefully and circle the number that most closely tells us how often each statement is true for you.

For example, if you like the hot weather *some of the time* you should circle number 2.

	All the time	Some of the time	Most of the time	Not often	Never
I like hot weather	1	2	3	4	5

If you don't like hot weather at all, you should circle 5 (*Never*).

Thank you very much for taking the time to complete this questionnaire.

The following statements are about you, your family, friends, school and neighbourhood. The statements may or may not be true for you. Please circle the number that is closest to how it is for you.

### About you...

	Almost Never	Not Often	Some times	Most of the time	Almost Always
I can find positives even in bad situations	1	2	3	4	5
I get a buzz out of meeting new people	1	2	3	4	5
I feel that I am misunderstood	1	2	3	4	5
I get wound up about things	1	2	3	4	5
I accept things that I can't change	1	2	3	4	5
I think about what things might be like for other people	1	2	3	4	5
If I have a problem, I know there is someone I can talk to	1	2	3	4	5
I am able to let go of things I can't control	1	2	3	4	5
I enjoy helping people with their problems	1	2	3	4	5
I enjoy spending time by myself	1	2	3	4	5
I feel confident to do things by myself	1	2	3	4	5
I like to think about why things happen the way they do	1	2	3	4	5
I can stand up for myself when there is a problem	1	2	3	4	5
My feelings are out of my control	1	2	3	4	5
When I am feeling down, I take extra special care of myself	1	2	3	4	5
I look for what I can learn out of bad things that happen	1	2	3	4	5
If I get upset, I know how to make myself feel better	1	2	3	4	5
I feel pressured to do things because my friends do them	1	2	3	4	5
I expect people to live up to my standards	1	2	3	4	5
I try to find meaning in the things that happen to me	1	2	3	4	5
I feel good about myself	1	2	3	4	5
I can accept other people's opinions even if they are different from mine	1	2	3	4	5
I can express my opinions when I am in a group	1	2	3	4	5
I feel stronger because of the problems I have faced	1	2	3	4	5
I am not happy unless things are perfect	1	2	3	4	5
If something is becoming a problem I try to ignore it	1	2	3	4	5
I feel hopeful about my life	1	2	3	4	5
I feel confident that I can handle whatever comes my way	1	2	3	4	5
I make quick decisions which I regret later	1	2	3	4	5
I think about new activities or projects I would like to try	1	2	3	4	5
I worry about what people are thinking about me	1	2	3	4	5
I find it hard to make important decisions	1	2	3	4	5
My life has a sense of purpose	1	2	3	4	5

	Almost Never	Not Often	Some times	Most of the time	Almost Always
When people say nice things about me I find it hard to believe them	1	2	3	4	5
I have trouble explaining how I am feeling	1	2	3	4	5
I make plans for the future	1	2	3	4	5
I find it hard to express myself to others	1	2	3	4	5
I feel helpless when faced with a problem	1	2	3	4	5
If I have a problem I can work it out	1	2	3	4	5
When I make a mistake I feel that I am a hopeless person	1	2	3	4	5
Sometimes I just can't let go of bad feelings	1	2	3	4	5
If I can't handle something I find help	1	2	3	4	5
I tend to think the worst is going to happen	1	2	3	4	5
I am confident that I can achieve what I set out to do	1	2	3	4	5
I can share my personal thoughts with others	1	2	3	4	5
I worry about the future	1	2	3	4	5
I feel that I have little control over the things that happen to me	1	2	3	4	5
I understand why I feel the way I do	1	2	3	4	5
I prefer to do activities with other people	1	2	3	4	5
I listen carefully to what other people are saying	1	2	3	4	5
I can change the way I feel by changing the way I think	1	2	3	4	5
I take it easy on myself when I am not feeling well	1	2	3	4	5
I am comfortable having different opinions to my friends	1	2	3	4	5
I am patient with people who can't do things as well as I can	1	2	3	4	5
I dwell on the bad things that happen	1	2	3	4	5
I have ways of getting rid of bad feelings	1	2	3	4	5
I feel shy around people	1	2	3	4	5
I slow down when things are going too fast	1	2	3	4	5
I push myself too hard to do what everyone else does	1	2	3	4	5
I get frustrated when people make mistakes	1	2	3	4	5
I use humour to help me feel better about problems	1	2	3	4	5
I tend to get anxious in unfamiliar situations	1	2	3	4	5
If one approach to a problem doesn't work I find it hard to think of other ideas	1	2	3	4	5
I am a person who can go with the flow	1	2	3	4	5
People come to me with their problems	1	2	3	4	5
I am easily frustrated with people	1	2	3	4	5
If something upsets me it affects how I feel about everything	1	2	3	4	5
I make time to do the things I enjoy	1	2	3	4	5
I can't stop worrying about my problems	1	2	3	4	5
I feel alone in the world	1	2	3	4	5

	Almost Never	Not Often	Some times	Most of the time	Almost Always
I avoid social situations	1	2	3	4	5
I find it hard to understand people	1	2	3	4	5
I can change my feelings by changing the way I see things	1	2	3	4	5
When things go wrong, I tend to give myself a hard time	1	2	3	4	5
I think things through carefully before making decisions	1	2	3	4	5
I find it difficult to cope when things change unexpectedly	1	2	3	4	5
I try to do the right thing by others	1	2	3	4	5
I can understand how other people feel when they talk to me about their problems	1	2	3	4	5
Seeing the funny side of situations helps me when things get bad	1	2	3	4	5

Please feel free to comment on any of these statements:

