Whole School Screening of Emotional Health Risk:

The Reliability and

Validity of a New Psychometric Instrument

John Burns

Bachelor of Social Work (UNSW)

Master of Letters in Psychology (UNE)

Master of Clinical Psychology (Macquarie)

This thesis is presented as partial fulfilment of the requirements for the degree of

Doctor of Philosophy

Submitted: August, 2017

1

Table of Contents

Thesis Summary

Recent research has demonstrated that as many as half of the young people with mental health difficulties are not being identified nor are they receiving any professional intervention. This is particularly concerning given that many evidenced-based prevention and early intervention programs exist for a wide range of mental health problems. One proposed solution to address this problem is mental health screening in schools. Schools are an ideal context within which to administer such screening, given that most students attend each day. Unfortunately, very few schools implement screening programs. The social validity and acceptability of currently available screening instruments is one hypothesised reason for this reluctance. This thesis presents the development of a new suite of mental health screening tools designed for use in schools to address the hypothesised social validity difficulties. Unlike most conventional mental health screening tools, the RADAR screening instruments do not ask about the presence or severity of symptoms of mental health disorders. Instead, they are based on risk and protective factors known to be associated with the development of mental health difficulties. As such, the RADAR instruments are particularly useful in screening for selective prevention programs, which are aimed at young people considered to be at-risk but not yet symptomatic. This thesis contains four individual papers evaluating the reliability and validity of the screeners. Paper 1 reports on the development of a Youth Version, Paper 2 reports on the development of a Child version and Paper 3 reports on the development of a Teacher version of the RADAR, while Paper 4 reports on a 12 month longitudinal follow-up of the initial Youth RADAR sample. The thesis concludes with some broader comments on a 'road map' for the implementation of mental health screening in Australian schools.

Statement of Candidate

I certify that the work in this thesis entitled "Whole School Screening of Emotional Health Risk: The Reliability and Validity of a New Psychometric Instrument" has not been submitted for a higher degree to any university or institution, nor has it been submitted as part of requirements for a degree to any other university or institution other than Macquarie University.

I also certify that the thesis in an original piece of research which has been written by me, with the support of my primary supervisor, Prof. Ronald M Rapee, and Associate Supervisor, Dr Lorna Peters. All other sources of information and literature used when preparing this thesis have been appropriately referenced. I further certify that the research presented within this thesis was approved by the Macquarie University Human Ethics Committee on 22 July, 2013 – Reference Number: 5201300284.

Name: John Burns   Signed:

Student ID: 89035623   Date: 15 August 2017

Acknowledgements

THESIS INTRODUCTION

The Status of Child and Adolescent Mental Health

Internationally, the mental health of children and adolescents is recognised as an extremely important issue (World Health Organisation, 2005, 2012). This importance stems from at least five inter-related factors.

      1. **Mental health problems in young people are prevalent:** Despite differences in the type of prevalence measured (point, period, lifetime), the methodologies used, the assessment systems, the ages of young people and disorders studied, the common theme across many studies is that mental health difficulties in young people are common. A review of global youth mental health prevalence found rates between 13 and 57% (Patel, Flisher, Hetrick, & McGorry, 2007), although a consensus figure is that at any given time up to 20% of young people experience a serious mental illness (Belfer, 2008). Recent Australian data on 12-month prevalence of mental health disorders in young people found that almost one in seven (13.9%) 4-17 year olds have a mental disorder (Lawrence et al., 2015). Of these, one third were found to have two or more concurrent mental health disorders. Anxiety disorders appear to be the most common difficulty in young people (Polanczyk, Salum, Sugaya, Caye, & Rohde, 2015). However, prevalence rates vary according to age and sex, with males showing higher rates of behaviour disorders than females and adolescents –particularly adolescent girls - showing higher rates of depression than children (Lawrence et al., 2015; Merikangas et al., 2010). Importantly, most mental health problems commence during childhood and adolescence (Kessler et al., 2007) and prevalence rates appear to increase into later adolescence and young adulthood, with younger age groups experiencing higher frequency of disorders than older adults (Australian Bureau of Statistics, 2008).

2. **Mental health problems in young people are persistent:** Many mental health problems experienced by young people do not necessarily resolve, but rather continue into adult life. For example, depression in adolescence is known to predict continued mental health problems into adult life (Fergusson, Boden, & Horwood, 2007; Jonsson et al., 2011; Weissman et al., 1999), with 50% of young people with major depression continuing to experience adult episodes (Kessler, Avenevoli, & Merikangas, 2001). In relation to anxiety, specific manifestations of anxiety in childhood have been found to be precursors of more typical adult expressions of anxiety. For example, separation anxiety disorder (SAD) in childhood is a major vulnerability for mental disorders in adulthood (Lewinsohn, Holm-Denoma, Small, Seeley, & Joiner Jr, 2008). Disorders such as schizophrenia (Newman, Bland, & Thompson, 2012) and bipolar disorder in youth (Solomon et al., 2010) are known to frequently continue episodically throughout adulthood.

3. **Mental health problems in young people are preventable**: A sizeable and growing research base now exists on the risk and protective factors in a young person's social, environmental and psychological life that can cause and shape the development of emotional and behavioural disorders. From this, many prevention and early intervention programs have been developed which have been shown to make a significant difference in the well-being of young people. Evidence-based prevention programs exist for both internalising disorders (Corrieri et al., 2014; Stice, Shaw, Bohon, Marti, & Rohde, 2009; Werner-Seidler, Perry, Calear, Newby, & Christensen, 2017) and externalising disorders (Borden, Schultz, Herman, & Brooks, 2010; Hanisch et al., 2010; Thomas & Zimmer-Gembeck, 2007). Moreover, prevention programs have been developed for implementation

across a range of formats, including school-based delivery (Calear & Christensen, 2010b), community-based delivery (Christensen, Pallister, Smale, Hickie, & Calear, 2010) and internet based delivery (Calear & Christensen, 2010a).

4. **Mental health problems in young people are costly:** Mental health disorders create an enormous burden on the community in terms of disability-adjusted life years (DALYs), years of life lost to premature mortality (YLLs) and years lived with disability (YLD). Concerningly, the burden of these disorders increased by over 35% between 1990 and 2010, with the highest proportion of total DALYs occurring in people aged 10-29 years (Whiteford et al., 2013). Costs incurred by mental health to the community include costs to the health care system, the education system, the justice system as well as to the individual families of the patient (Beecham, 2014). In Australia, mental illness in young men (12-25 years) costs the Australian economy $3.27 billion per year (Degney et al., 2012). In an economic estimate of the educational outcomes of students with ADHD it was found that these students incurred an average annual incremental cost to society of $5007 as compared to $318 for students without ADHD (Robb et al., 2011). From a purely financial point of view there are compelling reasons to be concerned about the rates and burden of the mental health of young people.

5. **Mental health problems in young people are frequently undiagnosed and/or untreated:** One key concern is that many young people with a mental health difficulty are not receiving assistance. In one American study, only 45% of adolescents with psychiatric disorders had received some form of professional help (Costello, He, Sampson, Kessler, & Merikangas, 2014). Data from Australia revealed that only about half (56%) of young people identified with a mental disorder had used services for their emotional and behavioural problems in the

previous 12 months (Lawrence et al., 2015). Similarly, a large scale study in Germany found that less than half of the young people identified with mental health problems were receiving treatment or were recognised by their parents as needing help (Ravens-Sieberer et al., 2008). The conclusion to be drawn is that although many young people experience emotional or behavioural difficulties, few of them are receiving suitable mental health intervention.

Concern for the mental health of young people, then, is well founded and highlights the need for effective programs to identify and assist those who need help. Traditionally, the focus of mental health care and intervention has been seen as the role of hospitals and community-based clinics. More recently, however, attention has shifted to the role that schools can play in helping address the mental health needs of young people (Fazel, Hoagwood, Stephan, & Ford, 2014; Weist & Murray, 2008). It is this key role of schools that is the focus of this thesis.

Schools – The New Frontier of Mental Health Intervention

The World Health Organisation's Ottawa Charter for Health Promotion (World Health Organisation, 1986) helped bring attention to the role community agencies, including schools, could play in promoting health and well-being. While the initial focus of the Health Promoting Schools movement emphasised physical health, since the 1990s there has been a burgeoning interest in the role that schools can play in the promotion of social and emotional wellbeing and indeed in the prevention of mental health disorders (Langford et al., 2015; Langford et al., 2014; Mũkoma & Flisher, 2004; Weist, 2001).

Schools have been described as 'second only to families in their potential to affect children's mental health', in so far as they can 'contribute to young people's successful

development by providing nurturance and the opportunity to develop cooperative social relations and social and psychological skills (National Research Council and Institute of Medicine, 2009, p. 178). Counselling services have traditionally been a key element of the mental health interventions offered in schools (Romer & McIntosh, 2005). Importantly, young people consistently identify a preference for school-based counselling services over community-based providers. This has been demonstrated in studies from the United Kingdom (Cooper, 2006; Quinn & Chan, 2009), Australia (Boyd et al., 2011) and an American study of ethnic and lower SES adolescents (Barker & Adelman, 1994).

Mental health practitioners from both within the school system (Ross, Powell, & Elias, 2002) and from outside it (Fazel, Hoagwood, et al., 2014; Fazel, Patel, Thomas, & Tol, 2014) are encouraging prevention and early intervention programs in schools for students. These programs can helpfully be considered in terms of the Institute of Medicine's classification of preventative interventions for mental disorders –universal, selective and indicated programs (Institute of Medicine Committee on Prevention of Mental Disorders, 1994).

Universal Programs

Universal programs are those that aim to improve the mental health of a whole population, whether it is a country, community or school. As such, they are administered to whole cohorts, regardless of their mental health risk status. There are some clear advantages to schools implementing universal programs over selective or indicated programs (Ahlen, Lenhard, & Ghaderi, 2015; Offord, Kraemer, Kazdin, Jensen, & Harrington, 1998). By not 'targeting' particular students, universal programs avoid the possibility of labelling or stigmatising individuals. Associated with this,

13

universal programs are less likely to have participants drop out compared to targeted

programs. Moreover, by delivering content to all students, school communities ensure

that students with genuine mental health needs do not get overlooked by inadequate or

imperfect case-identification processes. Accordingly, universal programs have been

advocated for a range of mental health concerns, including anxiety (Barrett & Pahl,

2006) depression (Gillham et al., 2007; Shochet et al., 2001) and substance abuse

(Newton, Andrews, Teesson, & Vogl, 2009; Newton, Teesson, Vogl, & Andrews,

2010). Various criticisms have also been levelled at universal programs. Delivering a

program to a whole community/cohort may be seen as unnecessarily expensive given

that it involves intervening with students who do not necessarily need the intervention

on offer. Universal interventions are also associated with relatively small effects. There

is a growing evidence base about the effectiveness of universal programs, primarily

through meta-analytic reviews. In relation to anxiety, Ahlen, Lenhard and Ghaderi

(2015) found an effect size (ES) of .13, Teubert and Pinquart (2011) report an effect

size of .12 and Fisak, Richard and Mann (2011) found an effect size of .18. Similar

effect sizes have been found for universal prevention programs for depression, with

Ahlen (2015) reporting an ES of .11 and Horowtiz and Garber (2006) reporting .12.

Less favourable evaluations on universal programs for depression were found by Stice

and colleagues (Stice et al., 2009), who concluded that the effect sizes for universal

depression prevention programs were trivial and not significantly different from zero,

while in their meta-analysis of studies on the effectiveness of the Penn Resiliency

Program (PRP), Bastounis and colleagues found no evidence that the PRP reduced

anxiety or depression (Bastounis, Callaghan, Banerjee, & Michail, 2016). Studies on the

efficacy of universal prevention programs for alcohol and drug programs have returned

similarly small effect sizes (Teesson, Newton, & Barrett, 2012). On balance, while

universal programs have pragmatic advantages, their overall effectiveness in preventing anxiety and depression appears to be small.

Selective and Indicated Programs

Selective programs target young people who are considered to be at risk of developing a disorder by virtue of the existance of particular risk factors while *indicated* programs are for young people who are already showing signs or symptoms of a particular disorder. As such they offer some distinct advantages over universal programs – they are cheaper to implement and they focus resources on where there is greatest need. Selective programs have been developed for anxiety disorders (Dadds, Spence, Holland, Barrett, & Laurens, 1997; McLoone, Hudson, & Rapee, 2006; Wuthrich et al., 2012); PTSD (Stein, Jaycox, Kataoka, & et al., 2003; Tol et al., 2008); depression (Kowalenko et al., 2005); substance abuse (Conrod, O'Leary-Barrett, Newton, & et al., 2013); and suicide prevention (Katz et al., 2013). By and large, the advantages of selective and indicated interventions address many of the disadvantages of universal programs. Selective programs have the advantages of being cheaper and more efficient to implement and they focus resources on where there is greatest need (Offord et al., 1998). One key consideration for schools when determining whether to run universal or selected/indicated programs is whether one returns more effective results than the other. Various meta-analyses have been done to compare outcomes of universal vs. selective and indicated programs. In relation to prevention programs for depression, Werner-Seidler and colleagues (2017) found that targeted programs returned significantly higher effect sizes than universal programs ($g = .32$ and .19 respectively). Horowitz and Garber (2006) returned very similar results, finding selective programs to be superior to universal programs ($d = .30$ and .12 respectively). In their meta-analysis of prevention programs, Stice and colleagues (Stice et al., 2009) found that the average effect for

studies with targeted participants returned significantly larger effects than those in universal trials ($M\ r = .23$, $p < .001$ vs. $M\ r = .04$, p = ns.). Moreover, in their Cochrane Review of prevention programs for depression in children and adolescents, Merry and colleagues (2012) found evidence for the effectiveness of both selective and universal programs, but concluded that there is more evidence to support selective interventions than universal ones. Similarly, in their review of prevention programs for depression, Calear and Christensen (2010b) concluded that indicated programs appeared to be more efficacious than universal programs. Evidence regarding prevention programs for anxiety is not as definitive. A meta-analysis of 65 studies by Teubert and Pinquart (2011) found similar results to those for depression prevention programs – namely that selective programs returned higher effect sizes than universal programs ($g = .32$ and .12 respectively). However, in their meta-analyses, neither Fisak, Richard and Mann (2011) nor Werner- Seidler et al (2017) found a significant difference in the effect size between universal vs. selective programs, although both studies showed a trend towards higher effect sizes for selective programs. Across all these studies various moderators were investigated without any clear consensus about the benefits of variables such as the inclusion of homework, the length of the programs and the training of the program deliverers (e.g., teachers vs. mental health professionals). There is some suggestion that females appear to respond better to intervention than males and older participants respond better than younger ones (Horowitz & Garber, 2006; Stice et al., 2009).

Across all reviews of prevention programs for young people, there are two important conclusions to be drawn. The first is the almost universal acknowledgement that more research is required to better understand the factors at play in accounting for the factors that lead to effective programs. The second is the commonly (but not universally) drawn conclusion that prevention programs produce larger effects when

delivered to young people who are identified to be at risk. This conclusion then directs researchers and practitioners alike to the core question (and criticism) of all selective and indicated programs: how can mental health practitioners ensure that those young people who need intervention are adequately identified? One solution that has been developed is the use of mental health screening.

Screening for Mental Health Difficulties in Schools

The United States Commission of Chronic Illness gave an early definition of screening as follows: *the presumptive identification of unrecognised disease or defect by the application of tests, examinations, or other procedures which can be applied rapidly. Screening tests sort out apparently well persons who probably have a disease from those who probably do not. A screening test is not intended to be diagnostic. Persons with positive or suspicious findings must be referred to their physicians for diagnosis and necessary treatment* (Commission on Chronic Illness, 1957).

This definition provides a number of vital parameters of relevance for school-based screening: screening is about presumptive identification of unrecognised difficulties; it uses tests/procedures that can be applied rapidly; screening does not seek to diagnose, but rather to tease out those who 'probably have' a disorder from those who 'probably do not'; and it leads to referral for further assessment and treatment.

A more recent definition of screening is offered by Wald, who defines screening as: *the systematic application of a test or inquiry, to identify individuals at sufficient risk of a specific disorder to benefit from further investigation or direct preventive action, among persons who have not sought medical attention on account of symptoms of that disorder* (Wald, 2008, p. 50). This definition helpfully highlights that screening is a

'systematic' process that is carried out to identify 'sufficient risk' of a disorder, in particular with people who have not sought help for symptoms.