---



---

<b>About family...</b>	Almost Never	Not Often	Some times	Most of the time	Almost Always
My family talks about problems we are having	1	2	3	4	5
My family listens to me	1	2	3	4	5
My mum or dad is over protective of me	1	2	3	4	5
My family is a safe place when things seem to be falling apart	1	2	3	4	5
We do things together as a family	1	2	3	4	5
There is someone in my family that I feel particularly close to	1	2	3	4	5
People in my family are too busy to pay attention to me	1	2	3	4	5
I enjoy spending time with my family	1	2	3	4	5
I don't feel loved by my family	1	2	3	4	5
I do fun things with my family	1	2	3	4	5
My family helps me to believe in myself and my abilities	1	2	3	4	5
My family understands my needs	1	2	3	4	5
I have a say in family decisions	1	2	3	4	5
There is someone in my family I can talk to about anything	1	2	3	4	5
My parents trust me to look after myself	1	2	3	4	5
My family provides me with emotional support	1	2	3	4	5
I can be honest with my family about how I feel	1	2	3	4	5
I get to spend enough time with my family	1	2	3	4	5
If I have a problem there is someone in my family I can talk to	1	2	3	4	5
People in my family expect too much of me	1	2	3	4	5

Please feel free to comment on any of these statements about family:

---



---



## About friends...

	Almost Never	Not Often	Some times	Most of the time	Almost Always
I feel confident around people my age	1	2	3	4	5
I feel left out of things	1	2	3	4	5
I wish I had more friends I felt close to	1	2	3	4	5
I have friends who make me laugh	1	2	3	4	5
I have a group of friends that I keep in touch with regularly	1	2	3	4	5
My friends get me into trouble	1	2	3	4	5
I have a friend I can trust with my private thoughts and feelings	1	2	3	4	5
I enjoy being around people my age	1	2	3	4	5
I find it hard making friends	1	2	3	4	5
I get to spend enough time with my friends	1	2	3	4	5
When I am down I have friends that help cheer me up	1	2	3	4	5

Please feel free to comment on any of these statements about friends:

---

---

## About school...

	Almost Never	Not Often	Some times	Most of the time	Almost Always
My teachers notice when I am doing a good job and let me know	1	2	3	4	5
I have a teacher that I feel looks out for me	1	2	3	4	5
My teachers expect too much of me	1	2	3	4	5
I get teased at school	1	2	3	4	5
Teachers in my school are caring	1	2	3	4	5
I am bored at school	1	2	3	4	5
I feel that what I say counts at school	1	2	3	4	5
At school students help to decide and plan things like school activities and events	1	2	3	4	5
I feel included by other students at school	1	2	3	4	5
I get involved with school activities	1	2	3	4	5
My teachers provide me with extra help if I need it	1	2	3	4	5
I hate going to school	1	2	3	4	5
There is an adult at school who I could talk to if I had a personal problem	1	2	3	4	5
My teachers are caring and supportive of me	1	2	3	4	5
I try hard in school	1	2	3	4	5

Please feel free to comment on any of these statements about school:

---

---

## About the area you live in, your neighbourhood or community...

	Almost Never	Not Often	Some times	Most of the time	Almost Always
I like the people in my neighbourhood	1	2	3	4	5
There is an adult in my neighbourhood I could talk to if I had a personal problem (e.g. neighbour, family friend)	1	2	3	4	5
The people in my neighbourhood treat other people fairly	1	2	3	4	5
If I did something wrong people in my neighbourhood would find out	1	2	3	4	5
Young people have a say in what happens in our neighbourhood	1	2	3	4	5
People in my neighbourhood are caring	1	2	3	4	5
People in my neighbourhood keep to themselves	1	2	3	4	5
I get involved in social groups in my neighbourhood that are not part of school (e.g. sporting club, scouts/guides)	1	2	3	4	5
I feel isolated in my neighbourhood	1	2	3	4	5
People in my neighbourhood know me personally	1	2	3	4	5
The people in my neighbourhood look out for one another	1	2	3	4	5
People in my neighbourhood go out of their way to help	1	2	3	4	5
I like my neighbourhood	1	2	3	4	5
I trust the people in my neighbourhood	1	2	3	4	5
The people in my neighbourhood look out for me	1	2	3	4	5

Please feel free to comment on any of these statements about your neighbourhood:

---



---



---

Some background questions about you...

How old are you? \_\_\_\_\_

Are you:

- Male  Female

At this stage in your life what are you doing: (Tick as many as apply)

- Attending school  Working part time  
 Attending university/TAFE  Working full time  
 Unemployed  Other \_\_\_\_\_

Are your parents:

- Living together  Have never lived together  
 Separated or divorced  Something else \_\_\_\_\_  
 One or both my parents have died

In your family, are you the:

- First child  Third child  
 Second child  Fourth child or higher

Your mothers highest level of education:

- Primary School  Technical /TAFE  
 Secondary School  Apprenticeship  
 University  Other \_\_\_\_\_

Your fathers highest level of education:

- Primary School  Technical /TAFE  
 Secondary School  Apprenticeship  
 University  Other \_\_\_\_\_

**Thank-you**

## P. Parent information letter and consent form.

### P.1 Parent Letter

Dear parent,

The Centre for Adolescent Health, Royal Children's Hospital is developing a resilience questionnaire. The questionnaire will help teachers and health professionals working with young people to better understand their needs during difficult times.

We would like your son or daughter to complete our questionnaire and give us their comments. This questionnaire looks at the strengths and skills that are important for young people in dealing with stressful life events. The questionnaire will take around 30 minutes to complete. Below are some examples of questions asked - students can circle *'Almost all the time'*, *'Most of the time'*, *'Sometimes'*, *'Not often'*, or *'Never'*.

Problem solving skills:	If I can't handle something I find help	I make quick decisions I regret later
Optimism:	I feel hopeful about my life	I worry about the future
Support from family:	I enjoy spending time with my family	I don't feel loved by my family

Your son/daughter's questionnaire answers will be confidential and he/she will not be named in any part of the study. You are free to decide whether you want your child to take part in the study or to withdraw your child at any time without giving a reason.

We would greatly value your child's assistance with this important research. Please fill out the yellow consent form showing whether you DO or DO NOT wish your child to take part, and return the form to school within the next two weeks. Only young people who have returned the signed yellow parent consent form to their teacher will be able to complete the questionnaire. We will also ask your child to give their written consent on the day of the study if they wish to complete the questionnaire.

If you have any concerns or questions please call Deirdre Gartland on 9345 7922. I look forward to hearing from you.