Schools are an ideal setting in which to screen young people for mental health risk, given that most young people attend school on a daily basis. The use of screening in schools to assess mental health status is not a new concept. As far back as the 1940s Rogers carried out a study of three elementary schools in the United States using a ten-item instrument to 'locate the maladjusted child' (Rogers, 1942). In a paper published in the same year, Mooney promoted the use of a 'Problem Check List' completed by high school students to identity problems. He reported that 94% of students 'enjoyed filling out the list' and 84% of students indicated on the list that they would like an 'individual conference with someone to talk about their problems' (Mooney, 1942). While there has been a gradual increase in interest in school mental health screening over the past 50 years, it is in the past decade that this interest has begun to receive international momentum (Albers, Glover, & Kratochwill, 2007a; Kettler, Glover, Albers, & Feeney-Kettler, 2014; Weist, Rubin, Moore, Adelsheim, & Wrobel, 2007). A number of key factors – particularly in the United States - have prompted this momentum, including President George W. Bush's New Freedom Commission recommending comprehensive mental health screening for all children (Jeanne Lenzer, 2004) and the growth of the Response to Intervention (RTI) model in schools for students with academic and behavioural difficulties (Gresham, 2005). Screening is sometimes conducted as a stand-alone process for identification of students at-risk of having the 'condition' being screened for. More frequently, however, it is part of a multi-tiered or 'multi-gate' process involving multiple informant sources across different contexts, such as home and school. Such multi-gate screening is considered to not only accurately identify

students at risk, but to do so in a cost effective way (Walker, Small, Severson, Seeley, & Feil, 2014).

Glover and Albers (2007) have identified three key components for making informed decisions when implementing universal screening programs in schools. First, screeners should be appropriate for their intended use, including delivery modality, the constructs measured, the theoretical support and their contextual appropriateness for the intended population. Second, screeners should demonstrate technical adequacy, including adequacy of the normative sample as well as validity and reliability. Third, screeners should be 'useable', including a suitable balance of cost and benefit, feasibility of administration, and acceptability to stakeholders. These criteria provide a helpful 'yardstick' from which to evaluate not only the implementation of screening programs in schools, but also the development of new screening instruments.

The Case for Mental Health Screening in Schools

The case for universal mental health screening in schools rests on four key arguments:

1. **Adequate screening instruments exist:** Over the past 30 years the breadth and status of instrumentation has improved greatly. School mental health screening has now developed to a point that an extensive array of screening tools are available. The breadth and status of these tools has been evaluated in detail elsewhere (Levitt, Saka, Romanelli, & Hoagwood, 2007; Stiffler & Dever, 2015). These reviews outline the sophistication that now exists in such instruments, including screening instruments for different levels of screening approaches (universal, selective and indicated); screening instruments for different aged students (preschool, primary/elementary school, middle and high school);

19

screening instruments for report by different informants (parents, teachers and self-report); and screening tools to target different conditions (broad psychosocial risk, specialised instruments to identify a range of problems or diagnoses, and targeted instruments for a specific disorder). All psychological instruments have their merits and difficulties, leading Levitt and colleagues to conclude that psychologists need to examine carefully the relative performance of each instrument across various settings and population. Without doubt further work is required to develop and refine screening instruments. However, this does not detract from the point that a range of suitable screening instruments is available for current use.

2. **Young people generally do not seek help of their own volition**: Many studies over the past two decades have revealed that young people are reluctant to seek help for mental health problems (Chan & Quinn, 2012; Rickwood, Deane, & Wilson, 2007; Rickwood, Deane, Wilson, & Ciarrochi, 2005b; Yap, Reavley, & Jorm, 2013). The reasons for this reluctance include perceived stigma and embarrassment of seeking help, failure to recognise a need for help (i.e., poor mental health literacy), a preference for self-reliance and previous bad experiences with mental health professionals (Gulliver, Griffiths, & Christensen, 2010; Rickwood et al., 2005b). One of the most concerning outcomes of this reluctance is that many young people with genuine mental health distress are not getting assistance (Costello et al., 2014; Lawrence et al., 2015). A conclusion to be drawn from this is that concerned adults need to be proactive in ensuring that young people at risk of - or already experiencing - mental health distress are identified and referred for appropriate treatment. In this context, mental health screening in schools becomes a key platform for identifying these young people. This is

particularly salient in light of recent findings that young people report value in disclosing embarrassing or sensitive problems via an e-tool system rather than talking directly to a clinician (Bradford & Rickwood, 2014).

3. **Parents and teachers are not always competent to identify and act:** Mental health literacy refers to the knowledge and beliefs about mental disorders that aid their recognition, management or prevention. It includes the ability to recognise specific disorders and a knowledge of what to do once a particular disorder is identified (Jorm, 2000; Jorm et al., 1997). The ability of adults to correctly recognise emotional and behavioural difficulties in young people is limited, with only 58.5% correctly recognising depression and 41.9% correctly identifying ADHD (Pescosolido et al., 2008). Moreover, parents do not adequately understand the value of encouraging professional help-seeking for young people (Jorm, Wright, & Morgan, 2007). This is particularly important as their knowledge about mental health problems influences both the number and quality of services their children receive (Mendenhall, 2012). Research on self-harm shows that parents are usually not aware that their children are self-harming (Mojtabai & Olfson, 2008) and so are not in a position to be able to make an informed response. Similarly, there is concern about the mental health literacy of teachers. Teachers report that they have a lack of experience and training in relation to students with mental health concerns (Reinke, 2011). One study found that, even when given training in recognising depression in the classroom, teachers' ability to do so did not improve (Moor et al., 2007). In their study on teacher mental health literacy, Jorm and colleagues found that even if teachers' knowledge and beliefs about mental illness could be improved, that did not of itself translate to the type of actual support that teachers offered students in the

classroom (Jorm, Kitchener, Sawyer, Scales, & Cvetkovski, 2010). Moreover, in a study to assess the accuracy of high school professionals (including teachers, school psychologists, guidance counsellors and special educators) at identifying students with mental health difficulties, Scott and colleagues found that less than half the students identified by a diagnostic interview to have a mental health disorder were identified by the school professionals (Scott et al., 2009). The conclusion to be drawn is that significant adults in a young person's life cannot be relied on to adequately identify the young people in need of help, nor to ensure that such assistance is given. This again becomes a compelling argument to use screening practices to aid identification.

    4. **Help is available for students identified as being at-risk:** According to the World Health Organisation one necessary condition to be met before screening is carried out is that there should be an accepted treatment for those identified with a recognised disease (Wilson & Jungner, 1968). To carry out universal screening in schools without access to evidence-based treatments would be considered unethical. However, psychologists in schools can implement screening programs with full confidence in the existence of evidence based therapies for the disorders they are likely to screen for. This includes both those therapies that may be practiced during individual treatment (Weisz & Kazdin, 2010) and a wide range of group and online programs which may be offered within schools, as outlined above. While it remains incumbent on school mental health staff to plan intervention and follow-up their screening, the availability of such interventions provides a powerful argument to carry out screening.

The arguments against mental health screening in schools

There is a strong case to implement mental health screening programs in schools. It is somewhat surprising then that universal school-based screening remains the exception rather than the rule in most schools. One large study in the United States found that only 2% of schools screened all their students while 7% screened most of their students for mental health problems (Romer & McIntosh, 2005). Another study reported only 15% of schools carried out some form of school-wide screening for behavioural and emotional problems (Foster et al., 2005). The arguments against screening in schools appear to prevail in many schools. The case against school mental health screening can broadly be summarised into broad lines – social validity concerns and practical concerns.

1. **Social Validity concerns:** Social validity centres on the degree to which a test or measurement is validated by the community within which it is administered. Wolf (1978) articulates a number of levels at which the society needs to validate the tests, including to the degree to which the *goals* of testing are what the community wants, as well as whether the *processes* are acceptable to the community. A variety of objections to school-based mental health screening can be considered as questions of social validity. The most prominent concern cited by many observers is the fear, justified or otherwise, that screening can lead to children being labelled and stigmatised (Chafouleas, Kilgus, & Wallach, 2010; Levitt et al., 2007; Lyon, Maras, Pate, Igusa, & Vander Stoep, 2016). Others have criticised screening programs for not adequately seeking parental consent to conduct screening on minors (Jackson, 2006). The most notable example of this was the Columbia University TeenScreen program (Shaffer et al., 2004) which initially adopted a 'passive consent' approach, but in the face of opposition

moved to a formal written consent approach (Kaplan, 2006). The
TeenScreen program has also been criticised for being too closely associated
with pharmaceutical companies (Citizens Commission on Human Rights
International, 2006; Horgan, 2011). A final philosophical objection noted by
some is that caring for the emotional health of young people is the job of
parents and that school-based screening is a violation of this right (Ashford,
2005; Chafouleas et al., 2010; Kaplan, 2006).

2. **Practical concerns**: Many schools remain reluctant to implement mental
health screening for a range of practical and individual reasons. A key
concern cited is that screening will overburden the school mental health
system (Dever, Raines, & Barclay, 2012). Some support for this concern
comes from one study in which staff chose to discontinue screening after two
semesters because an overwhelming percentage of students (29%) were
identified as being at risk of suicide (Hallfors et al., 2006). To some degree
this becomes a matter of ensuring screening tools have the right balance of
sensitivity and specificity. A related concern is the need for school mental
health staff to ensure that suitable follow-up is available for students –both
within the school and within the community. Levitt et al (2007) rightly point
out that there can be a paucity of services in some communities and/or long
waiting lists to see community-based professionals. A second practical
concern about screening relates to the time and resources that a screening
program takes to implement. One study found that teachers refused to
complete the chosen screening tool (the Strengths and Difficulties
Questionnaire) because of the amount of time taken for completion (Lane,
Kalberg, Parks, & Carter, 2008). Some have expressed the view that

schools/education systems perceive screening as too costly to implement (Dever et al., 2012). This concern extends not just to the cost of the screening program, but also the cost of following up on those identified as being at risk, particularly those costs of assessing the 'false positives' from screening (Dowdy, Ritchey, & Kamphaus, 2010; Kratochwill, 2007). While there is strong evidence to support the cost-effectiveness of early identification and treatment of youth mental health disorders (Mihalopoulos & Vos, 2013; Mihalopoulos, Vos, Pirkis, & Carter, 2012; Mihalopoulos, Vos, Pirkis, Smit, & Carter, 2011), these are usually longer-term benefits to society rather than short term benefits to the school. Efforts have been made to estimate the costs and cost effectiveness of school-based mental health screening (Chatterji, Caffray, Crowe, Freeman, & Jensen, 2004; Kuo, Stoep, McCauley, & Kernic, 2009), but such studies do little to reassure school administrators, with the Chatterji study finding that the total cost of the screening project ranged from $106,125 to $172,016 for screening all students in Grades 6-8 in one school. Although funding is a significant barrier to the implementation of school mental health initiatives, strategies and solutions have been advanced to address this need (Cammack, Brandt, Slade, Lever, & Stephan, 2014; Weist et al., 2003). Finally, school administrators and school psychologists alike have expressed reluctance to carry out school-wide suicide screening on the basis that it is more intrusive than alternate suicide prevention programs, such as curriculum based programs or staff training (Eckert, Miller, DuPaul, & Riley-Tillman, 2003; Scherff, Eckert, & Miller, 2005).

On balance, although there is a strong case for mental health screening in schools, concerns about social validity, combined with some practical considerations have become significant barriers to the implementation of school-wide screening programs.

The Present Thesis

The focus of the present thesis is on the development of a new mental health screening tool - The RADAR[1] - that particularly seeks to address some of the social validity concerns that may be barriers to implementation in schools. Most screeners being used in schools ask teachers or students to rate the presence or severity of 'symptoms' of mental health difficulties, such as depression, anxiety, substance use, or suicidality. As such, they are suitable to help identify students for *indicated* programs, where there is an expectation that students are already symptomatic. In contrast, The RADAR is based on the measurement of risk and protective factors known to be implicated in the *development* of mental health disorders. In so doing it is more suited in the identification for *selective* prevention groups, for students who are considered 'at risk' but are not yet demonstrating symptoms of disorders.

Measuring risk/protective factors instead of symptoms is important for a school screener for at least four reasons:

1. **A non-diagnostic screener:** A screener that does not ask about symptoms of specific mental health disorders cannot be used – or confused – as a diagnostic instrument. A key implication of this is that, while students may be flagged as needing follow-up, they cannot be 'labelled' with any disorder. As such, a risk/protective factor-based screener is less

---

[1] The title RADAR initially was an acronym for five subscale of the screener. Subsequent development altered the subscale structure and the acronym no longer held. However, the name was retained as it reflected the purpose of the instrument – that is, to alert school staff to students who should be "on the radar" of mental health risk.

stigmatising than instruments that seek to identify specific mental health disorders.

2. **A transdiagnostic screener**: Screeners that ask questions about a particular mental health problem are limited to alerting mental health professionals about only that particular disorder. Schools that screen for depression may identify students with depression, but not students with, for example, anxiety or disruptive behaviour problems. The concepts of equifinality and multifinality are well described in the field of developmental psychopathology (Cicchetti & Rogosch, 1996). Equifinality is the understanding that a range of pathways can lead in a non-linear way to the same outcome, while multifinality proposes that one adverse event or condition can express itself in a multitude of outcomes. A screener that measures a range of risk and protective factors is more likely to identify young people who may develop a range of mental health problems.

3. **A pre-symptom screener:** Early detection and intervention is widely accepted as the most important approach to preventing mental health problems (Costello, 2016). Traditionally, screening instruments have focused on identifying students who are already experiencing symptoms, but in doing so may overlook students who are asymptomatic but may be at future risk (Albers, Glover, & Kratochwill, 2007b). By contrast, assessments of risk factors that pre-date symptoms may allow for students at risk to be identified even before symptoms are evident.

4. **A less transitory screener:** Emotions and behaviours in children and adolescents are transitory (Larson, Moneta, Richards, & Wilson, 2002). By asking about symptoms of mental distress, a screener runs the risk of

tapping into short-lived behavioural and emotional difficulties. This is one

of the criticisms of Gilbody and colleagues in their analysis of depression

screening for adults (Gilbody, Sheldon, & Wessely, 2006). By contrast,

most risk and protective factors tend to be more constant, longitudinal

factors that influence a young person's life. As such, by measuring risk

and protective factors, a screener is less likely to detect transient states.

The RADAR Model of Risk and Protective Factors

As stated, the RADAR screening system is based on a model of risk and

protective factors associated with mental health difficulties. Since the pioneering work

of researchers such as Rutter (1987), Masten and Garmezy (1985) and Resnick (2000),

the concepts of risk, protection and resilience have been critical in shaping the

understanding of how mental health problems develop. Risk factors have been defined

as "conditions or variables associated with a lower likelihood of socially desirable or

positive outcomes and a higher likelihood of negative or socially undesirable outcomes"

while protective factors "have the reverse effect; they enhance the likelihood of positive

outcomes and lessen the likelihood of negative outcomes from exposure to risk" (Jessor,

Turbin, & Costa, 1998, p. 195). There are now an extensive number of studies that has

investigated the complex relationships between risk factors, protective factors and

developmental outcomes (Crews et al., 2007). There has been some contention around

conceptualising risk and protective factors. Rutter (1987) took the view that risk and

protective factors are qualitatively different, primarily in that risk 'mechanisms' lead to

disorder, while protective processes only operate through their interaction with the risk

factor. That is, protective factors can only be in play when a risk factor is present. This

view has continued to be articulated by others (for example, Durlak, 1998; Jessor et al.,

1998; Small and Memmo, 2004). However, this Thesis adopts the view articulated by

O'Connell and colleagues (National Research Council and Institute of Medicine, 2009) that it is often difficult to distinguish the effect of protective factors from that of risk factors because the same variable may be labelled as either, depending on the direction in which it is scored. For example, having a family environment characterised by hostility may be considered a risk factor, while having a family environment characterised by warmth and nurturance is likely to be a protective factor. Similarly, Seeley et al have observed that poor school functioning may be a risk for depression while good school functioning may act as a protective factor (Seeley, Stice, & Rohde, 2009). Due to the inherent interrelationships of factors in the field of developmental psychopathology, the same factors that lead to difficulties can also be the outcome of those same difficulties. For example, just as academic and learning problems are a risk factor for depression in young people (Allington-Smith, 2006; Bernard, 2009; Mugnaini, Lassi, La Malfa, & Albertini, 2009), so also depression is known to impair school performance (Fröjd et al., 2008; Reid, Gonzalez, Nordness, Trout, & Epstein, 2004; Trout, Nordness, Pierce, & Epstein, 2003). Similarly, just as peer difficulties can be a risk factor for child and adolescent anxiety (Choukas-Bradley & Prinstein, 2014), so also they can be the outcome of it (Inderbitzen, Walters, & Bukowski, 1997; Vernberg, Abwender, Ewell, & Beery, 1992).

The underlying 'model[2]' for the RADAR screening system was developed following a review of the literature of known risk and protective factors in the development of mental health disorders in young people. Given the intention of using these factors to create a screening tool for use in schools, the review sought to identify risk and protective factors that met two specific criteria:

---

[2] The word 'model' is used in this context to refer to a general representation of the structure of risk and protective factors within the instrument, rather than as a comprehensive theory or hypothesis to explain the development of psychopathology.

1. **Acceptability**: Levitt et al (2007) use the expression of "contextual appropriateness" when referring to screening instruments. That is, a screening measure should be suitable for the context in which it is being used. In discussing ethical principles of screening for disease, the World Health Organisation makes specific mention that the test "must be acceptable to the population to which it is offered" (p, 31, Wilson & Jungner, 1968). Test developers must consider the *social validity* of the instruments they create (Pierce, Lambert, & Alamer, 2016; Schwartz & Baer, 1991). A measure developed in a clinic or research setting may not be suitable for use in a school context. A particularly important consideration for a school based screener is ensuring that the questions being asked and the format of the instrument is acceptable to all stakeholders. For a risk factor to be included in the RADAR model it needed to be considered acceptable to parents, who would need to give consent for their child to be screened; acceptable to staff, who would need to administer the screener and respond to the results; and acceptable to the students, who would complete the screener. For example, sexual behaviour and drug and alcohol use are known to predict depression and suicidal ideation in young people (Hallfors et al., 2004), but questions on such topics are unlikely to be answered honestly by students in a school screener.

2. **Modifiability:** Some of the main risk factors for mental health difficulties are not modifiable. Examples include gender (Galambos, Leadbeater, & Barker, 2004; Nolen-Hoeksema & Girgus, 1994) and race (Brown, Sellers, Brown, & Jackson, 1999). Some risk factors may be modifiable, but not necessarily by school-based mental health professionals. Examples include socio-economic status (Essex et al., 2006; Hudson, 2005; McLaughlin, Costello, Leblanc, Sampson, & Kessler, 2012; Reiss, 2013), chronic medical conditions (for

example, Hood et al., 2006; Tellez-Zenteno, Patten, Jetté, Williams, & Wiebe, 2007) or parent psychopathology (Marmorstein & Iacono, 2004; Ohannessian et al., 2005). The RADAR model sought to focus on factors that school mental health staff could be expected to play some role in changing.

With these two factors as filters, six risk/protective factors were ultimately selected for inclusion in the RADAR model.

1. **Academic competence:** A student's academic competence is at the core of a school's involvement with that student. Students with academic difficulties are known to be at significantly greater risk of developing mental health difficulties than their peers without such difficulties (Allington-Smith, 2006; Bernard, 2009). This relation is true for children (Mehrotra et al., 2011), adolescents and adults (Wilson, Deri Armstrong, Furrie, & Walcot, 2009). Most studies have focused on reading and literacy based difficulties (Carroll, Maughan, Goodman, & Meltzer, 2005; Willcutt & Pennington, 2000). These difficulties are compounded by the fact that literacy difficulties are often associated with low socio-economic status and co-morbidities, such as ADHD (Carroll et al., 2005). Indeed ADHD can be considered both a learning difficulty and a mental health difficulty, which has the potential for a devastating outcome on a young person's wellbeing (Currie & Stabile, 2006; Danckaerts, 2010). Academic competence is a central component of the RADAR screener not only because of its clear association with emotional and behavioural disorders, but also because school professionals are best placed to modify those difficulties.

2. **Family environment:** The association between mental health difficulties and the nature of the family environment has been well documented over many decades. Aspects of the family environment have been found to be related to the

development of difficulties in anxiety (Bögels & Brechman-Toussaint, 2006; Rapee, 2012b), depression (McLeod, Wood, & Weisz, 2007; Puig-Antich et al., 1993; Yap, Pilkington, Ryan, & Jorm, 2014), ADHD (Cunningham & Boyle, 2002; Johnston & Mash, 2001), disruptive behaviour disorders (Boden, Fergusson, & Horwood, 2010; Marmorstein & Iacono, 2004; Tolan, Dodge, & Rutter, 2013) and suicidal ideation (Matlin, Molock, & Tebes, 2011; Xing et al., 2010). Across these studies a range of specific family factors have been implicated, including level of family cohesion/tension, family structure, family communication and problem solving. Including a factor on family relationships within a school based screening instrument is justified on the basis that schools see their connection with families as vital on both academic/educational grounds (Topor, Keane, Shelton, & Calkins, 2010) as well as pastoral/wellbeing grounds (de Jong & Kerr-Roubicek, 2007).

3. **Peer relationships:** Relationships between students in schools have always been an important factor for schools, with a particular focus on bullying (Allanson, Lester, & Notar, 2015; Hong & Espelage, 2012). One reason for schools to be concerned about bullying is that students who are bullied return compromised academic grades (Glew, Fan, Katon, Rivara, & Kernic, 2005; Juvonen, Yueyan, & Espinoza, 2010). Moreover, bullying is well recognised for its effect on the mental health of victims. Bullying has been linked with many adverse psychological outcomes, including depression and anxiety (Millings, Buck, Montgomery, Spears, & Stallard, 2012; Reijntjes, Kamphuis, Prinzie, & Telch, 2010), psychosomatic problems (Gini & Pozzoli, 2009), suicidal ideation and self-harming behaviour (Heilbron & Prinstein, 2010) and externalising problems (Reijntjes et al., 2011; van Lier et al., 2012). Peer relationships are an important

inclusion in the RADAR scales both because of their known relationship in the development of psychopathology but also because of the important protective status that comes from positive peer relationships (Chu, Saucier, & Hafner, 2010; Matlin et al., 2011). Moreover, in light of evidence supporting the effectiveness of school-based programs for preventing bullying (Evans, Fraser, & Cotter, 2014; Vreeman & Carroll, 2007), peer relationship difficulties fall well within the domain of being a modifiable risk factor.

4. **School connectedness**: School connectedness, in its simplest terms can be considered as the belief by students that adults and peers in the school care about their learning as well as about them as individuals (Centers for Disease Control and Prevention, 2009). A variety of other terms, including school bonding, school attachment and school engagement, have been used to describe the same or similar concepts (Jimerson, Campos, & Greif, 2003). There is now a growing body of literature linking school connectedness with emotional and behavioural outcomes in students. One prospective Australian study found school connection to predict depressive symptoms, anxiety and general functioning over 12 months (Shochet, Dadds, Ham, & Montague, 2006). These findings are in line with those from other studies around the world (Bond et al., 2007; Kidger, Araya, Donovan, & Gunnell, 2012; Millings et al., 2012). Modifiable factors that promote school connectedness within a school environment have been clearly identified, including mentoring programs (King, Vidourek, Davis, & McClellan, 2002), enhancing the role of homeroom teachers (Ito, 2011), personalised counselling services (Lapan, Wells, Petersen, & McCann, 2014) positive classroom management, participation in extracurricular activities and tolerant discipline policies (McNeely, Nonnemaker, & Blum, 2002). Acting to promote

school connectedness as early as elementary school can promote connectedness even through the age of 18 years (Hawkins, Guo, Hill, Battin-Pearson, & Abbott, 2001).

5. **Sport and physical activity:** Physical education and sport have long been components of most school programs and have been found to produce a broad range of positive child development outcomes (Bailey, 2006). A recent Cochrane Review concluded that there is good evidence that school-based physical interventions are effective in promoting a range of health benefits for students (Dobbins, DeCorby, Robeson, Husson, & Tirilis, 2009). Most salient for this Thesis is the consistent finding that participation in sport and physical exercise promotes positive mental health in young people. (Ahn & Fedewa, 2011; Biddle & Asare, 2011; Morgan, Parker, Alvarez-Jimenez, & Jorm, 2013; Penedo & Dahn, 2005; Rees & Sabia, 2010). The research points to a range of pathways of association between these parameters, including the role that physical activity has in self-esteem (Dishman et al., 2006; Donaldson & Ronan, 2006; Ekeland, Heian, & Hagen, 2005; Simons, Capio, Adriaenssens, Delbroek, & Vandenbussche, 2012); body image (El Ansari et al., 2011; Hausenblas & Fallon, 2006; Slater & Tiggemann, 2011); the association between physical exercise and obesity (Hoare, Skouteris, Fuller-Tyszkiewicz, Millar, & Allender, 2014); social support and integration through sport participation (Eime, Young, Harvey, Charity, & Payne, 2013; Taliaferro, Dodd, Miller, Pigg, & Rienzo, 2008; Taliaferro, Rienzo, Miller, Pigg Jr, & Dodd, 2008); and neurobiological mechanisms (Deslandes et al., 2009; Matta Mello Portugal et al., 2013). School-based physical activity also acts to improve students' academic performance (Rasberry et al., 2011).

6. **Body Image:** In light of growing community concerns about eating disorders, body image and obesity, schools are now taking an increasing interest in programs that address these areas. In addition to school-based health education strategies on body image (O'Dea & Maloney, 2000; O'Dea, 2005), schools are introducing body image and eating disorders screening programs (Austin et al., 2008; D'Souza, Forman, & Austin, 2005; Haines et al., 2011). Importantly, evidence-based healthy body image programs have been developed for students in primary school (Bird, Halliwell, Diedrichs, & Harcourt, 2013; Kater, Rohwer, & Londre, 2002) as well as high schools (Yager, Diedrichs, Ricciardelli, & Halliwell, 2013). From a mental health perspective, the association between body image distortions and mental health difficulties is well established (Hutchinson, Rapee, & Taylor, 2010; Shroff & Thompson, 2006; Stice & Shaw, 2002). Body image distortions have also been found to be strongly associated with depression (Bearman & Stice, 2008; Ivarsson, Svalander, Litlere, & Nevonen, 2006; Ozmen et al., 2007; Rierdan, Koff, & Stubbs, 1989) and suicidal ideation (Brausch & Muehlenkamp, 2007; Kim, 2009; Kim, Moon, & Kim, 2011) in young people. While the focus of much research has been on body image problems in girls, there is mounting evidence that boys experience similar processes (Blashill & Wilhelm, 2014; Cohane & Pope, 2001; Olivardia, Pope Jr, Borowiecki Iii, & Cohane, 2004).

The body of this thesis reports on the development and psychometric evaluation of the RADAR instruments. Test development is a time intensive, resource consuming and complex process. Christ and Nelson (2014) have summarised the processes of test development into a six step process and checklist. This checklist serves as a helpful model from which to discuss the objectives of the test development within this thesis.

35

The initial stage is an overview of the purpose and rationale of the assessment, such as is contained in the Introduction to this thesis. The second stage is a description of the assessment, including its content and administration procedures. The third and fourth stages are the technical characteristics and validation process respectively. It is these two stages that primarily form the body of this thesis. Technical characteristics of the test include the field-testing design, the participant group, test statistics and reliability. Validation in particular refers to the content validity, criterion validity and group comparisons. Within this thesis by publication, Paper 1 details the development of the Youth RADAR, a self-report instrument for students in Years 7 − 12; Paper 2 details the development of the Child RADAR, a self-report instrument for students in Years 3 − 6; Paper 3 details the development of the Teacher-report RADAR. In particular, each paper considers the third and fourth stages of test development outlined in Christ and Nelson. The fifth stage of test development from the Christ and Nelson model refers to the reporting of scores and supporting references. These steps are not directly addressed in this thesis, although details of administration, scoring and supporting references are listed on the Macquarie University Centre for Emotional Health [www.centreforemotionalhealth.com.au]. The final stage of test development refers to the publishing of supporting references to bolster the claims of the test. In addition to the psychometric evaluations mentioned, this thesis includes a fourth paper, which details a longitudinal follow-up of the Youth RADAR sample, with a specific focus on the relative value of each of the RADAR factors in predicting internalising and externalising symptoms over twelve months. The final chapter of this Thesis is a Conclusion that summarises the main findings and contribution of this thesis, considers areas for future research on the RADAR, and then makes some broader suggestions regarding implementation of school-based screening within the Australian context.

PAPER 1

Screening for Mental Health Risk in High Schools:

The Development of the Youth RADAR

Authors:

John R Burns and Ronald M Rapee

Centre for Emotional Health

Department of Psychology

Macquarie University

The Final Published version of the paper cited above can be found at

Abstract

Epidemiological studies indicate that as many as one in five young people will develop a mental health problem in any given year. Early detection and intervention are needed to reduce the impact that these conditions have – both for the young person and for the communities in which they live. This study reports the development of a new instrument aimed at helping identify students at risk of developing mental health difficulties. Rather than asking about the presence of symptoms of mental health conditions, the RADAR screening tool assesses a student's balance of risk and protective factors associated with the development of mental health problems. The RADAR was evaluated with a sample of 838 participants in high school Years 7 – 12. A robust internal factor structure was revealed using exploratory and confirmatory factor analysis. Internal consistency was satisfactory for each subscale, ranging from .73 to .90 while the reliability for the total scale was .91. Retest stability, measured over a 12 month period, was found to be strong ($r = .72$). Convergent validity was demonstrated with reference to standard measures of depression and behavioural problems. It is concluded that the RADAR is a promising measure for helping mental health professionals and educators decide which students may be at risk of developing mental health problems.

Keywords: adolescent mental health, screening, school, scale development

Introduction

Epidemiological studies from around the world indicate that mental health difficulties in young people can no longer be ignored. Data are available from a range of developed countries, including the United States (Costello, Egger, & Angold, 2005; Merikangas et al., 2010), Australia (Mission Australia, 2013; Patel et al., 2007), Germany (Ravens-Sieberer et al., 2008) and the United Kingdom (Ford, Goodman, & Meltzer, 2003) suggesting that as many as 20% of young people will suffer from some form of mental disorder in any given year.

Mental health difficulties for a young person are likely to create broad life problems. For example, young people with emotional and behavioural difficulties are known to have significant deficits in their academic outcomes (Reid et al., 2004) and are likely to experience impaired occupational and educational attainment as adults (Slominski, Sameroff, Rosenblum, & Kasser, 2011).

The global burden that these mental health disorders generate is only now starting to be understood. In Australia, mental disorders represent the greatest burden of disease for children aged 0-14, as measured by *Disability Adjusted Life Years* (DALYs) (Begg et al., 2007). Internationally, six of the top eight causes of DALYs in the 15-19 year age group are directly mental health related (depressive disorders, schizophrenia, bipolar disorder, alcohol use, self-inflicted injuries and panic disorder) while the remaining two (road traffic accidents and violence) are likely to be mental health related (Gore et al., 2011).

In light of this impact it is not surprising that there have been growing calls to ensure that young people with mental health difficulties are identified as early as possible and referred for suitable intervention. Such calls are not only coming from

mental health professionals (Catalano et al., 2012; Greenberg, Domitrovich, & Bumbarger, 2001; Kieling et al.), but also from economists (Knapp, McDaid, & Parsonage, 2011) and policy makers (Waddell, Hua, Garland, Peters, & McEwan, 2007).

A key focus over the past decade or more has been on the role that schools have in implementing preventative programs. Schools are a logical place for the delivery of mental health programs because most young people attend school regularly and are more likely to seek help from people with whom they already have some established and trusted relationships (Rickwood, Deane, Wilson, & J. Ciarrochi, 2005a; Rickwood et al., 2007). Importantly, there is a growing body of evidence to support the efficacy of school-based early intervention programs for young people. These include programs for depression (Calear & Christensen, 2010b; Merry et al., 2011), anxiety (Barrett, Farrell, Ollendick, & Dadds, 2006; McLoone et al., 2006; Neil & Christensen, 2009), PTSD (Nadeem et al., 2014), substance abuse (Faggiano et al., 2010), eating disorders (Berger et al., 2013) as well as effective general social and emotional learning interventions (Durlak, Weissberg, Dymnicki, Taylor, & Schellinger, 2011). Importantly, the development of computerized and web-based interventions means that therapeutic programs can be implemented even in schools or communities where access to mental health professionals is limited (Rickwood, 2010; Stallard, Richardson, Velleman, & Attwood, 2011; Wuthrich et al., 2012).

The challenge for educators and mental health experts has been to ensure that young people who would benefit from these programs are properly identified and selected. Young people are not good at seeking help for emotional difficulties independently (Gulliver et al., 2010; Rickwood et al., 2005a; Rickwood et al., 2007). Moreover, there is evidence that teacher reports alone are insufficient to identify many

young people with emotional health difficulties (Dowdy, Doane, Eklund, & Dever, 2013; Eklund & Dowdy, 2014; Scott et al., 2009). In light of these limitations, mental health screening tools become a key mechanism to identify students at risk of developing mental health problems.

A broad range of screening instruments for emotional distress has been used in the school context (Levitt et al., 2007). Typically, these screeners ask students to rate the presence/absence of symptoms relating to the domain of mental health the screener is seeking to 'diagnose', such as anxiety, depression or suicidality. Although such screening has proved valuable, several limitations restrict the utility of their use in every day school practice. A primary concern relates to the disorder-specific nature of the screeners. It is impractical for schools to initiate separate screening programs for every type of disorder. By screening for just one disorder, schools are likely to then overlook students with other difficulties. A more suitable approach to universal screening in schools is to implement a broader system which has the potential to alert mental health professionals to risk of a wider range of emotional health difficulties. Broader, multi-problem screeners are available, such as the Child Behavior Checklist (Achenbach, 1991) or the Behavior Assessment System for Children-2 (Kamphaus & Reynolds, 2007), but they are impractical for universal screening in schools due to their length. Moreover, they are unsuitable based on one or more of the other concerns outlined below.