Susan Sawyer  
Director  
CAH

Dr Lyndal Bond  
Head of Research  
CAH

Deirdre Gartland  
Researcher  
CAH & Swinburne University

This page has some important general information about taking part in research studies approved by the Royal Children's Hospital.

**Your rights as the parent of a child in a research project are:**

- To choose for your son / your daughter to take part or not to take part
- To withdraw your son / your daughter from the study at any time
- To have the study fully explained to you and your son / your daughter
- You and your child should feel free to ask the researchers any questions about the study.

**Other information you should know before consenting for your child to be part of this study**

- Your son's/your daughter's answers to the questions on this study will be kept private. This is subject to legal requirements.
- Any information from this study will not reveal your son's/your daughter's identity.
- You should have been told what your son/your daughter needs to do for this study, and how long it will take.
- If you or your son/your daughter do not wish to take part in this study, this will not affect your or your son's / your daughter's relationship with the Royal Children's Hospital.
- This research project has been approved by the Royal Children's Hospital Ethics in Human Research Committee.

The person to contact first if you or your son/your daughter would like more information or have any questions about the study is:

Deirdre Gartland  
The Adolescent Resilience study  
Centre for Adolescent Health  
Tel: 9345 7922

If you have any concerns about the study, and would like to speak to someone independent, please contact during business hours:

The RCH Patient Representative  
RCH Hospital Support Unit  
Phone 9345 5676

*P.2 Parent Consent Form*

I \_\_\_\_\_

(Your full name)

Please tick:

DO CONSENT

DO NOT CONSENT

to my son/daughter taking part in the development of the ARQ-Pilot(ARQ-Pilot) which has been explained to me in the attached letter.

I understand that I am free to withdraw my son/daughter from the study at any time without explanation and that nonparticipation in this study will not in any way affect my access to the best available treatment and care at the Centre for Adolescent Health or the Royal Children's Hospital.

Signature

Date

**Thank you.**

Q. Student information letter and consent form.

*Q.1 Information letter*

Adolescent Resilience Questionnaire

Dear student,

The Centre for Adolescent Health, Royal Children's Hospital is developing a questionnaire and we want your help to develop a questionnaire that works!

The questionnaire looks at the strengths and skills that are important for young people in dealing with stressful life events (or 'resilience'). Once developed, the questionnaire will help teachers and health professionals working with young people to better understand their needs during difficult times.

We would like you to complete our questionnaire and give us your comments. The questionnaire will take around 30 minutes. Participation is completely voluntary and you are free to withdraw at any time.

Please fill in the consent form indicating whether you DO or DO NOT wish to take part. This will be kept separately from your questionnaire so that your responses will be private and confidential. You will not be identified by name in any part of the project. You do not need to put your name on the questionnaire.

If you have any concerns or questions please ask the researcher or your teacher.

Thank you

Susan Sawyer  
Director  
CAH

Dr Lyndal Bond  
Head of Research  
CAH

Craig Olsson  
Researcher  
CAH

Deirdre Gartland  
Researcher  
CAH & Swinburne University

This page has some important general information about taking part in research studies approved by the Royal Children's Hospital.

**Your rights as a participant in a research project are:**

- To choose to take part or not to take part
- To withdraw from the study at any time
- To have the study fully explained to you
- You should feel free to ask the researchers any questions about the study.

**Other information you should know before consenting to be part of this study**

- Your answers to the questions on this study will be kept private. This is subject to legal requirements.
- Information from this study will not reveal your identity.
- You should have been told what you need to do for this study, and how long it will take.
- If you do not wish to take part in this study, this will not affect your relationship with the Royal Children's Hospital.
- This research project has been approved by the Royal Children's Hospital Ethics in Human Research Committee.

The person to contact first if you would like more information or have any questions about the study is:

Deindre Gartland  
The Adolescent Resilience study  
Centre for Adolescent Health  
Tel: 9345 7922

If you have any concerns about the study, and would like to speak to someone independent, please contact during business hours:

The RCH Patient Representative  
RCH Hospital Support Unit  
Phone 9345 5676



*Q.2 Student Consent Form*

I \_\_\_\_\_ (Your full name)

Please tick:

DO CONSENT

DO NOT CONSENT

to taking part in the development of the ARQ-Pilot(ARQ-Pilot) which has been explained to me in the attached letter.

I understand that I am free to withdraw from the study at any time without explanation and that nonparticipation in this study will not in any way affect my access to the best available treatment and care at the Centre for Adolescent Health or the Royal Children's Hospital.

Signature

Date

**Thank you.**

R. Example of a school report.

### **Adolescent Resilience Questionnaire results**

#### *School Name*

Thank you very much for being involved in the Centre for Adolescent Health, Royal Children's Hospital research in the area of resilience. Your assistance and involvement were central to the success of the research study.

The data collected at *School Name* and nine other schools in Victoria will be used to test and revise a newly developed resilience questionnaire. The questionnaire examines the strengths and skills that are important for young people in dealing with stressful life events. When completed, the Adolescent Resilience Questionnaire will help teachers and health professionals working with young people to better understand their needs during difficult times.

The following report has been written specifically to provide you with feed back on the data collected at your school. It covers a selection of areas and items from the Adolescent Resilience Questionnaire that were considered most relevant and interesting to you. Tables present the data for your school and for all students at the eight schools collected to date. It should be noted that these are preliminary results. The response rate for your school was:

Year seven (2 classes)	84%
Year nine (2 classes)	39%

If you have any queries, please feel free to contact me.

Yours sincerely

Deirdre Gartland  
Phone: 9345 7922  
Email: [gartland@cryptic.rch.unimelb.edu.au](mailto:gartland@cryptic.rch.unimelb.edu.au)

### **School environment**

*School name* student responses were generally similar to those for all students surveyed. In terms of the school environment, students at *School name* appeared to feel included and involved, reporting slightly higher levels than the sample as a whole (see Table 1).

As shown in Table 1, students reported similar levels of connectedness to school as the general sample. Positively, only a small proportion of students reported being teased at school. However, as with all students surveyed, a number of *School name* students reported being bored at school or hated going to school ‘almost always’ or ‘most of the time’. A smaller proportion of *School name* students reported hating going to school compared to the whole sample.

With respect to connectedness to staff, students were generally positive. However students at *School name* were less likely to report that there was an adult at school they could talk to if they had a personal problem compared to the whole sample.

Table 1. Combined responses for ‘*Almost always*’ or ‘*Most of the time*’ for selected items relating to school.

	<i>School name</i> n = 53 %	All schools n = 375 %
<b>School environment</b>		
I feel included by other students at school	62	58
I feel that what I say counts at school	29	20
At school students help to decide and plan things like school activities and events	49	40
I get involved with school activities	58	50
<b>Student connectedness</b>		
I get teased at school	15	13
I hate going to school	28	34
I am bored at school	42	45
I try hard in school	79	77
<b>Staff</b>		
My teachers provide me with extra help if I need it	56	52
My teachers notice when I am doing a good job and let me know about it	44	47
My teachers expect too much of me	32	28
My teachers are caring and supportive of me	36	33
There is an adult at school who I could talk to if I had a personal problem	27	40

## Personal skills and resources

As shown in Table 2 most students reported positive social engagement, with access to someone they could talk to about problems and few students reported feeling alone in the world. A low level of peer pressure was reported.

In terms of self-esteem, students were generally feeling positive about themselves and their abilities, however over a third showed evidence of a pessimistic rather than positive approach.

Table 2. Combined responses for ‘Almost always’ or ‘Most of the time’ for selected items relating to personal skills and resources.

	<i>School name</i>	All schools
	n = 53	n = 375
	%	%
<b>Social skills</b>		
If I have a problem, I know there is someone I can talk to	67	63
I feel alone in the world	9	16
I feel pressured to do things because my friends do them	13	12
<b>Self-confidence</b>		
I feel good about myself	62	62
I feel confident that I can handle whatever comes my way	48	53
When I make a mistake I feel that I am a hopeless person	17	21
I tend to think the worst is going to happen	36	33
<b>Optimism / positive future expectations</b>		
I feel hopeful about my life	66	64
My life has a sense of purpose	66	60
I worry about the future	28	33
<b>Emotion regulation</b>		
If I get upset, I know how to make myself feel better	47	46
I understand why I feel the way I do	36	40
I have trouble explaining how I am feeling	37	41
My emotions keep bottling up	31	29
<b>Problem solving</b>		
If I have a problem I can work it out	64	57
I feel helpless when faced with a problem	15	18
I make quick decisions which I regret later	35	32
I can't stop worrying about my problems	40	32

*School name* students were very positive in terms of having a sense of optimism and meaning in their lives. However, as with the student sample as a whole, a smaller proportion of *School name* students reported understanding and being in control of their

emotions. Almost half knew how to make themselves feel better and just over a third reported they understood their feelings and a similar number reported difficulties expressing their feelings.

Students reported positive skills in terms of problem solving. However regretting ‘quick’ decisions and worrying about problems was a concern for over a third of students.

### Family and friends

Students were generally very positive about the support received from family and friends. Most *unidentified school* students reported having a family member they felt close to and could talk to. A higher proportion of *School name* students reported open communication and doing things together as a family than did the sample as a whole.

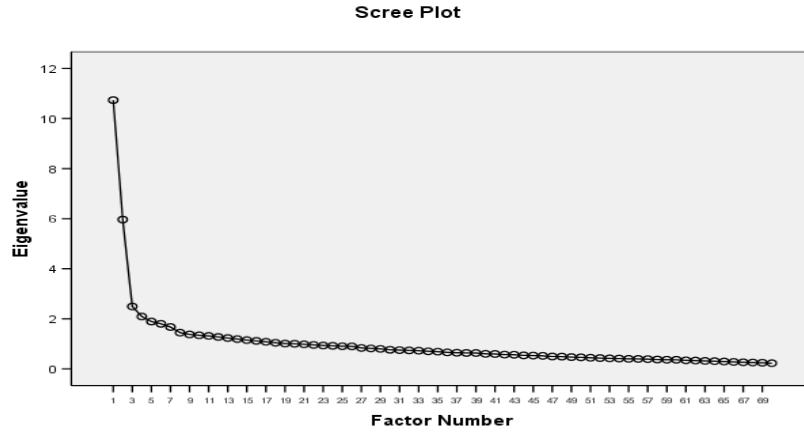
Table 3. Combined responses for ‘*Almost always*’ or ‘*Most of the time*’ for selected items related to family and friends

	X school n = 53 %	All schools n = 375 %
<b>Family</b>		
There is someone in my family that I feel particularly close to	74	66
There is someone in my family I can talk to about anything	64	56
My family listens to me	66	61
I can be honest with my family about how I feel	56	49
My family understands my needs	60	58
We do things together as a family	64	53
People in my family expect too much of me	21	20
<b>Friends</b>		
I have a group of friends that I keep in touch with regularly	79	81
I have a friend I can trust with my private thoughts and feelings	70	70
I find it hard making friends	11	10
I wish I had more friends I felt close to	25	33

Most students also had a group of friends they kept in touch with and at least one friend they could trust with private feelings. Only a small proportion reported finding it difficult to make friends, however a quarter of students reported wanting more friends they ‘felt close to’.