A second concern of available screeners is their dependence on identifying *symptoms* of mental health difficulties. Ideally, screeners should seek to identify students at risk before they become symptomatic and thus facilitate intervention from the very earliest stage. The key assumption underlying early intervention is that the earlier a problem is identified, the more likely a positive outcome can be achieved. The

third concern stems from apprehensions that diagnostic screeners can lead to children receiving a mental health 'label' and therefore be stigmatised as a result of the screening. For example, studies into the relative 'acceptability' of suicide prevention programs found screening programs to be least acceptable of three alternate prevention programs, both by School Principals (Miller, Eckert, DuPaul, & White, 1999) and by School Psychologists (Eckert et al., 2003). In seeking to explain this finding, both of these papers refer to labelling and stigmatisation as possible causes.

The fourth concern of symptom-based screeners is that they provide no information on possible causes or triggers for the difficulty. An instrument that can identify students who are high on particular risk factors may also provide greater utility in suggesting specific areas to target intervention. A final, practical concern about universal screeners currently available is their cost. By definition, universal screeners are administered to a large number of students - usually entire grades or even whole school communities. Given that some commercially available screeners cost $10 or more per student to administer and score, the total price of a screening program becomes impractical for many schools.

This paper describes the development of a new mental health screening tool designed specifically for use in schools that addresses these concerns. We have called this instrument the *RADAR* on the assumption that it provides schools with a tool to help determine which students should be on their social and emotional 'radar', but in a way that doesn't utilise symptoms of mental health problems or seek to diagnose specific disorders. Instead, a specific RADAR model was developed to assess a student's combination of risk and protective factors known to be associated with a broad range of common mental health problems.

Over the past two decades a significant body of research has revealed a broad range of risk and protective factors associated with mental health risk and resilience (Costello, Swendsen, Rose, & Dierker, 2008; Crews et al., 2007; Resnick, 2000; Wille, 2008). From this body of knowledge we developed a model of the risk and protective factors known to be involved in mental health difficulties in young people. For potential inclusion in our model a factor had to satisfy two primary criteria. First, there must be robust evidence in the scientific literature to support its relationship to adolescent mental health. Second, the nature of the element must fall within the domain of what would be considered reasonable competency and knowledge of educators. On the basis of this second criterion, some factors known to predict mental health difficulties in young people, such as a parent having a mental disorder, experiencing child abuse or having a substance abuse problem, were excluded from consideration. Other factors were excluded on the basis that they could be easily identified without the need for a screener (e.g., gender) or were likely to be common across the entire school cohort (e.g. socio-economic status).

The final RADAR model consisted of six factors which met the above criteria: *family environment* (McLeod et al., 2007; Rapee, 1997, 2012b; Tolan et al., 2013); *academic competence* (Nelson, 2011; Reid et al., 2004; Trout et al., 2003); *peer relationships* (Choukas-Bradley & Prinstein, 2014; Gini & Pozzoli, 2009; Reijntjes et al., 2011; Reijntjes et al., 2010); *school connectedness* (Bond et al., 2007; Kidger et al., 2012; Ross, Shochet, & Bellair, 2010; Shochet et al., 2006; Shochet, Homel, Cockshaw, & Montgomery, 2008); *sporting interest and activity* (Ahn & Fedewa, 2011; Biddle & Asare, 2011; Fox, 1999; Lawlor & Hopker, 2001); and *body satisfaction* (Blashill & Wilhelm, 2014; Cohane & Pope, 2001; Kostanski & Gullone, 1998; Stice & Shaw, 2002).

The purpose of this study is to evaluate the viability of the Youth RADAR screening instrument as an alternate approach to assessing mental health risk in high schools students. Specifically, we seek to evaluate the validity of the underlying six factor RADAR model, appraise its reliability and consider its concurrent validity against traditional symptom-based screening methods.

Method

Participants

Participants for this project were drawn from six independent, Anglican (Church of England) high schools in the state of New South Wales, Australia. These schools were chosen because of the first author's connection with the Anglican schools network and are not necessarily considered to provide a true cross-section of Australian high school students. Of the six schools, two were in the central suburbs of Sydney, two were in the outer suburbs of Sydney and two were outside Sydney in rural/regional New South Wales. Two of the schools were single sex (one male, one female) and four were co-educational. Two schools included residential boarders who were approached to participate through their boarding house. Initially, parents/guardians of all students in all six schools were approached to give consent for their child to participate. Consent rates across the schools ranged from a high of 40.3% (an all-girls school in suburban Sydney) to a low of 8.8% (a co-ed school in regional NSW), with a mean of 25.1%. In total, 838 students participated, consisting of 482 boys (58%) and 356 girls (42%). The sample was spread across high school Years 7-12 and ranged in age from 11-18 years ($M = 14.5$ years, $SD = 1.63$). The sample identified themselves as predominantly being 'Anglo/Caucasian' (87%), followed by 'Asian' (6.1%), 'Other' (5.4%), Indigenous Australian (0.8%) and Middle Eastern (0.7%). English was the main language spoken at

home for 95.8% of the sample. 83.3% of the sample lived with both parents; 9.2% with one parent; 4.5% with one parent in a step family; 2.5% lived with neither parent.

Measures

The Youth RADAR 'alpha' version consisted of a pool of 59 potential items spread across the six different risk and protective factors of the RADAR model. Items were derived through a combination of a) the research literature on risk and protection for mental health in youth; b) consultation with other questionnaires that assessed similar domains; and c) the authors' experience. Care was taken to ensure that the items reflected the relevant risk factor and importantly, that the items were not directly a diagnostic symptoms of a mental health condition. All items were independently reviewed by two senior English teachers. Some items were subsequently modified to ensure the complexity of the language and grammar was suitable for low grade Year 7 students. Participants responded to the individual items on a 5-point scale from 'not at all like me' (1) to 'very much like me' (5).

The *Center for Epidemiological Studies – Depression Scale for Children* (CES-DC) (Faulstich, Carey, Ruggiero, Enyart, & Gresham, 1986; Fendrich, Weissman, & Warner, 1990) is a commonly used screener for children and adolescents. It contains 20 items of depressive symptoms (e.g., "I felt down and unhappy", "I didn't sleep as well as I usually sleep") which respondents rate on a 4-point scale of frequency of occurrence in the past week, ranging from 'not at all' (0) to 'a lot' (3). Faulstich et al (1986) report good internal consistency (Cronbach's alpha = .86) and test-retest reliability (r=.69, p<.0005) in an adolescent sample. Moreover, concurrent validity was assessed with reference to the Children's Depression Inventory and found to be acceptable (r=.61; p<.0005). In this sample, the mean score was 25.7 (*SD*=11.9).

The *Strengths and Difficulties Questionnaire* (Goodman, 1997) is a 25 item self-report measure of difficulties as well as positive attributes. It contains 5 subscales: hyperactivity, emotional symptoms, conduct problems, peer problems and a prosocial scale. Items are rated on a 3-point scale of 'not true' (0), 'somewhat true' (1) and 'certainly true' (2). The self-report version of the SDQ has been reported as having a mean of 13.0 (*SD*=1.4) in a community sample of adolescents (Goodman, Meltzer, & Bailey, 1998). The author reports that the Youth version of SDQ has satisfactory reliability, with Cronbach's alpha of 0.80 for the total difficulties scale and the individual subscales having reliabilities ranging from 0.41 (Peer Problems) to 0.67 (Hyperactivity-Inattention) (Goodman, 2001). Moreover, SDQ scores were found to predict risk of psychiatric diagnosis, as assessed by structured diagnostic interview.

Participants completed the questionnaires during school time, on school computer labs, under the supervision of their student welfare teacher or another senior staff member. The questionnaires were delivered via an internet survey tool (SurveyGizmo). The order in which RADAR items were administered was randomised by the survey tool to ensure that there was no bias in item response related to their position in the questionnaire.

Data Analysis

The final data set contained no missing data. In part this was because the survey tool required participants to answer all questions. A small number of participants completed only a small section of the surveys and these responses were excluded from the final data set. Data from the total sample was randomly divided into two subsamples using the SPSS random number generation. Sample A consisted of 425 participants (249 male; 176 female) with a mean age of 14.5 years (*SD* = 1.66). Sample B consisted

of 413 participants (233 male; 180 female) with a mean age of 14.5 years ($SD = 1.61$).

An exploratory factor analysis (EFA) was carried out on Sample A to investigate the basic factor structure of the data. Factors were extracted with SPSS using Principal Axis Factoring, as this method is considered more suitable when data are not normally distributed (Costello & Osborne, 2005). Factors were then rotated using oblique rotation (oblimin with Kaiser Normalisation), as it was expected that the factors would be correlated. Three main criteria were set as minimum standards for inclusion in the scale: (i) items must load robustly onto their main factor, with a selected cut-off of .40 (Netemeyer, Bearden, & Sharma, 2003) (ii) items must not load above .30 on any other factor, and (iii) items must have face validity for the sub-scale on which they loaded. In order to create a scale with sufficient brevity for widespread school use, the top 5 items per factor that best met these criteria were selected and subjected to a confirmatory factor analysis (CFA) on Sample B to test the fit of the model identified through the EFA. Analysis was carried out using SPSS *Analysis of Moment Structures (AMOS)*. Maximum likelihood estimation was used as there were no missing responses in the data set. There is some consensus that ideal fit indices are values above .95 for indices of incremental fit, values below .08 for the standardized root mean square residual (SRMR) and values below .06 for the root mean squared error of approximation (RMSEA) (Hu & Bentler, 1999; M. Kline, 2013). Additional analyses were carried out to explore the psychometric qualities of the RADAR and its subscales. In doing so, separate calculations were made for gender and age grouping (Junior High School = Years 7-9; Senior High School = Years 10-12). In addition to calculation of means and standard deviations of Total RADAR and all subscales, reliability of the scale was assessed using Cronbach's alpha and concurrent validity was assessed by evaluating the relationship of the RADAR to the CES-DC and SDQ. Given that higher scores on the

RADAR represent lesser risk of emotional health difficulties, while higher scores on the distress measures indicate greater distress, we hypothesised that the constructs measured by the RADAR would demonstrate a negative relationship with CES-DC and SDQ (with the exception of the Prosocial scale). To further explore the relationship between the individual subscales of the RADAR and the 'distress' scores we carried out a regression analysis (forward stepwise method) using the RADAR subscores as independent variables and the CES-DC and the Total SDQ as dependent variables. Retest stability was assessed using one year follow-up data available from two of the participating schools. Twelve months is longer than is typically used to estimate measurement stability, as over such a period correlations may reflect both actual changes in student's risk/mental health status and measurement instability. In light of this, correlations over a 12 month period would be expected to be at the lower end of stability estimates. Finally, we investigated whether scores on the RADAR were able to discriminate between those students with high vs. low risk of distress as measured by the CES-DC and the SDQ. In relation to depression, students were divided into two groups based on their CES-DC scores. The authors of the CES-DC originally recommend a score of 15 as an optimal cut-off score when screening for major depressive disorder or dysthymia (Fendrich et al., 1990). More recent studies have recommended higher cut-offs. For example, in an Iranian study the mean score for the sample was 20.45 (Essau, Olaya, Pasha, Gilvarry, & Bray, 2013), while Olsson et al (1997) found that a cut-off score of 30 was optimal. In our own sample, the mean score on the CES-DC was 15.75 ($SD = 10.44$). We elected to use a cut-off score of 26 (i.e., one SD above the mean) to divide our sample into two groups – low (0-26) and high (27+). In relation to clinical risk measured by the SDQ, the most recent categorisation listed on the SDQ website (http://www.sdqinfo.com/py/sdqinfo/c0.py) gives a four-band

system for the Total Difficulties score as follows: Close to Average (0-14); Slightly

Raised (15-17); High (18-19); and Very High (20-40). Students in our sample were

divided into two groups based on the SDQ as follows: Low distress (0-17) and high

distress (18+). T-tests were performed to compare means of the Total RADAR scores

for the 'low' vs. 'high' risk groups on the CES-DC and the SDQ.

Results

Exploratory Factor Analysis

The Kaiser-Meyer-Olkin measure of sampling adequacy was excellent (.92) and

Bartlett's test of sphericity was highly significant (χ^2 (1711) = 14774.34, $p < .001$).

Scree-plot analysis suggested either a six or possibly seven factor model. Analysis of

the Pattern Matrix for a seven Factor model revealed that only two items loaded onto

the seventh factor with a loading greater than .3, and that both these items loaded more

strongly onto other factors. We therefore rejected the seven factor model. A six factor

model accounted for 54.5% of the variance. Almost all items loaded most strongly onto

the originally predicted domains. The non-predicted loadings related to some intended

peer relationship items (*I have friends to turn to for help; I know my friends care about

me; Other kids include me in their games*) that actually loaded onto the School

Connection factor. Table 1 shows the top five items per factor that satisfied these

criteria. The fifth factor did not have five items that loaded above .40. Items on this

factor relate to peer difficulties. On the basis that this is an important predictor of the

emotional well-being of young people and that the items satisfied the other two criteria

for inclusion, we chose to maintain the five highest loading items in this factor to take

into a CFA. Following a review of these items, the following labels were given for each

factor: School Connectedness (SC), Family Relations (FR), Academic Success (AS),

Sporting Interest (SI), Peer Acceptance (PA) and Acceptance of Appearance (AA).

Table 1.

Exploratory Factor Analysis Loadings on Sample A

	SC	FR	AS	SI	PA	AA
People at my school care about me	.76					
I feel supported by other people in this school	.73					
In this school I feel safe	.67					
In this school I feel like I belong	.66					
I feel free to be who I am in this school	.66					
I live in a happy family		-.76				
In my family we can trust each other		-.75				
My family argues a lot		.73				
I feel a strong connection to my family		-.73				
People don't get along very well in my family		.71				
I get good results in exams and tests at school			-.77			
I get good marks in most school subjects			-.75			
I'm not very smart when it comes to school work			.74			
At school my marks are at the lower end of my grade			.74			
Overall school is just too hard for me			.65			
I am a sporty person				-.97		
Compared to other kids I am good at sport				-.83		
I am in the sporty group at school				-.77		
I enjoy doing physical exercise				-.77		
I like PE classes at school				-.74		
I get bullied at school					.49	
Other kids tease me or call me unkind names					.47	
I am not very popular at my school					.42	
I find it hard to make friends					.39	
I am usually on my own					.38	
I like the way I look						.82
I like how my body looks						.80
I like how my face looks						.72
I think I am ugly						-.70
I wish my body was different						-.65

SC School Connectedness, *FR* Family Relations, *AS* Academic Success, *SI* Sporting Interest, *PA*

Peer Acceptance, *AA* Acceptance of Appearance

Confirmatory Factor Analysis

The model showed adequate fit ($\chi2 = 895.333$, *df* = 390, *p* <.001, CFI = .922,

TLI = .913, RMSEA = .056, SRMR = .059). Loadings of individual items and

correlations between sub-scales are given in Figure 1.

Figure 1.

Model evaluated during CFA
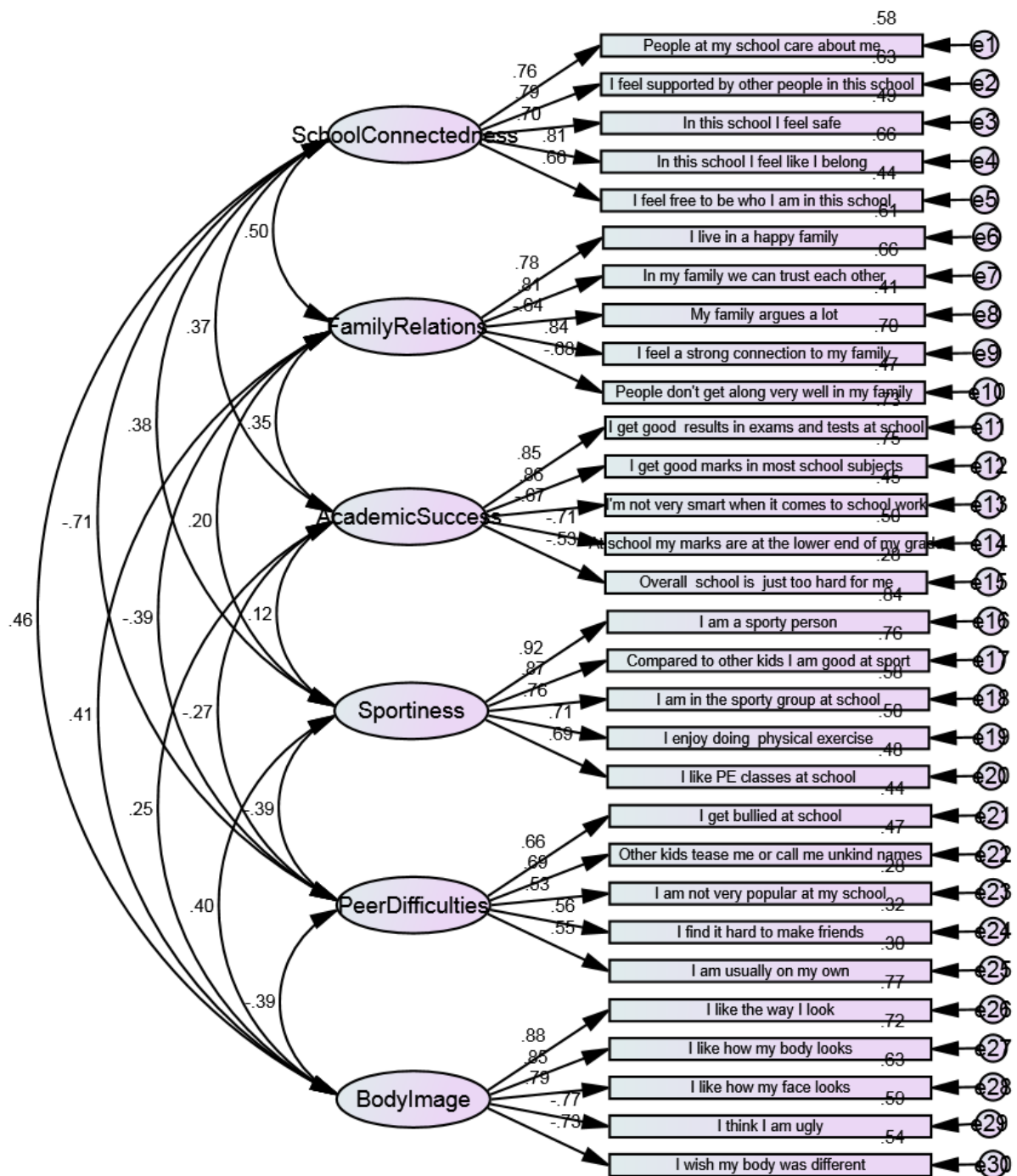
Final RADAR Scale

On the basis of the results from the EFA and the CFA, six subscales of the RADAR were created with five items per subscale (30 item total scale). Scores on negatively worded items were reversed in order to calculate each subscale score. The six subscales were then tallied to create a Total RADAR score. Lower scores on the RADAR (and the subscales) indicated increased risk for the individual.