S. Individual domain: Factor analysis output (n=451)

S.1 Scree plot



S.2 Initial statistics for a 5-factor solution with oblimin rotation (n = 451)

Factor	Initial Eigenvalues			Rotation Sums of Squared Loadings(a)
	Total	% of Variance	Cumulative %	Total
1	10.74	15.34	15.34	6.98
2	5.97	8.52	23.86	6.69
3	2.49	3.56	27.42	3.76
4	2.09	2.99	30.41	4.58
5	1.89	2.70	33.11	4.41
6	1.80	2.57	35.68	
7	1.67	2.39	38.07	
8	1.45	2.07	40.15	
9	1.38	1.97	42.11	
10	1.34	1.92	44.03	
11	1.32	1.88	45.92	
12	1.28	1.82	47.74	
13	1.23	1.76	49.51	
14	1.19	1.70	51.21	
15	1.15	1.64	52.85	
16	1.12	1.60	54.45	
17	1.08	1.55	56.00	
18	1.04	1.49	57.49	
19	1.01	1.44	58.93	
20	1.00	1.43	60.37	
21	0.98	1.40	61.77	
22	0.96	1.37	63.13	
23	0.93	1.33	64.47	
24	0.92	1.32	65.78	
25	0.90	1.29	67.08	

*S2 (continued)*

*Initial statistics for a 5-factor solution with oblimin rotation (n = 451)*

Factor	Initial Eigenvalues		Rotation Sums of Squared Loadings(a)
	Total	% of Variance	Cumulative %
26	0.90	1.28	68.36
27	0.84	1.19	69.55
28	0.82	1.17	70.72
29	0.80	1.14	71.86
30	0.76	1.09	72.95
31	0.75	1.07	74.02
32	0.74	1.05	75.07
33	0.73	1.04	76.11
34	0.70	1.00	77.11
35	0.69	0.98	78.09
36	0.66	0.94	79.03
37	0.64	0.92	79.95
38	0.64	0.91	80.86
39	0.63	0.91	81.77
40	0.60	0.86	82.63
41	0.60	0.85	83.48
42	0.57	0.82	84.29
43	0.57	0.81	85.10
44	0.54	0.77	85.87
45	0.53	0.76	86.63
46	0.52	0.75	87.38
47	0.50	0.71	88.09
48	0.49	0.70	88.79
49	0.47	0.68	89.47
50	0.46	0.66	90.13
51	0.45	0.64	90.77
52	0.43	0.62	91.39
53	0.42	0.60	91.99
54	0.41	0.59	92.58
55	0.40	0.58	93.16
56	0.40	0.57	93.73
57	0.39	0.56	94.29
58	0.38	0.54	94.83
59	0.37	0.53	95.35
60	0.37	0.52	95.87
61	0.34	0.49	96.36
62	0.34	0.48	96.84
63	0.32	0.46	97.30
64	0.31	0.45	97.75
65	0.30	0.42	98.17

(a) When factors are correlated, sums of squared loadings cannot be added to obtain a total variance.

ARQ-Rev1 Scale	ARQ-Rev1 Factor	Factor*				
		1	2	3	4	5
	<b>Negative cognition</b>					
Negative cognition	When things go wrong, I tend to give myself a hard time	0.63				
Negative cognition	Sometimes I just can't let go of bad feelings	0.59				
Negative cognition	I can't stop worrying about my problems	0.57				
Negative cognition	If something upsets me it affects how I feel about everything	0.54				
Negative cognition	I tend to think the worst is going to happen	0.52				
Negative cognition	I worry about the future	0.49				
Negative cognition	I dwell on the bad things that happen	0.48				
Negative cognition	My feelings are out of my control	0.47				
Social skills	I feel alone in the world	0.47				
Negative cognition	I find it difficult to cope when things change unexpectedly	0.44				
Negative cognition	When I make a mistake I feel that I am a hopeless person	0.44				
Emotional insight	I like to think about why things happen the way they do	0.43				
Empathy	I can understand how other people feel when they talk to me about their problems	0.42				
Social skills	I feel that I am misunderstood	0.42				
Negative cognition	I feel that I have little control over the things that happen to me	0.38				
Emotional insight	I think about what things might be like for other people	0.37				
Negative cognition	I worry about what people are thinking about me	0.37				
Negative cognition	I get wound up about things	0.34				
Negative cognition	I tend to get anxious in unfamiliar situations	0.31				
Social skills	I enjoy spending time by myself					
	<b>Confidence (in self and future)</b>					
Optimism	I feel hopeful about my life	0.67				
Self-Confidence	I am confident that I can achieve what I set out to do	0.65				
Self-Confidence	I feel confident that I can handle whatever comes my way	0.64				
Self-Confidence	I feel good about myself	0.56				
Optimism/	My life has a sense of purpose	0.54				
Optimism	I am a person who can go with the flow	0.47				
Self-Confidence	I think about new activities or projects I would like to try	0.45				
Self-Confidence	I feel confident to do things by myself	0.43				
Self-Confidence	If I have a problem I can work it out	0.43				
Self-Confidence	I feel stronger because of the problems I have faced	0.39				
Emotional insight	If I get upset, I know how to make myself feel better	0.38				0.30
Optimism	I make plans for the future	0.33				
Emotional insight	I have ways of getting rid of bad feelings	0.31				
Social skills	I can stand up for myself when there is a problem					
Emotional insight	I understand why I feel the way I do					
Optimism	I use humour to help me feel better about problems					
Optimism	Seeing the funny side of situations helps me when things get bad					
Optimism	I can find positives even in bad situations					
Social skills	I get a buzz out of meeting new people					



S.3 (continued)

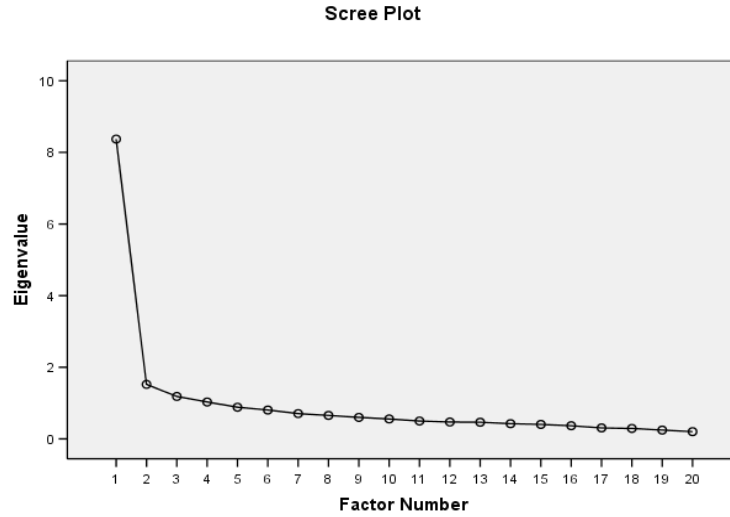
Conceptual scales and pattern matrix of 5-factor solution (n = 451)

ARQ-Rev1 Scale	ARQ-Rev1 Factor	Factor*				
		1	2	3	4	5
<b>Empathy / Tolerance</b>						
Empathy/Tolerance	I am patient with people who can't do things as well as I can			-0.55		
Empathy/Tolerance	I get frustrated when people make mistakes			0.55		
Empathy/Tolerance	I am easily frustrated with people			0.52		
Empathy/Tolerance	I expect people to live up to my standards			0.49		
Negative cognition	I push myself too hard to do what everyone else does			0.32		
Emotional insight	I am able to let go of things I can't control			-0.32		
Problem solving	I make quick decisions which I regret later					
Emotional insight	I accept things that I can't change					
Negative cognition	I am not happy unless things are perfect					
<b>Social skills</b>						
Social skills	I find it hard to express myself to others				0.54	
Social skills	People come to me with their problems	0.44			-0.46	
Social skills	I feel helpless when faced with a problem				0.41	
Social skills	I can share my personal thoughts with others				-0.39	
Problem solving	I find it hard to make important decisions	0.32			0.37	
Negative cognition	I have trouble explaining how I am feeling	0.30			0.36	
Social skills	I can express my opinions when I am in a group		0.33		-0.36	
Social skills	I feel pressured to do things because my friends do them			0.31	0.33	
Problem solving	If something is becoming a problem I try to ignore it					
Problem solving	If one approach to a problem doesn't work I find it hard					
<b>Emotional insight</b>						
Emotional insight	When I am feeling down, I take extra special care of myself					0.48
Emotional insight	I look for what I can learn out of bad things that happen					0.44
Emotional insight	I think things through carefully before making decisions					0.42
Emotional insight	I take it easy on myself when I am not feeling well					0.41
Problem solving	If I have a problem, I know there is someone I can talk to					0.40
Emotional insight	I slow down when things are going too fast					0.40
Problem solving	If I can't handle something I find help					0.40
Emotional insight	I can change my feelings by changing the way I see things					0.37
Emotional insight	I try to find meaning in the things that happen to me					0.33
Emotional insight	I can change the way I feel by changing the way I think					
Social skills	I feel shy around people					

Note. Maximum Likelihood extraction, Oblimin rotation with Kaiser Normalisation, Rotation converged in 20 iterations.

T. Family domain: Factor analysis output (n=451)

T.1 Scree plot



T.2 Initial statistics for a two-factor solution with oblimin rotation (n = 451)

Factor	Initial Eigenvalues			Rotation Sums of Squared Loadings(a)
	Total	% of Variance	Cumulative %	Total
1	8.37	41.86	41.86	7.00
2	1.52	7.61	49.47	5.47
3	1.19	5.93	55.39	5.57
4	1.03	5.15	60.54	0.95
5	0.88	4.42	64.97	
6	0.81	4.03	69.00	
7	0.71	3.53	72.53	
8	0.66	3.28	75.81	
9	0.60	3.00	78.81	
10	0.56	2.78	81.59	
11	0.50	2.50	84.09	
12	0.47	2.36	86.45	
13	0.47	2.33	88.77	
14	0.42	2.12	90.90	
15	0.40	2.02	92.92	
16	0.37	1.84	94.76	
17	0.31	1.54	96.30	
18	0.29	1.46	97.75	
19	0.25	1.23	98.99	
20	0.20	1.01	100.00	

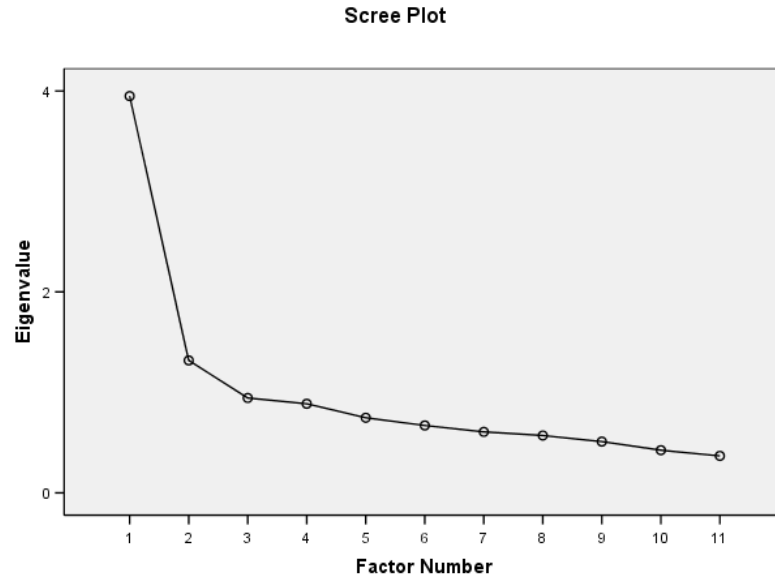
(a) When factors are correlated, sums of squared loadings cannot be added to obtain a total variance.

T.3 *Conceptual scales and pattern matrix of two-factor solution (n = 451)*

ARQ-Rev1 Scale	ARQ-Rev1 Factor	Factor	
		1	2
<b>Connectedness</b>			
Connectedness	I do fun things with my family	0.88	
Connectedness	We do things together as a family	0.81	
Connectedness	My family understands my needs	0.71	
Connectedness	I enjoy spending time with my family	0.69	
Connectedness	I get to spend enough time with my family	0.68	
Connectedness	My family is a safe place when things seem to be falling apart	0.67	
Availability	I have a say in family decisions	0.66	
Connectedness	My family helps me to believe in myself and my abilities	0.65	
Connectedness	My family listens to me	0.64	
Connectedness	My family provides me with emotional support	0.58	
Connectedness	My parents trust me to look after myself	0.47	
Connectedness	People in my family expect too much of me	-0.45	
Connectedness	I can be honest with my family about how I feel	0.42	-0.35
Availability	People in my family are too busy to pay attention to me	-0.40	
Connectedness	I don't feel loved by my family	-0.37	
Connectedness	My family talks about problems we are having	0.34	
<b>Availability</b>			
Availability	There is someone in my family I can talk to about anything	-0.92	
Availability	If I have a problem there is someone in my family I can talk to	-0.79	
Availability	There is someone in my family that I feel particularly close to	-0.50	
Connectedness	My mum or dad is over protective of me		