Age and Gender Differences

Table 2 shows means and standard deviations for the Total RADAR and all subscales. The mean Total RADAR score across the whole sample was 118.7 while subscale means ranged from 18.06 (SI) to 20.92 (PR). A two-way ANOVA (gender x age group) was carried out to identify main and interaction effects across the mean scores. Main gender effects were identified for the Total RADAR Score, $F(1,834) = 7.042$, $p < .01$; School Connectedness, $F(1,834) = 6.238$, $p < .05$; Academic Success, $F(1,834) = 5.697$, $p < .05$; Sporting Interest, $F(1,834) = 36.061$, $p < .001$; and Acceptance of Appearance, $F(1,834) = 80.266$, $p < .001$. Girls scored significantly higher than boys on the SC and AS subscales, while boys scored significantly higher than girls on the SI, AA and Total RADAR scores.

Main age group effects were found for Total Radar $F, (1, 834) = 14.982$. $p < .001$; Family Relations, $F(1, 834) = 11.413$. $p < .01$; Sporting Interest, $F(1, 834) = 13.135$. $p < .001$; and Acceptance of Appearance, $F(1, 834) = 20.209$. $p < .001$. That is, the younger age group scored significantly higher than their older peers on the FR, SI and AA subscales as well as the Total Radar. However, the main effects for gender and age on the Acceptance of Appearance subscale were qualified by a significant age by

53

gender interaction, $F(1,834) = 7.321$, $p < .01$., with older girls scoring significantly

lower than younger girls.

Reliability

Cronbach's alpha was acceptable for all RADAR subtests (Table 2), ranging

from .73 (PR) to .90 (SI), while the Total RADAR showed excellent reliability ($\alpha =$

.91). This remained the case when the sample was split into age and gender groups.

Reliability coefficients across age and gender groups are given in Appendix E.

Table 2.

Descriptive Data and Cronbach Alpha of the Youth RADAR and Subscales by Gender and Age Group

	Total RADAR Mean (*SD*)	SC Mean (*SD*)	FR Mean (*SD*)	AS Mean (*SD*)	SI Mean (*SD*)	PR Mean (*SD*)	AA Mean (*SD*)
Total Sample (*N*=838)	118.74 (16.95)	20.13 (3.98)	20.92 (4.30)	19.87 (4.16)	18.06 (5.38)	21.27 (3.50)	18.48 (4.65)
All Boys	119.88 (16.96)	19.82 (4.03)	20.88 (4.17)	19.60 (4.28)	18.94 (5.09)	21.06 (3.66)	19.59 (4.08)
Boys Yrs 7-9	121.49 (17.29)	20.08 (4.03)	21.32 (3.92)	19.87 (4.07)	19.27 (5.02)	21.10 (3.89)	19.85 (4.10)
Boys Yrs 10-12	118.12 (16.46)	19.53 (4.03)	20.40 (4.39)	19.30 (4.48)	18.57 (5.16)	21.03 (3.40)	19.30 (4.04)
All Girls	117.20 (16.83)	20.55 (3.87)	20.99 (4.48)	20.25 (3.99)	16.88 (5.54)	21.54 (3.25)	16.99 (4.95)
Girls Yrs 7-9	119.56 (16.49)	20.73 (3.96)	21.45 (4.16)	20.12 (3.92)	17.68 (5.16)	21.67 (3.38)	17.91 (4.53)
Girls Yrs 10-12	113.76 (16.84)	20.28 (3.73)	20.32 (4.85)	20.44 (4.08)	15.70 (5.88)	21.35 (3.06)	15.66 (5.25)
α	.91	.87	.87	.86	.90	.73	.88

SC School Connectedness, *FR* Family Relations, *AS* Academic Success, *SI* Sporting Interest, *PA* Peer

Acceptance, *AA* Acceptance of Appearance

Test Stability

Retest stability was calculated using 1 year follow-up data available from two of

the participating schools, creating a subsample of 120 students (mean age = 14.8; 48

male; 72 female;). Test-retest correlation for the Total RADAR was .72 ($r = .79$ for

males; $r = .67$ for females). Adequate correlations were found across all subscales:

School Connectedness = .51; Family Relations = .69; Academic Success = .73; Sporting

Interest = .79; Peer Acceptance = .50; and Acceptance of Appearance = .64. All

correlations were significant at the 0.01 level.

Convergent Validity

Table 3 shows the association between the RADAR, including its subscales,

with the SDQ and the CES-DC. As expected, the RADAR Total Score showed high

negative correlations with the CES-DC and the SDQ, and a positive correlation with the

SDQ Prosocial scale. All RADAR subscales were significantly correlated ($p < .001$)

with both the CES-DC and the SDQ.

Table 3

Correlations Between RADAR Scales, CES-DC and SDQ

Scale	RADAR Total	RADAR SC	RADAR FR	RADAR AS	RADAR SI	RADAR PR	RADAR AA
CES-DC	-.67**	-.52**	-.47**	-.33**	-.33**	-.52**	-.50**
SDQ Total	-.69**	-.53**	-.47**	-.41**	-.34**	-.54**	-.45**
SDQ Emotional	-.53**	-.36**	-.32**	-.20**	-.37**	-.38**	-.44**
SDQ Conduct	-.50**	-.38**	-.44**	-.38**	-.17**	-.37**	-.25**
SDQ Hyperactivity	-.45**	-.31**	-.34**	-.42**	-.17**	-.27**	-.28**
SDQ Peer Problems	-.53**	-.53**	-.26**	-.18**	-.28**	-.60**	-.31**
SDQ Prosocial	.28**	.32**	.23**	.20**	.12**	.23**	.09*

 *$p < .05$, ** $p < .001$. *SC* School Connectedness, *FR* Family Relations, *AS* Academic Success, *SI*

Sporting Interest, *PA* Peer Acceptance, *AA* Acceptance of Appearance

The six RADAR subscales were used in a stepwise (forward method) multiple

regression analysis to predict both 'distress' variables – that is, CES-DC and the SDQ

Total. Using the CES-DC as a dependent variable, the prediction model was

statistically significant, $F(5,832) = 150.86$, $p < .001$, and accounted for approximately

47% of the variance of the depression score (Adjusted R^2=.472). All predictor subscales

were statistically significant except the *Sporting Interest* subscale. CES-DC scores were primarily predicted by *School Connectedness*, followed by *Acceptance of Appearance, Peer Acceptance, Family Relations and Academic Success* (Table 4).

Table 4.

Predicting Depression Scores (CES-DC) from RADAR Scores

Model	b	SE-b	Beta	R^2	Adjusted R^2	Change in R^2	Sig. F Change
Constant	66.659	1.97					
SC	-.453	.085	-.173	.268	.267	.268	.000
AA	-.595	.063	-.265	.377	.375	.109	.000
PR	-.743	.091	-.249	.428	.426	.052	.000
FR	-.499	.069	-.206	.468	.466	.040	.000
AS	-.229	.068	-.091	.476	.472	.007	.001

Note: DV = CES-DC. R^2 = .476, Adjusted R^2 = .472. *SC* School Connectedness, *FR* Family Relations, *AS* Academic Success, *SI* Sporting Interest, *PA* Peer Acceptance, *AA* Acceptance of Appearance

Using the SDQ Total as a dependent variable, the prediction model was statistically significant, $F_{(6,831)}$ = 138.120, p <.001, and accounted for approximately 50% of the variance of the depression score (Adjusted R^2=.496). All predictor subscales were statistically significant, with *Peer Acceptance* being the primary predictor, followed by *Family Relations, Acceptance of Appearance, Academic Success, School Connectedness* and *Sporting Interest* (Table 5).

Table 5.

Predicting Distress Scores (SDQ) from RADAR Scores

Model	*B*	SE-*b*	Beta	R^2	Adjusted R^2	Change in R^2	Sig. F Change
Constant	39.133	1.063					
PR	-.441	.049	-.269	.291	.290	.291	.000
FR	-.259	.037	-.195	.393	.392	.102	.000
AA	-.202	.035	-.164	.439	.437	.046	.000
AS	-.262	.037	-.191	.476	.474	.037	.000
SC	-.220	.046	-.153	.493	.490	.017	.000
SI	-.092	.029	-.087	.499	.496	.006	.002

SC School Connectedness, *FR* Family Relations, *AS* Academic Success, *SI* Sporting Interest, *PA* Peer Acceptance, *AA* Acceptance of Appearance

It is possible that the significant predictive power of the RADAR subscales on the SDQ Total may be inflated by the overlap of constructs between the SDQ Peer Problems subscale and the RADAR *Peer Acceptance* subscale. We therefore generated an additional SDQ composite score consisting of only the *Emotional Symptoms, Conduct Problems and Hyperactivity/Inattention* subscales. Using this "*SDQ minus Peer Problems*" score as the dependent variable, the prediction model remained statistically significant, $F(6,831) = 105.06$, $p = <.001$, and accounted for approximately 43% of the variance of the *SDQ-Peer Problems* score (Adjusted R^2=.427). All predictor RADAR subscales remained statistically significant.

An independent samples *t*-test was conducted to examine differences in Total RADAR scores between the low and high depression groups, as measured on the CES-DC. Total RADAR scores for the high depression group ($M = 99.88$, $SD = 15.64$, $n =$

130) were found to be significantly lower than those of the low depression group ($M =$ 122.20, $SD = 14.77$, $n = 708$), $t = 15.69$, $df = 836$, $p < .001$. Similarly, an independent t-test was used to examine differences in Total RADAR scores between the low vs. high distress groups on the SDQ. Total RADAR scores for the high distress group ($M =$ 96.77, $SD = 16.02$, $n = 83$) were found to be significantly lower than those of the low distress group ($M = 121.15$, $SD = 15.23$, $n = 755$), $t = 13.77$, $df = 836$, $p < .001$.

Discussion

The RADAR was developed as an alternative approach to universal screening for mental health risk in high schools. Rather than ask about the presence of symptoms of specific mental health diagnostic categories, the RADAR was modelled on a mix of risk and protective factors known to be associated with mental health difficulties. In this way it may be considered as a 'pre-symptom' screener that may be able to alert mental health and educational professionals of the potential for students to later develop a range of mental health difficulties. Moreover, as the RADAR does not ask about symptoms of specific mental health diagnoses it reduces the potential pitfall of labelling and stigmatisation.

Exploratory and Confirmatory Factor Analyses both supported the underlying model of the RADAR, which showed six strong and independent factors. Moreover, the RADAR had acceptable reliability across all six subscales and excellent reliability for the Total RADAR scale ($\alpha = .91$). This remained the case even within specific age and gender cohorts. The Total RADAR and all subscales also correlated significantly with self-reported symptoms as assessed by the CES-DC and the SDQ, providing further evidence to support the validity of the RADAR test score interpretation.

The Peer Acceptance subscale raised a preliminary concern in the EFA as only three items from the original pool loaded onto this factor above the desired cut-off of .4. However, two items with good face validity (*I find it hard to make friends; I am usually on my own*) loaded above .3 and both loaded above .5 in the CFA, providing some support for their inclusion in the scale. Nonetheless, the Peer Acceptance subtest returned the lowest reliability of all subtests, particularly for girls, suggesting that future work may need to identify some more coherent items reflecting this factor. Interestingly the Peer Problems subscale of the SDQ Youth Report also shows the lowest internal consistency of all the SDQ subscales (.41) (Goodman, 2001) and is considerably lower than the alpha of the RADAR Peer Acceptance scale (.73). It appears that peer relationships may be a less coherent construct than several other potential risks and it may be comprised of its own slightly independent sub-components. For example, victimisation may reflect a slightly different construct to popularity. However, most importantly, the Peer Acceptance subscale showed the highest correlations with both of the measures of distress pointing to the importance of this construct as a risk factor (Choukas-Bradley & Prinstein, 2014; Reijntjes et al., 2010) and the relevance of the construct as assessed by the RADAR.

The correlations between the distress scores (SDQ and CES-DC) and the Total RADAR scale were somewhat stronger than the correlations between the distress scores and the RADAR subscales. Further, regression analysis showed that each subscale contributed independent variance in prediction of distress. It appears, therefore, that the RADAR subscales all reflect unique components of risk and protection and that the total score provides a more comprehensive predictor for mental disorder than any individual subscale. The one exception to this was the non-significant beta between the *Sporting Interest* subscale and the CES-DC, suggesting that this subscale may not offer any

unique variance to specific prediction of depression. This subscale's inclusion in the final scale remains warranted on the basis that it does add unique independent variance in predicting the SDQ Total Difficulties score.

While not intended as a direct measure of mental health status, we anticipated that RADAR scores would be able to discriminate between students with, and without mental health difficulties. This was evaluated by comparing the means of the Total RADAR scores of those reporting high vs. low levels of symptoms on the SDQ and CES-DC. As expected, independent samples t-tests revealed significant differences between the low and high depression groups (measured by the CES-DC) and the average and high clinical risk groups (measured by the SDQ), providing additional evidence for the validity of the RADAR scores.

There are some limitations to this study which should be taken into account. Given that all data used in this study was from self-report measures, it is possible that some of the findings may in part be due to shared method variance rather than actual variation within the constructs being measured. All participants in the study were drawn from independent, fee-paying Anglican schools. While the size of the sample was adequate for the required analysis, it is unlikely that the sample reflects the diversity of life experiences of Australian youth, especially given that far more students in Australia attend government (non-fee paying) than fee-paying schools. To some extent the difficulty of a fairly homogenous sample was balanced by using samples from diverse geographical regions of New South Wales as well as a mix of lower and higher fee-paying schools. However, there is some evidence that attending an independent school provides some degree of protection against mental health risk (Baggish & Wells, 2014). It is possible that students drawn from such schools have fewer emotional and behavioural problems or lower risk factors than typical students from the average

Australian high school. While the current study has produced promising evidence to support the scale, replication of the results with a broader sample of young people who are stratified to represent the general population would be valuable. Similarly, future research will need to develop nationally or internationally valid norms for the instrument. Moreover, at this point we have not assessed the utility of the RADAR to identify students who develop emotional distress over time. A longitudinal follow-up of this sample is planned to help address this question.

The RADAR shows promise as a whole-school universal screening instrument for mental health risk. Its focus on positive attributes is likely to be more acceptable to many schools and parent groups than traditional screening instruments that focus on symptoms of distress and its breadth of coverage helps to identify risk across a range of difficulties. By identifying factors that are important to protection from emotional and behavioural distress in young people, the RADAR will allow schools to identify young people at risk for difficulties and will indicate potentially fruitful directions for intervention.

PAPER 2

School-Based Assessment of Mental Health Risk in Children:

The Preliminary Development of the Child RADAR

Authors:

John R. Burns and Ronald M. Rapee

Centre for Emotional Health

Department of Psychology

Macquarie University

The article cited above has now been published, with the following deatils:

Burns, J. R. & Rapee, R. M. (2018). School-based assessment of mental health risk in children: the preliminary development of the Child RADAR. *Child and Adolescent Mental Health*, 24(1), 66-75.

Abstract

Background: Screening young people for risk of mental health difficulties in schools is an effective method to facilitate referral and early intervention. This study reports the development of a new screening instrument aimed at identifying risk for anxiety and depression difficulties in children as young as eight years. Specifically designed to be used in schools, the Child RADAR assesses a child's balance of risk and protective factors known to be associated with the development of mental health problems. **Method:** 339 children drawn from six primary schools across NSW, Australia, completed the alpha version of the Child RADAR in addition to an assessment of depression and anxiety symptoms and subjective wellbeing. **Results**: Confirmatory factor analysis revealed the Child RADAR to have an acceptable factor structure. Reliability for the Total Child RADAR was satisfactory based on both internal consistency ($\alpha = .86$) and test-retest reliability ($r = .85$). Convergent validity was demonstrated through significant associations with symptoms of anxiety and depression. **Conclusion**: The Child RADAR shows promise as a measure to detect early risk for internalising disorders in children.

Key Practitioner Message

- Mental health problem often show first signs in primary school aged children but are rarely recognised by significant adults in the child's life.

- Direct screening of primary aged children for risk of mental health difficulties is likely to increase the chances of detecting difficulties at an earlier stage.

- To date, most screening instruments developed for primary aged children are based on assessing the presence or severity of *symptoms* of mental health difficulties

- The Child RADAR, as an assessment of a child's risk and protective factors provides promise as a school-based screening tool.

Keywords: Screening, early intervention, rating scales, risk factors

Introduction

Up to 20% of youth have mental health difficulties (Belfer, 2008; E.J. Costello et al., 2005) and 50% of lifetime mental disorders start by 14 years (Kessler et al., 2005). Schools can play a key role in the identification and amelioration of mental health difficulties (Baggish & Hardcastle, 2005) given that most students attend school each day. Many evidence-based prevention and treatment programs for school aged children now exist for a range of mental health concerns (Werner-Seidler et al., 2017). However, implementation of these programs relies on the availability of psychometrically solid screening and/or outcome measures to aid in the identification of suitable participants. A range of screening tools currently exist (Levitt et al., 2007) although self-report measures of mental health status are more commonly used with students in high school than in primary schools. While some self-report measures have been specifically developed for use in schools (Deighton et al., 2012), it is frequently the case that screening is done using tools developed for clinics and epidemiological studies, such as the Pediatric Symptom Checklist (Guzman et al., 2011), the Screen for Child Anxiety Related Emotional Disorders (Simon & Bogels, 2009) and the Mood and Feelings Questionnaire (Vander Stoep et al., 2005).

Current measures that screen for mental health difficulties focus on assessing the *symptoms* of mental health difficulties. Such screeners are highly suitable when screening students for inclusion in *targeted* interventions, where there is an expectation that students will already be experiencing discernible symptoms of the relevant mental health disorder for the intervention. By contrast, inclusion in *selective* intervention programs is made on the basis of an increased risk of a disorder without necessarily already displaying symptoms of that disorder. Screening for selective programs opens up the possibility of an alternate approach to school screening, based on the presence of

risk and protective factors, rather than based on the presence or severity of symptoms. There are a number of advantages to screening for the presence or risk/protective factors rather than symptoms alone, particularly in the primary school setting. First, screening risk/protective factors allows for the possibility of identifying at risk students before they become symptomatic. Second, in accordance with the theory of equifinality and multifinality (Cicchetti & Rogosch, 1996) screening for risk factors may alert mental health professionals to the risk for a variety of mental health difficulties rather than just the one that is the focus of the symptom screener. Third, screeners based on risk and protective factors are likely to be more socially acceptable than those based on symptoms of diagnoses. Stiffler and Dever (2015) highlight opposition to screening, from both parents and teachers, and conclude that the 'social validity' and public perception of screening is a vital future challenge for mental health professionals. Screening for factors that teachers and school management understand and relate to is more likely to be socially acceptable than screening for mental health symptoms, which carries a degree of stigma.

This paper reports on the development of a new screening system designed for use with children in primary school from Grades 3-6. The RADAR[3] instruments are based on a model of mental health risk previously developed by the authors. The RADAR "model" was developed to bring together research on mental health risk and protective factors that met two primary criteria: (i) a strong evidence base linking them to the development of emotional health problems and (ii) domains that are acceptable to be measured in the school context by school personnel. We have described the development of this model and a youth version of the screener in further detail

---

[3] An earlier version of this screener used the acronym RADAR in describing five subscales. The subscale structure has been altered and the acronym no longer holds. However, the name RADAR was retained because it continues to aptly describe the role of the instrument – i.e., to inform schools about which students should be on their emotional health 'radar'.

elsewhere (Burns & Rapee, 2016). The RADAR model consists of three risk factors (peer relationship difficulties, academic difficulties and family conflict) and three protective factors (school connectedness, body image and sporting interest). From a pragmatic perspective, the RADAR model adopts the view articulated by various observers (Crews et al., 2007; National Research Council and Institute of Medicine, 2009) that risk and protective factors are often different ends of a continuum.

The risk and protective factors utilised by the *adolescent* version of the RADAR are also empirically supported in studies with *younger children*. Many meta-analyses and reviews of risk factors for mental disorder combine studies on both primary and secondary school aged children. These studies have supported the importance of peer relationship difficulties (Reijntjes et al., 2011; Reijntjes et al., 2010), physical activity (Ahn & Fedewa, 2011; Biddle & Asare, 2011), family relationships (McLeod et al., 2007; Rothbaum & Weisz, 1994), academic difficulties (Reid et al., 2004; Riglin, Petrides, Frederickson, & Rice, 2014), and school connectedness (Marraccini & Brier, 2017) in the development of mental health problems in children as well as adolescents. A number of individual studies have also provided support for the role of each RADAR risk factor in mental health difficulties specifically in primary school aged students. Examples include body image (Contreras-Valdez, Hernández-Guzmán, & Freyre, 2016; Gilliland et al., 2007), school connectedness (Murray & Greenberg, 2000; A. G. Ross et al., 2010), exercise participation (Annesi, 2005; Parfitt & Eston, 2005), family environment (Chen, Rubin, & Li, 1995; Ogburn et al., 2010) and learning difficulties (Carroll et al., 2005; van Lier et al., 2012). These data provide conceptual support for applying the RADAR model, originally developed for high school, to primary school students.

The current paper aims to investigate the psychometric properties of the Child version of the RADAR screening instrument, with particular reference to the relationship of the RADAR to the internalising symptoms of anxiety, depression as well as subjective well-being. Although disruptive behaviour disorders are highly prevalent in school aged children (Ford et al., 2003), by virtue of their 'externalising' nature they are more likely to be identified by teachers in the school context. Screening for internalising is particularly important in light of concerns that teachers are not good at recognising either anxiety (Headley & Campbell, 2011) or depression (Moor et al., 2007) in their students. Hence, the interest of this paper is on the reliability and validity of the Child RADAR as a screening instrument for internalising disorders.

Method

Participants

Permission to conduct this study was obtained from the Macquarie University Human Research Ethics Committee. Participants were students drawn from six independent (non-government) primary schools around the state of New South Wales, Australia. Three schools were located in suburban Sydney (Schools 2, 3 and 5); two were located on the outer western suburbs of Sydney (Schools 1 and 4); and one school was located in regional New South Wales (School 6). An index of Community Socio-educational Advantage (ICSEA) for each school community is available from the Australian Curriculum Assessment and Reporting Authority (ACARA) "My School" website (http://www.myschool.edu.au/). ICSEA scores have a mean of 1000 and a SD of 100. ICSEA values for schools who participated in this study ranged from 1068 to 1163. Higher ICSEA scores indicate greater socio-educational advantage. Initially, parents of all children in Grades 3 – 6 were approached and asked to give informed consent for their child to participate. Across the six schools, 25.8% of parents

approached consented to their child participating in the study, ranging from a low of 8.2% in School 3 to a high of 39.8 % in School 6. Those children who had parental consent were then approached to participate. Approaches to students were made through the classroom teacher or a senior member of the school welfare staff, using a script written by the researchers to explain the nature of the study and what their participation would involve. Within this script were clear instructions to students that participation was voluntary and that their status or standing within the school was in no way affected by their decision about participation.

Not all students completed all questionnaires involved in this study. Students in schools 1 – 4 completed the Child RADAR as well as a measure of depression symptoms and a measure of life satisfaction. Students in schools 5 and 6 completed the Child RADAR on two separate occasions as well as a measure of anxiety symptoms. In total, 345 children participated in this study. Six incomplete data sets were removed before analysis, leaving 339 complete Child RADAR data sets. The final sample consisted of 178 boys (52.5%) and 161 girls (47.5%). All participants were aged between 8 and 12 years, with a mean age of 10.3 years. Participants were spread across Grade 3 ($M = 8.7$ years, $SD = .48$; 21% of sample), Grade 4 ($M = 9.6$ years, $SD = .51$; 24.5% of sample), Grade 5 ($M = 10.6$ years, $SD = .53$; 25.5% of sample) and Grade 6 ($M = 11.7$ years, $SD = .48$; 29% of sample). The sample predominantly identified themselves as living with both parents (88%). The vast majority (83.5%) identified themselves as culturally 'Australian', with 7.1% Asian, 1.2% Aboriginal and 8.3% 'other'. English was the main language at home for 92% of the sample.

Measures

Child RADAR: The Child RADAR is the focus of the current study and is intended for use with students in Grades 3-6. The alpha version of this scale was comprised of items from the original pool of items of the Youth Version of the RADAR, which was developed for students in Grades 7-12 (Burns & Rapee, 2016). All Youth RADAR items were evaluated separately by two experienced primary school teachers in terms of the concepts, language and complexity of the items. Any items deemed too complex for a low ability Grade 3 student, or that were geared more towards high school students were either modified or omitted. For example, the Youth RADAR item *I get good marks in most school subjects* was changed to *I get good marks at school*. Some items from the Youth RADAR were excluded on the basis of very low factor loading in the Youth RADAR study. Some additional items were added to more adequately reflect the intention of the subscale. For example, some items addressing the importance of teachers in school connection were added, such as *The teachers at my school are kind to me*. The final alpha version of Child RADAR scale consisted of a pool of 37 items, spread across six subscales which reflect the six mental health risk/protective factors of the RADAR model. Participants responded to the items on a 3-point scale from 'not at all like me/my life' (0), 'a little like me/my life (1) and 'very much like me/my life' (2). A three point scale was chosen in preference to the 5-point response system of the Youth RADAR on the basis that it is simpler for the younger respondents. Higher scores on the RADAR represent better life functioning across the measured domain and therefore lower mental health risk. A Flesch-Kincaid Grade Level test of readability (performed using Microsoft Word) on the final scale items returned a reading level of 1.5, suggesting that students in Grades 3 – 6 should

experience no difficulty reading the scale. The Flesch Reading Ease for the items was 96.4, also highlighting the ease of reading of the scale for this age group.

The Center for Epidemiological Studies Depression Scale for Children: The Center for Epidemiological Studies Depression Scale for Children (CES-DC) is a 20 item self-report scale of common symptoms of depression (e.g., "I felt down and unhappy", "I didn't sleep as well as I usually sleep") which respondents rate on a 4-point scale of frequency of occurrence in the past week, ranging from 'not at all' (0) to 'a lot' (3). The authors report good internal consistency ($\alpha = .84$) and test-re-test reliability ($r = .51$, $p < .005$) (Faulstich et al., 1986).

The Children's Anxiety Scale: The Children's Anxiety Scale (CAS-8) consists of 8 items that reflect symptoms of anxiety, with respondents asked to rate how often they experience each symptom (Never, Sometimes, Often, Always). Six items are taken from the Spence Children's Anxiety Scale (Spence, 1998) with two additional items added during further development for the *beyondblue* schools research project (Spence et al., 2014). In that study ($N = 5633$) the internal consistency of the scale was .89 and the CAS-8 correlated .70 with the Strengths and Difficulties Questionnaire Emotional Symptoms subscale (Goodman, 1997).

The Students' Life Satisfaction Scale: The Students' Life Satisfaction Scale (SLSS) is a seven item self-report measure of global life satisfaction. The SLSS was developed and intended for children as young as 7 years old (Huebner, 1991). Students answer questions about their overall experience of life satisfaction (e.g., 'my life is going well'; 'my life is just right') on a six point scale of agreement, from 'strongly disagree' (1) to 'strongly agree' (6). In a review of various studies over more than 15

years, the author cites Cronbach's alpha in the .70 - .80 range while test-retest studies show correlations of between .53 and .76 (Huebner & Hills, 2013).

Data Analysis

The data set for this analysis contained 339 completed Child RADARs from all six schools. To further investigate the factor structure of the scale, and on the basis that the preliminary factor structure of the RADAR model had already been established (Burns & Rapee, 2016), we conducted a confirmatory factor analysis (CFA) with the Child RADAR data to test the fit of the data to the previously determined six subscales. To create a screener that is practical for children as young as Grade 3, we planned to reduce the number of items to 4 or 5 per subscale. Therefore, in the initial step, items were removed sequentially from each subscale on the basis of the effect of their removal on the subscale's internal consistency. In this way, two models were created, which were then compared in the CFA: Model 1 contained 5 items per subscale and Model 2 contained a more parsimonious 4 items per subscale. CFA was carried out using SPSS *Analysis of Moment Structures (AMOS)* to assess the fit of two models. Maximum likelihood estimation was used as there were no missing responses in the data set. All factors were allowed to correlate. Goodness of fit was measured using Chi-square, the Tucker-Lewis Index (TLI), the Comparative Fit Index (CFI), the Root Mean Square Error of Approximation (RMSEA), and the Standardized Root Mean Square Residual (SRMR). Interpretation of goodness of fit statistics was guided by Hu and Bentler (Hu & Bentler, 1999), with TLI and CFI levels of .95 and values below .06 for the RMSEA and below .08 for the SRMR being considered indicative of good fit. Validity was further assessed by evaluating the Child RADAR's concurrent association with a measure of depression symptoms (CES-DC), a measure of anxiety symptoms (CAS-8) and a measure of subjective well-being (SLSS). We expected the Child RADAR to

show a significant, negative correlation with the CES-DC and CAS-8 and a significant, positive correlation with the SLSS. During testing, students were asked to identify whether they had previously seen a counsellor/psychologist. Using a *t*-test, we evaluated the hypothesis that the Child RADAR would be able to discriminate between those students who had previously seen a counsellor/psychologist from those who had not. Analysis of the reliability of the scale was carried out with reference to both Cronbach's alpha and test-retest reliability. Given concern by some about the suitability of alpha as an assessment of internal consistency (eg, Revelle & Zinbarg, 2009), we also calculated McDonald's Omega (ωt) using the statistical package R (R Core Team, 2013). Finally, multiple linear regression was used to assess the value of the Child RADAR subscales in predicting student depression symptoms (CES-DC), anxiety symptoms (CAS-8) and life satisfaction (SLSS). With no *a priori* hypotheses to determine the order of entry of variables, a forced entry method was used. The skewness statistic of the Family Relationships subscale was unacceptably large to satisfy normality (-2.15). This variable was subsequently transformed using the log transformation function in SPSS, returning a more acceptable skewness statistic (-1.19). This transformed variable was used in all further regression analyses. Homoscedasticity was examined via an inspection of a plot of standardised residuals against the regression standardised predicted values, revealing a relatively even dispersal around 0. An examination of correlations among the variables (Table 3) revealed correlations ranging from $r = .00$ (SI and PA) to $r = .63$ (SC and FR), suggesting that multicollinearity is unlikely to be a problem.

Results

Confirmatory Factor Analysis

Results of CFA for both models tested are shown in Table 1. In both models we allowed covariance of the error terms e26 and e27 – the first two items on the Peer

Relations factor – as suggested by the modification indices. The absolute fit indices based on root mean square (i.e., RMSR and RMSEA) fell below the intended cut-off of .08 for SRMS and .06 on the RMSEA on both models tested. CFI and TFI both fell slightly below .95 in Model 1, but exceeded the .95 cut-off in Model 2.

Table 1.

Fit statistics from Confirmatory Factor Analysis

	χ^2	*df*	*p*	RMSEA	SRMR	TLI	CFI
Model 1	669.428	389	.000	.05	.06	.91	.92
Model 2	355.259	236	.000	.04	.05	.95	.96

TLI = Tucker-Lewis Index, CFI = Comparative Fit Index, RMSEA = Root Mean Square Error of Approximation, SRMS = Standardized Root Mean Square Residual

Final Child RADAR Scale

On the basis that Model 2 (4 items per subscale) yielded slightly stronger fit statistics in CFA and was more parsimonious than Model 1, we elected to create a final Child RADAR scale consisting of 24 items – that is, four items on each of the six subscales. Each subscale consisted of the sum of the responses for the four items used in the CFA. Scores on negative worded items were reversed. The six subscales were then summed to create a Total Child RADAR scale. Higher scores on the RADAR (and each subscale) indicate lower mental health risk.