U. Peer domain: Factor analysis output (n=451)

U.1 Scree plot



U.2 Initial statistics for a two-factor solution with oblimin rotation (n = 451)

Factor	Initial Eigenvalues			Rotation Sums of Squared Loadings (a)
	Total	% of Variance	Cumulative %	Total
1	3.95	35.90	35.90	3.09
2	1.32	11.99	47.89	2.32
3	0.94	8.59	56.48	
4	0.89	8.06	64.54	
5	0.75	6.80	71.34	
6	0.67	6.10	77.44	
7	0.61	5.52	82.96	
8	0.57	5.19	88.15	
9	0.51	4.64	92.79	
10	0.42	3.86	96.65	
11	0.37	3.35	100.00	

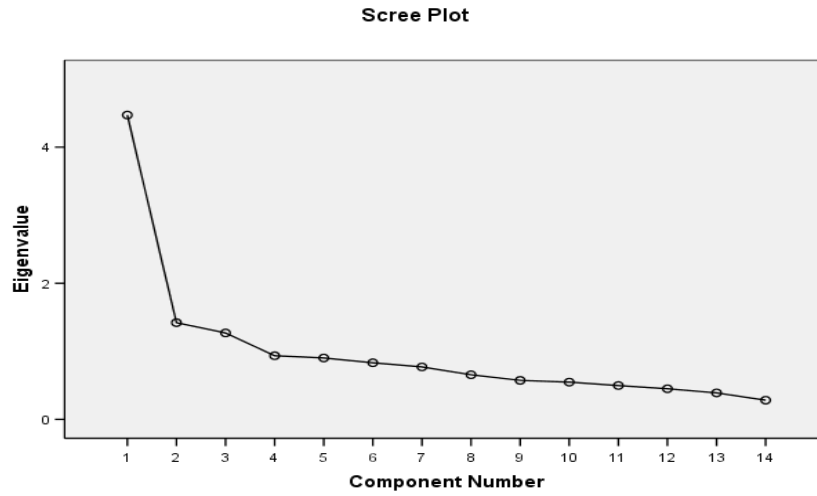
(a) When factors are correlated, sums of squared loadings cannot be added to obtain a total variance.

U.3 Conceptual scales and pattern matrix of two-factor solution (n = 451)

ARQ-Rev1 Scale	ARQ-Rev1 Factor	Factor	
		1	2
<b>Connectedness</b>			
Connectedness	When I am down I have friends that help cheer me up	0.78	
Availability	I have a group of friends that I keep in touch with regularly	0.65	
Availability	I have a friend I can trust with my private thoughts and feelings	0.65	
Connectedness	I have friends who make me laugh	0.59	
Connectedness	I enjoy being around people my age	0.57	
Availability	I get to spend enough time with my friends	0.41	
Connectedness	I feel confident around people my age	0.40	
<b>Availability (negative)</b>			
Connectedness	I feel left out of things		0.82
Availability	I wish I had more friends I felt close to		0.55
Availability	I find it hard making friends		0.46
Connectedness	My friends get me into trouble		

V. School domain: Factor analysis output (n = 451)

V.1 Scree plot



V.2 Initial statistics for a 2-factor solution with oblimin rotation (n = 451)

Component	Initial Eigenvalues			Rotation Sums of Squared Loadings		
	Total	% of Variance	Cumulative %	Total	% of Variance	Cumulative %
1	4.47	31.94	31.94	3.16	22.60	22.60
2	1.42	10.15	42.10	2.18	15.57	38.17
3	1.27	9.07	51.17	1.82	13.00	51.17
4	0.94	6.68	57.85			
5	0.90	6.45	64.30			
6	0.83	5.94	70.24			
7	0.77	5.51	75.75			
8	0.66	4.69	80.43			
9	0.57	4.09	84.53			
10	0.55	3.91	88.44			
11	0.50	3.55	91.99			
12	0.45	3.22	95.20			
13	0.39	2.78	97.99			
14	0.28	2.01	100.00			

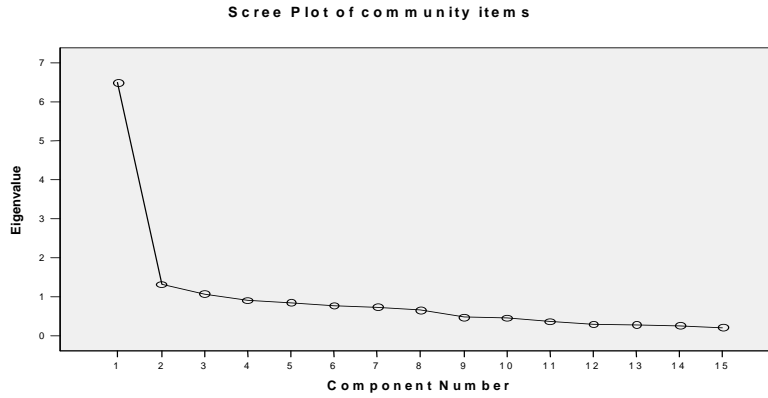
(a) When factors are correlated, sums of squared loadings cannot be added to obtain a total variance.