The means and standard deviations for each subscale and the Total Child RADAR are reported in Table 2, including a breakdown for each score by gender and grade. Two way ANOVA (gender x age group) was carried out to investigate differences between mean scores and interaction effects across scores on the Total Child RADAR and all

subscales. Main gender effects were identified on the School Connectedness subscale, where girls scored higher than boys, $F(1,335) = 5.77$, $p = .02$; and on the Sporting Interest subscale, where boys scored higher than girls, $F(1, 335) = 6.07$, $p = .01$. No significant main effects of age group and no significant interaction effects were found.

Table 2.

Descriptive Data and Cronbach Alpha of the Child RADAR and Subscales by Gender

	Total Child RADAR Mean (*SD*)	SC Mean (*SD*)	FR Mean (*SD*)	AS Mean (*SD*)	SI Mean (*SD*)	PA Mean (*SD*)	AA Mean (*SD*)
Total Sample (*N*=339)	37.64 (6.81)	6.99 (1.44)	7.24 (1.27)	5.38 (1.83)	5.62 (2.36)	6.23 (1.73)	6.17 (2.10)
All Boys (*n* = 178)	37.62 (7.08)	**6.82*** (1.57)	7.19 (1.35)	5.20 (1.81)	**5.93*** (2.26)	6.24 (1.78)	6.24 (2.08)
Boys Grade 3-4 (*n* = 87)	39.03 (6.88)	6.83 (1.42)	7.20 (1.37)	5.21 (1.70)	6.24 (2.04)	6.08 (1.83)	6.48 (1.99)
Boys Grade 5-6 (*n* = 91)	37.22 (7.28)	6.81 (1.71)	7.19 (1.34)	5.20 (1.93)	5.64 (2.44)	6.38 (1.73)	6.00 (2.15)
All Girls (*n* = 161)	37.66 (6.53)	**7.17*** (1.27)	7.29 (1.17)	5.58 (1.87)	**5.28*** (2.43)	6.23 (1.67)	6.11 (2.12)
Girls 3-4 (*n* = 67)	37.93 (6.25)	7.34 (1.15)	7.19 (1.34)	5.58 (1.75)	5.48 (2.23)	6.03 (1.66)	6.30 (2.10)
Girls 5-6 (*n* = 94)	37.47 (6.74)	7.05 (1.35)	7.35 (1.03)	5.59 (1.89)	5.14 (2.56)	6.37 (1.67)	5.97 (2.13)
α – Total Sample (*N*=339)	.86	.75	.73	.69	.84	.69	.85
α – Boys only (*n*=178)	.87	.75	.75	.67	.83	.71	.85
α – Girls only (*n*=161)	.85	.74	.71	.71	.85	.68	.84
ωt (N = 339)	.89	.82	.79	.73	.88	.81	.88

SC School Connectedness, *FR* Family Relations, *AS* Academic Success, *SI* Sporting

Interest, *PA* Peer Acceptance, *AA* Acceptance of Appearance; * *sig. < .05*

Concurrent Validity

To assess concurrent validity, in addition to the Child RADAR participants in Schools 1 – 4 completed the CES-DC and the SLSS, while participants in Schools 5 and 6 completed the CAS-8. Correlations between the Child RADAR, the CES-DC, the CAS-8 and the SLSS are listed in Table 3, separated by gender. The Child RADAR was found to have a strong and negative correlation ($r = $-.68; $p < .001$) with the CES-DC, a strong and negative correlation with the CAS-8 ($r = $-.59, $p < .001$) and a strong and positive correlation with the SLSS ($r = .70$; $p < .001$).

Participants in Schools 1-4 were divided into two groups, based on whether they identified as having previously seen a counsellor/psychologist ($n = 62$) or not ($n = 137$). One participant did not respond to this question, leaving a total data set of $n = 199$. An independent samples t-test was performed to compare the mean Total Child RADAR between the groups. The mean of the 'no previous counselling' group ($M = 38.78$; $SD = 6.12$) was significantly higher than the mean of the 'previous counselling' group ($M = 34.85$; $SD = 7.34$) – $t(197) = 3.95$ ($p < .001$).

The six Child RADAR subscales were used in separate multiple regression analyses to predict depression symptoms on the CES-DC, anxiety symptoms on the CAS-8 and life satisfaction on the SLSS. The Enter method in SPSS was used as there was no a priori hypotheses to determine entry order. Using the CES-DC as a dependent variable, the prediction model was statistically significant, $F(6,193) = 35.87$, $p < .001$, and accounted for approximately 51% of the variance of the depression score (Adjusted R2 =.512).

Table 3

Correlations between Child RADAR scores and Other Measures – by Gender

	TCR	FR	AS	SC	AA	SI	PA	CES-DC	SLSS	CAS-8
TCR	1	.58**	.59**	.63**	.73**	.41**	.72**	-.71**	.74**	-.70**
FR	.68**	1	.32**	.38**	.21*	.19	.35**	-.38**	.54**	-.53**
AS	.46**	.21*	1	.35**	.40**	-.10	.45**	-.46**	.41**	-.45**
SC	.64**	.63**	.33**	1	.36**	.00	.41**	-.51**	.50**	-.40**
AA	.71**	.36**	.21*	.23*	1	.07	.46**	-.57**	.57**	-.57**
SI	.65**	.33**	.06	.17	.36**	1	.00	-.08	.11	-.30*
PA	.67**	.21*	.22*	.26**	.44**	.33**	1	-.64**	.67**	-.57**
CES-DC	-.67**	-.37**	- .25**	- .38**	- .52**	- .36**	- .60**	1	- .66**	n/a
SLSS	.69**	.54**	.22*	.43**	.54**	.39**	.51**	-.62**	1	n/a
CAS-8	-.47**	-.09	-.26*	- .34**	- .49**	-.26*	- .34**	n/a	n/a	1

*p < .05, ** p < .001

TCR = Total Child RADAR, SC = School Connectedness, FR = Family Relations, AS = Academic Success, SI = Sporting Interest, PA = Peer Acceptance, AA = Acceptance of Appearance, CES-DC = Center for Epidemiological Studies Depression Scale for Children, SLSS = Students' Life Satisfaction Scale, CAS-8 = Child Anxiety Scale.

Scores above the line are for girls – below the line are for boys.

Significant predictors of depression scores (Table 4) were Peer Acceptance (p < .001), Acceptance of Appearance (p < .001) and Academic Success (p < .01) (Table 5). Using the CAS-8 as a dependent variable, the prediction model was statistically significant, $F(6,132) = 14.66$, p <.001, and accounted for approximately 37% of the variance of the anxiety score (Adjusted R2 =.373). Significant predictors of anxiety scores (Table 5) were Acceptance of Appearance (p < .001), Peer Acceptance (p < .05) and Academic Success ($p < .05$). Similarly, the six Child RADAR subscales were used in a multiple regression analysis to predict students' life satisfaction, as measured by the SLSS. Using the SLSS as a dependent variable, the prediction model was statistically significant, $F(6,193) = 35.57, p < .001$, and accounted for approximately 51% of the variance of the life satisfaction score (Adjusted R^2 =.51). Significant predictors of SLSS scores (Table 6) were Peer Acceptance ($p < .001$), followed by Acceptance of Appearance ($p < .001$) and Family Relations ($p < .001$).

Table 4.

Predicting Depression Scores (CES-DC) from Child RADAR Scores

Model	b	SE-b	Beta	Sig.
Constant	58.25	3.42		< .001
FR	-5.25	3.19	-.10	.10
AS	-1.10	.41	-.16	.01
SC	-6.9	.49	-.09	.16
AA	-1.35	.35	-.22	< .001
SI	-.45	.29	-.08	.12
PA	-2.65	.38	-.40	< .001

Note: DV = CES-DC. R^2 = .53, Adjusted R^2 = .51. *SC* School Connectedness, *AS* Academic Success, *PA* Peer Acceptance, *AA* Acceptance of Appearance, *SI* Sporting Interest

Table 5.

Predicting Anxiety Scores (CAS-8) from Child RADAR Scores

Model	*b*	SE-*b*	Beta	Sig.
Constant	22.26	2.18		< .001
FR	-.37	.26	-.11	.15
AS	-.52	.21	-.20	.01
SC	-.03	.31	-.01	.92
AA	-.80	.18	-.37	< .001
SI	-.00	.15	-.00	.99
PA	-.63	.25	-.21	.01

Note: DV = CAS-8. R^2 = .40, Adjusted R^2 = .37. *SC* School Connectedness, *AS* Academic

Success, *PA* Peer Acceptance, *AA* Acceptance of Appearance, *SI* Sporting Interest

Reliability

Cronbach's Alpha and McDonald's Omega for the Total Child RADAR and each

subscale was calculated using the total sample of 339 subjects (Table 2). Alpha for the

Total Child RADAR was .86, with α values for the subscales ranging from .69 on both

the Academic Success and Peer Acceptance subscales, to .85 on the Acceptance of

Appearance subscale. Omega (ωt) for the Total RADAR was .89, with Omega subscale

ranging from .73 (Academic Success) to .88 (Sporting Interest and Acceptance of

Appearance).

Table 6.

Predicting Life Satisfaction Scores (SLSS) from Child RADAR Scores

Model	b	SE-b	Beta	Sig.
Constant	1.27	.29		< .001
FR	1.09	.27	.24	< .001
AS	.05	.03	.09	.14
SC	.06	.04	.08	.16
AA	.14	.03	.28	< .001
SI	.04	.03	.09	.08
PA	.16	.03	.29	< .001

Note: DV = SLSS. R^2 = .52, Adjusted R^2 = .51. *SC* School Connectedness, *AS* Academic

Success, *PA* Peer Acceptance, *AA* Acceptance of Appearance, *SI* Sporting Interest

To assess test-retest reliability, the Child RADAR was re-administered to

participants in two schools (Schools 5 and 6) one week after the initial administration. A

total of 127 students completed the Child RADAR over the two time periods. Bivariate

Pearson product-moment correlations revealed that correlations for all six subscales and

the Total Child RADAR (Table 7) were statistically significant (p < .001) with the test-

retest coefficient for the Total Child RADAR being .85 and subscale coefficients

ranging from .62 (School Connectedness) to .91 (Sporting Interest).

Table 7
*Child RADAR Test-retest correlations between Time 1
and Time 2*

Subscale	r
Family Relations	.79**
Academic Success	.73**
School Connectedness	.62**
Acceptance of Appearance	.77**
Sporting Interest	.91**
Peer Acceptance	.68**
Total Child RADAR	.85**

** p < .001

Discussion

In the present study we examined the psychometric properties of Child RADAR as a screening tool for use with students in Grades 3 to 6. The Child RADAR is an extension of the Youth RADAR and as far as possible we based this screener on items developed for the Youth version of the RADAR. Although empirically there is reason to believe that the six factors of the RADAR model are associated with mental health outcomes for children as well as youth, we sought to confirm the structure of the items in this scale via factor analysis. Confirmatory factor analysis showed adequate model fit statistics for this Child version of the instrument, indicating that a 6-factor model, consistent with that used among older students, adequately fit the data from this younger sample. The fact that the 4-item model produced slightly stronger fit statistics than the 5-item model provides the additional benefit of producing a shorter and more parsimonious screener.

Cronbach's alpha for the Total Child RADAR ($\alpha = .86$) fell well within the acceptable range of reliability. There were no marked differences between alpha values for boys and girls within the sample. While most of the alpha values for separate subscales were also above .7, two subscales (Academic Success and Peer Acceptance) both fell marginally below this level (.69). In line with concern that α is a lower bound to a scale's reliability and can be a poor estimate of internal consistency (Revelle & Zinbarg, 2009), we also calculated McDonald's Omega. Omega (*ωt)* scores for the Total RADAR and all subscales were slightly higher than the related alpha scores and confirmed the utility of the Total RADAR and its subscales as having acceptable internal consistency.

Analysis of test-retest reliability generally showed sound consistency over time. The Total Child RADAR ($r = .85$) and the Sporting Interest subscale ($r = .91$)

81

demonstrated especially high re-test reliability. Lower reliability scores were returned for the Peer Acceptance ($r = .68$) and School Connectedness ($r = .62$) subscales. While both these scores fell within accepted ranges of reliability and were highly significant ($p < .001$), it suggests that relations with peers and even teachers may be more variable in a young person's life than attributes like their view on their own body or sporting interest. Indeed there is much evidence to support the notion that peer relationships in childhood are far less stable than those in adolescence (Poulin & Chan, 2010).

This study also sought to investigate the validity of the Child RADAR in terms of its concurrence with internalising symptoms (i.e., depression symptoms on the CES-DC and anxiety symptoms on the CAS-8). The fact that the Child RADAR scores were highly correlated with depressive symptoms ($r = -.71$, $p < .001$) provides supportive evidence for its validity as a mental health screener. In relation to anxiety symptoms, the Total Child RADAR was found to be strongly correlated to CAS-8 ($r = -.59$) although significantly stronger associations ($z = 2.95$. $p = <.005$) were found for girls ($r = -.70$) than for boys ($r = -.47$). This pattern was also shown across all RADAR subscales. Given that girls are more likely to experience anxiety disorders than boys (Merikangas, Nakamura, & Kessler, 2009) this pattern of results suggests that the Child RADAR could be quite sensitive to alerting school personnel in particular to girls at risk of anxiety disorders.

A 'dual-factor' approach to emotional health considers not just the absence of symptoms of pathology but also the presence of subjective well-being (Antaramian, Huebner, Hills, & Valois, 2010). A recent study found that as much as 32% of the variance in students' overall well-being was explained by positive psychological dispositions while only 8% was explained by symptoms of distress (Kim, Furlong, Dowdy, & Felix, 2014). One implication of a dual-factor model is that mental health

screening that only seeks to investigate a young person's psychopathology may be an inadequate or incomplete measure of a student's true well-being. We found that the Total Child RADAR was significantly correlated with subjective well-being, as measured by the SLSS ($r = .71$, $p < .001$), providing support for the Child RADAR not just as a measure of psychopathology, but also of positive well-being. Most Child RADAR subscales were also significantly correlated with the SLSS. The only exception to this was the Sporting Interest subscale, which returned a significant correlation for boys ($r = .39$, $p < .01$) but a non-significant correlation for girls. The suggestion that sporting interest has a closer connection to emotional well-being for boys than girls during the primary school years is in accord with prior research (Raufelder, Waak, Melchior, & Ittel, 2013).

In an additional effort to assess the validity of the Child RADAR we compared the mean scores of participants who had previously seen a counsellor to those who had not. As expected, those students who had previously seen a counsellor/psychologist returned significantly lower Total Child RADAR scores than their peers who had not seen a counsellor, supporting the contention that the Child RADAR has potential to differentiate between students with varying levels of emotional health risk. A surprisingly large number of participants - over 30% - identified that they had seen a counsellor. This may be a reflection of the fact that each of the participating schools had their own school counsellor, thus making counselling more readily accessible for this sample. It may also be a reflection of the slightly above average level of socio-educational advantage of the participating schools, suggesting they have not only a more educated parent body, but also greater access to counselling services.

The multi-factor nature of the Child RADAR allowed us to investigate the predictive strength of each subscale domain on students' depression and anxiety

symptoms, as well as their overall life satisfaction. The Peer Acceptance and Acceptance of Appearance subscales in particular were found to be highly significant predictors for depression, anxiety and life satisfaction. This finding reinforces the very powerful role that social relationships play in creating both positive and negative outcomes for children and serves as a reminder for school communities to pay careful attention, from the earliest stages, to monitoring and nurturing students' peer development.

From a practical perspective, the Child RADAR provides schools with a brief, age-appropriate and non-stigmatising tool with which to identify students who may be at risk of developing internalising difficulties. As a screener for mental health risk, it is intended to be used with whole classes, year groups, or even whole schools. Results from the Child RADAR could be used in a variety of ways. They could be used to identify students for inclusion in school-based prevention or early intervention groups and/or to prioritise students who may benefit from additional school counselling services. Schools may also choose to examine the results of subscales for themes across cohorts. For example, after screening with the RADAR schools may notice a broad concern for peer relationships or school connectedness across an entire year group and subsequently implement a class- or school-wide intervention. At a more basic level, results may be used purely to alert teachers and well-being staff to students who they should monitor more closely in future for signs of emotional health difficulties.