V.3 *Conceptual scales and pattern matrix of two-factor solution (n = 451)*

ARQ-Rev1 scale	ARQ-Rev1 Factor	Factor	
		1	2
<b>Supportive environment</b>			
Supportive environment	My teachers are caring and supportive of me	0.83	
Supportive environment	Teachers in my school are caring	0.74	
Supportive environment	My teachers provide me with extra help if I need it	0.66	
Supportive environment	I have a teacher that I feel looks out for me	0.63	
Supportive environment	My teachers notice when I am doing a good job and let me know about it	0.58	
Supportive environment	There is an adult at school who I could talk to if I had a personal problem	0.49	
Supportive environment	I feel that what I say counts at school	0.48	
Supportive environment	At school students help to decide and plan things like school activities and events	0.31	
Connectedness	I get involved with school activities	0.31	
Connectedness	I feel included by other students at school		
<b>Connectedness</b>			
Connectedness	I hate going to school		0.77
Connectedness	I am bored at school		0.66
Connectedness	I try hard in school		-0.40
Supportive environment	My teachers expect too much of me		0.33
Connectedness	I get teased at school		

W Community domain: Factor analysis output (n=451)

W.1 Scree plot



W.2 Initial statistics for a two-factor solution with oblimin rotation (n = 451)

Factor	Initial Eigenvalues			Rotation Sums of Squared
	Total	% of Variance	Cumulative %	Loadings(a)
1	6.48	43.25	43.25	6.01
2	1.30	8.73	51.98	1.42
3	1.06	7.13	59.11	
4	0.90	6.01	65.12	
5	0.83	5.58	70.70	
6	0.76	5.08	75.79	
7	0.72	4.82	80.61	
8	0.64	4.27	84.88	
9	0.45	3.07	87.94	
10	0.44	2.97	90.91	
11	0.35	2.34	93.25	
12	0.28	1.92	95.17	
13	0.27	1.80	96.97	
14	0.24	1.66	98.63	
15	0.20	1.37	100.00	

(a) When factors are correlated, sums of squared loadings cannot be added to obtain a total variance.



W.3 *Conceptual scales and pattern matrix of two-factor solution (n = 451)*

	Factor	
	1	2
I trust the people in my neighbourhood	0.90	
People in my neighbourhood are caring	0.83	
The people in my neighbourhood treat other people fairly	0.80	
I like my neighbourhood	0.80	
The people in my neighbourhood look out for me	0.77	
I like the people in my neighbourhood	0.75	
The people in my neighbourhood look out for one another	0.73	
People in my neighbourhood go out of their way to help	0.70	
People in my neighbourhood know me personally	0.51	0.36
There is an adult in my neighbourhood I could talk to if I had	0.42	
Young people have a say in what happens in our neighbourhood	0.40	
I get involved in social groups in my neighbourhood	0.31	
I feel isolated in my neighbourhood		
If I did something wrong people in my neighbourhood would find out		0.36
People in my neighbourhood keep to themselves		-0.30

## X. ARQ-Rev2 Scales

Scale	Items	Reliability (Cronbach Alpha)
Confidence (self/future)	I feel hopeful about my life I am confident that I can achieve what I set out to do I feel confident that I can handle whatever comes my way I feel good about myself My life has a sense of purpose I am a person who can go with the flow I feel confident to do things by myself If I have a problem I can work it out	0.81
Emotional insight	When I am feeling down, I take extra special care of myself I look for what I can learn out of bad things that happen I think things through carefully before making decisions I take it easy on myself when I am not feeling well If I have a problem, I know there is someone I can talk to If I can't handle something I find help I can change my feelings by changing the way I see things I try to find meaning in the things that happen to me	0.71
Negative cognition	When things go wrong, I tend to give myself a hard time (R) I just can't let go of bad feelings (R) I can't stop worrying about my problems (R) If something upsets me it affects how I feel about everything (R) I tend to think the worst is going to happen (R) I worry about the future (R) I dwell on the bad things that happen (R) My feelings are out of my control (R)	0.83
Social skills	I find it hard to express myself to others (R) I feel helpless when faced with a problem (R) I can share my personal thoughts with others I find it hard to make important decisions (R) I have trouble explaining how I am feeling (R) I can express my opinions when I am in a group I am a shy person* (R) I find it easy talking to people my age	0.68
Empathy	I am patient with people who can't do things as well as I can I get frustrated when people make mistakes (R) I am easily frustrated with people (R) I expect people to live up to my standards (R) I push myself too hard to do what everyone else does (R) I am able to let go of things I can't control (R) I think about other peoples feelings before I say things Other peoples feelings are easy for me to understand	0.66

## X. (continued)

## ARQ-Rev2 Scales

Scale	Items	Reliability (Cronbach Alpha)
Family Connectedness	I do fun things with my family We do things together as a family My family understands my needs I enjoy spending time with my family My family helps me to believe in myself and my abilities I get to spend enough time with my family My family listens to me People in my family expect too much of me (R)	0.86
Availability	There is someone in my family I can talk to about anything If I have a problem there is someone in my family I can talk to There is someone in my family that I feel particularly close to	0.80
Peer Connectedness	When I am down I have friends that help cheer me up I have a group of friends that I keep in touch with regularly I have a friend I can trust with my private thoughts and feelings I have friends who make me laugh I enjoy being around people my age I get to spend enough time with my friends I feel confident around people my age	0.80
Availability	I feel left out of things (R) I wish I had more friends I felt close to (R) I find it hard making friends (R) Making new friends is easy I prefer to do things on my own (R) I find it hard to stay friends with people (R) I am happy with my friendship group I feel shy around people my age (R)	0.64
Supportive School Environment	My teachers are caring and supportive of me My teachers provide me with extra help if I need it I have a teacher that I feel looks out for me My teachers notice when I am doing a good job and let me know I feel that what I say counts at school There is an adult at school who I could talk to if I had a personal problem I get involved with school activities At school students help to decide and plan things like school activities/events	0.81
Connectedness	I hate going to school (R) I am bored at school (R) I try hard in school My teachers expect too much of me (R) I join in class discussions I enjoy going to school I participate in class Getting good marks is important to me	0.66

Scale	Items	Reliability (Cronbach Alpha)
Community	<i>I trust the people in my neighbourhood</i> People in my neighbourhood are caring The people in my neighbourhood treat other people fairly I like my neighbourhood The people in my neighbourhood look out for me There is an adult in my neighbourhood I could talk to if I had a problem	0.87

\* Items in italic are new items (added with the intention of increasing reliability above 0.70), therefore reliability scores presented here were calculated using non-italicised items only.