Limitations, Future Research and Conclusions

There are a number of important limitations to this study. All participants were drawn from fee-paying/non-government schools, meaning that they came from families biased either by their ability to pay for independent schooling, or their beliefs about the

84

value of independent education. The fact that all schools had ICSEA values above the national mean is one indicator of this advantage. In line with international research on socioeconomic status and mental health problems (Reiss, 2013) it is likely that the overall levels of psychopathology in this sample were lower than for the broader Australian community. This need not negate the relationship between risk factors and internalising symptoms – children from higher SES backgrounds are still exposed to risk factors and experience anxiety and depression. One possibility is that a broader sample would allow for more variance in the data set allowing the identification of even stronger relationships between the RADAR and measures of emotional distress. Further validation on the RADAR with a larger and more representative sample would help address these questions. Moreover, future study should investigate the ability of the Child RADAR to discriminate between groups of children who would be expected to return different scores, such as clinic vs. community samples. The greatest benefit of any screening instrument is its ability to predict in advance those individuals who will develop the illness being screened for. While there is evidence to support the utility of the Youth RADAR in predicting emotional distress over a one year period (Burns & Rapee, 2016), further longitudinal scrutiny of the Child RADAR is required to better evaluate its validity in predicting mental health problems over time. This will be important not only for risk of depression and anxiety, but also for behavioural disorders. One assumption behind the Child RADAR is that schools are likely to find assessing risk/protective factors more 'acceptable' than directly assessing symptoms of disorders, such as anxiety or depression. However, this assumption is as yet unproven and would be an important matter to investigate in future. Finally, future studies will need to evaluate the relationship between the Child RADAR as a self-report measure, with both teacher and parent measures of emotional health.

This current study provided preliminary evidence for the reliability and validity of the Child RADAR, which appears to have potential as a self-report instrument for risk of internalising disorders in primary school aged children.

PAPER 3

Universal Screening by Teachers for Mental Health Risk:

The Development of the Teacher RADAR

Author:

John R. Burns

Centre for Emotional Health

Department of Psychology

Macquarie University

Abstract

School teachers are in a unique position to identify young people who may be at risk of developing emotional health problems and thus aid in ensuring such students receive additional assessment and intervention. However, teachers are not necessarily proficient at identifying students with emotional disorders. Screening instruments are one way to help guide teachers to refer students for further assessment. This paper reports on the development of a screening tool for teachers based on a model of risk and protective factors that may be observable in the school context. The Teacher RADAR was developed in conjunction with a complementary youth self-report version of the screener. Psychometric data were collected on 353 teacher-student pairs across six high schools in New South Wales, Australia. Exploratory and confirmatory factor analysis revealed a robust structure to the model and internal consistency for the total scale and all subscales was acceptable. Significant but small correlations were found between the Teacher RADAR and students' self-reports of distress. Although the Teacher RADAR has a number of potential strengths, this paper concludes that further development is required before this instrument can be considered for general use in schools.

Keywords: adolescence, screening, teachers, emotional health, psychometrics

Introduction

Schools have good reason to be concerned about students experiencing emotional distress. The association between emotional disorders and poor academic performance has long been identified (Reid et al., 2004; Trout et al., 2003). Longitudinal research has shown that youth with emotional problems have the poorest outcomes of any group of youth with disabilities (Wagner, Kutash, Duchnowski, & Epstein, 2005). These students have worse relationships with both peers and teachers, are more likely to be involved in bullying, and are more likely to receive poor grades than youth with other types of disabilities (Wagner & Cameto, 2004). Moreover, young people with emotional and behavioural problems have the highest school drop-out of any student population (Zablocki & Krezmien, 2013).

These negative impacts are all the more concerning when it is understood that students with mental health difficulties are not uncommon. A recent, large scale study from the United States found that the overall prevalence of mental disorders in 13-18 year olds with severe impairment was as high as 22% (Merikangas et al., 2010). Other prevalence studies from around the world have shown figures of 15-20% of young people experiencing some form of serious mental health difficulty (Farbstein et al., 2010; Ivancic, Perrens, Fildes, Perry, & Christensen, 2014; Ravens-Sieberer et al., 2008). Moreover, in the school context there is a significant gap between the number of students who have a mental disorder and those who are actually being identified by special educators as having a need (Forness, Freeman, Paparella, Kauffman, & Walker, 2012).

Following from these figures an important goal for educators and mental health professionals alike is to identify young people at risk of emotional health difficulties in order to put in place suitable resources. Efforts to identify young people with emotional

health risk is particularly important in light of research showing that young people are not good at seeking help for themselves (Rickwood et al., 2005a; Rickwood et al., 2007).

In order to allocate appropriate resources, school staff with a responsibility for student welfare[4] are increasingly proactive in identifying students who have particular emotional health needs. This is particularly the case in high schools, when the lives of young people become more complex and they are at greater risk of emotional health problems. Despite an acknowledgement that teachers are interested in identifying young people with emotional problems, there is mixed evidence about the ability of teachers to recognise such difficulties in young people. Scott and colleagues (2009) found that teachers identified only about 50% of the students in their sample who had significant mental health problems (Scott et al., 2009). Other studies have shown that teachers may be competent to pick up more severe social and emotional difficulties, but less attuned to less severe difficulties (French & Waas, 1985; Headley & Campbell, 2011), while also more attuned to picking up externalising disorders in young people than internalising problems (Dwyer, Nicholson, & Battistutta, 2006). Moreover, evidence is mixed regarding whether training teachers to recognise the signs of mental health problems is of value. Training in mental health literacy can increase teachers' knowledge, attitudes and confidence in working with students with mental health problems (Jorm et al., 2010). However, training alone appears insufficient to change teachers' ability to actually recognise depression in their students (Moor et al., 2007). Clearly relying solely on teachers' perceptions of students is insufficient to identify mental health concerns in many students.

---

[4] The expressions 'Student Welfare' teacher and 'Pastoral Care' teacher will be used interchangeably in this paper to refer to teachers in a school with a specific responsibility for the social and emotion wellbeing of a group of students.

One strategy that has been employed to help school personnel identify students in need of additional assistance is the use of universal screening instruments. Such instruments have developed along two separate lines – each with their own strengths and weaknesses. The first are screeners developed primarily by educators/school personnel seeking to identify students with behavioural disorders who may require specialist educational intervention. The best examples of these types are instruments are the Student Screening for Behavior Disorders (Walker & Severson, 2014; Walker et al., 1988) and the Student Risk Screening Scale (Drummond, 1994). The primary advantages of these systems for universal screening are that they are brief and simple to use. The SRSS is reproducible at no cost; the SSBD-2nd Edition is available commercially. However, such screening systems rely purely on teacher reports and do not seek additional information from other informants, which appears to be inadequate in light of evidence above. Moreover, although both these screeners have been broadly evaluated on primary school aged populations, there has been relatively little attention to their utility with older students.

The second type of screeners used in schools are those that have been developed by mental health experts in the community to assist in the identification of young people displaying symptoms of emotional difficulties across a variety of settings (e.g., clinics, hospitals). Examples of these screening tools include the Strengths and Difficulties Questionnaire (Goodman, 1997, 2001), the Behavior Assessment System for Children, Third Edition (Kamphaus & Reynolds, 2015), the Conners Teacher Rating Scale (Conners, Sitarenios, Parker, & Epstein, 1998) and the Achenbach Child Behaviour Checklist (Achenbach, 2009). The advantages of these types of screeners are that they usually have extensive psychometric evaluation; many have multi-informant versions; and some assess a wide range of behavioural and emotional difficulties. Unfortunately

these measures are rarely suited for universal screening by teachers due to their cost and length. For example, at least one study reported that teachers refused to complete the Strengths and Difficulties Questionnaire due to its length (Lane, Kalberg, Parks, & Carter, 2008).

The current paper reports on the development of a new teacher screening instrument which seeks to build on the strengths and avoid the pitfalls of the two systems described above. The RADAR model was developed specifically for this project from an evaluation of the research literature on risk and protective factors known to be associated with adolescent mental health difficulties. In addition to having a robust evidence base to support its inclusion, each risk/protective factor needed to satisfy two additional criteria. First, given that the screening system was specifically being developed for use within schools, we sought to include factors which could broadly be considered to fall within the realms of reasonable knowledge for school personnel. On this basis, some factors (such as parental mental illness) were excluded from the model. Second, we chose to include factors which were potentially modifiable. Factors such as socio-economic status or gender were excluded. The final RADAR model contained six factors: *family environment* (Rapee, 1997, 2012b; Tolan et al., 2013); *academic competence* (Nelson, 2011; Reid et al., 2004); *peer relationships* (Choukas-Bradley & Prinstein, 2014; Reijntjes et al., 2011; Reijntjes et al., 2010); *sporting activity/interest* (Biddle & Asare, 2011; Merglen, Flatz, Bélanger, Michaud, & Suris, 2014; Simons et al., 2012); *school connectedness* (Bond et al., 2007; Millings et al., 2012; Shochet et al., 2006)and *body satisfaction* (Blashill & Wilhelm, 2014; Bucchianeri, Arikian, Hannan, Eisenberg, & Neumark-Sztainer, 2013; Lanza, Echols, & Graham, 2013). A Youth report version of the RADAR has been reported elsewhere (Burns & Rapee, 2016).

There are four key benefits of a screening system based on risk and protective factors: 1) the items associated with risk and especially protection are typically more positive and hence less stigmatising than items that directly tap disorder, thereby increasing the acceptability of the measure for students, parents, and schools; 2) such a screener highlights areas of concern in the young person's life that are potentially modifiable (such as school connectedness or relationship difficulties) and hence provides more direct implications for prevention; 3) given the growing prominence of transdiagnostic approaches to mental health (Ehrenreich-May & Bilek, 2012; Nolen-Hoeksema & Watkins, 2011), such a screening system may be able to detect risk for a broad range of possible emotional health difficulties experienced by young people; 4) a focus on risk allows attention and intervention from educational and mental health professionals before the symptoms become obvious or full clinical disorders emerge, allowing a stronger focus on prevention.

The remainder of this paper describes the development and initial validation of the Teacher version of the RADAR screening system, with specific reference to the relationship between the Teacher and Youth version of the screeners.

Method

Participants

Permission to conduct this study was obtained from the Macquarie University Human Research Ethics Committee. Participants were students and teachers drawn from six independent Anglican (Church of England) high schools around the state of New South Wales, Australia. Two of the schools were single sex and four were co-educational. Two schools were in suburban Sydney; two were in the outer suburbs of Sydney; and two were from rural/regional areas of New South Wales. Initial consent

was sought from parents, with an explicit statement in the consent form that their son/daughter's pastoral care teacher would also be invited to complete a corresponding Teacher RADAR. Those students with parental consent were then approached to give their own consent to participate, again with an explicit understanding that their pastoral care teacher would be asked to provide a corresponding Teacher RADAR. Finally, pastoral care teachers of participating students were approached to participate and asked signed their own consent. When completing the Youth version of the RADAR student participants were asked to provide their name so that their pastoral care teacher could then provide a corresponding and linked Teacher RADAR. In total, 353 combined Teacher and Youth RADAR reports were completed. Of the students, 229 (66%) were males and 119 (34%) were female. Students age ranged from 12 to 18 years, with a mean age of 14.6 years ($SD = 1.66$). They were distributed across high school Years 7 through 12, the highest percentage from Year 7 (20%) and the lowest from Year 12 (10%). The students for this study were a subset of those previously described in the Youth RADAR study and further description of the sample is provided elsewhere (Burns & Rapee, 2016). Participating teachers were not asked to provide personal demographic information in order to minimise total number of items and maximise participation.

Materials/Measures

The Youth RADAR is a measure of a student's risk of developing emotional disorders (Burns & Rapee, 2016). It contains 30 items (e.g., *My family argues a lot; People at my school care about me*) that incorporate six subscales, which can be summed to give a total risk score. Students use a 5-point scale to rate how strongly each item describes them, from 'not at all like me' (1) to 'very much like me' (5). Each subscale displays acceptable reliability, with Cronbach's alphas ranging from .73 (Peer

Relationships) to .90 (Sporting Interest) and a Total RADAR alpha of .91. It shows

sound convergent validity with other measures of emotional distress, correlating

strongly with the Strengths and Difficulties Questionnaire ($r = -.69, p < .001$)

(Goodman, 1997) and the Center for Epidemiological Studies – Depression Scale for

Children ($r = -.67, p < .001$) (Faulstich et al., 1986).

The alpha version of the Teacher RADAR consisted of 22 items distributed across

three domains related to student well-being: academic competence, peer relationships

and school connectedness. These domains were drawn from the original RADAR model

and were selected for inclusion in the Teacher RADAR because they were considered

the domains that teachers could report on most reliably. The individual items on the

Teacher RADAR were drawn from corresponding items of the Youth RADAR item

pool, with minor changes to the pronouns used to reflect the different informant.

Teacher responses were given on a 5-point scale ranging from 'very much like' (1) to

'not at all like' (5) the target student. Youth and teacher participants completed the

RADAR online via an internet survey tool (SurveyGizmo).

Student participants also completed two other common screening tools of

emotional difficulties. The Strengths and Difficulties Questionnaire (Goodman, 1997,

2001) is a 25 item questionnaire that measures psychological adjustment in children

across four separate domains: emotional symptoms, conduct problems,

hyperactivity/inattention, and peer relationship problems. Reliability of the subscales of

the SDQ is acceptable, ranging from .41 (Peer Problems) to .67

(Hyperactivity/inattention), with a total scale reliability of .80 (Goodman, 2001).

Additionally, it contains a prosocial behaviour scale. The Center for Epidemiological

Studies – Depression Scale for Children contains 20 items describing symptoms of

depression (e.g., *I felt down and unhappy*, *I felt like crying*) and respondents describe

95

how much they have felt like that in the past week, ranging from 'not at all' (0) to 'a lot' (3). The original psychometric evaluation displayed sound properties, with a test-retest reliability of .51 (p<.005) and a coefficient alpha of .84 (Faulstich et al., 1986). Since the original publication of the CES-DC numerous studies have confirmed the psychometric utility of this instrument (Barkmann, Erhart, & Schulte-Markwort, 2008; Essau et al., 2013).

Data Analysis

The original data set of 353 Teacher RADAR responses was randomly split into two subsamples using SPSS random number generation. Sample A consisted of 150 Teacher RADARs (representing 63% male and 37% female Youth) and was used to carry out an exploratory factor analysis (EFA). There were no missing data or outliers. Four of the original 22 items were removed prior to EFA on the basis of either extreme skewness or very low communalities. Factors were extracted from the remaining 18 items with SPSS using Principal Axis Factoring, as this method is considered more suitable when data are not normally distributed (Costello & Osborne, 2005). Factors were then rotated using oblique rotation (oblimin with Kaiser Normalisation), as factors were expected to be correlated. From the EFA we selected items to retain in the measure. To be retained, items had to meet three criteria: (i) the item must load onto its primary factor with a minimum loading of .5, (ii) the item must have at least a .3 difference between the absolute values of its loadings on the primary factor and any other factor, and (iii) the item must have face validity for the factor on which it loaded. Sample B consisted of 203 Teacher RADARs (representing 68% male and 32% female youth participants) and was used for a confirmatory factor analysis (CFA). We elected to ensure that we had a minimum sample of 200 for the CFA, as a sample of this size is considered large enough for most models and may help avoid technical problems

(Kline, 2005). In determining adequate model fit we set primary criteria of an RMSEA below .08, indices of incremental fit above .95 and SRMR less than .10 as satisfactory evidence of adequate fit (Hu & Bentler, 1999; M. Kline, 2013). We tested the reliability of the Teacher RADAR and its subscales using Cronbach's alpha, and the convergent validity of the scale through its correlation with the student instruments. We expected to see positive correlations between the Youth and Teacher RADAR scores for their corresponding subscales as well as their Total scores. Given that high scores on the RADAR represent lower mental health risk, we hypothesised that the constructs measured by the Teacher RADAR would demonstrate a negative relationship with the student symptom-based screeners (CES-DC and SDQ).

Results

Exploratory Factor Analysis

An exploratory factor analysis was performed on Sample A. Sampling adequacy was excellent, with a Kaiser-Meyer-Olkin Measure of Sampling Adequacy of .90 and Bartlett's test of sphericity was highly significant, $\chi^2 (153) = 1985.108$, $p < .000$. The scree plot suggested a three or possibly four factor model. Analysis of the Pattern Matrix for a 4 Factor model revealed that only three items loaded onto the fourth factor with a loading greater than .3, and that all of these items loaded more strongly onto other factors. We therefore rejected the four factor model. A three factor model accounted for 68.6% of total variance. Four items (as indicated with an asterisk in Table 1) were excluded from the model at this point as they did not satisfy the retention criteria.

Table 1

Pattern Matrix from EFA on Sample A (N = 150)

	Factor		
	1	2	3
throws himself/herself into school life	**.68**	-.28	-.11
appears to like being part of this school	**.68**	-.15	-.22
seeks to support the ethos of the school	**.60**	-.05	-.27
appears well connected to the school*	**.57**	-.41	-.10
mixes easily with other students	-.07	**-.86**	.06
makes friends easily	.13	**-.85**	.09
is popular at school	.15	**-.79**	-.04
is often alone	.02	**.75**	-.040
is well liked by others at this school	.19	**-.70**	-.14
is teased bullied by other students*	.26	**.60**	.35
is well known by staff and students*	.43	-.46	.06
applies himself/herself to study with diligence	.32	.16	**-.79**
usually completes homework	.34	.22	**-.73**
gets good results in exams and tests at school	.030	-.01	**-.72**
is easily distracted finds it hard to pay attention in class	.09	.03	**.71**
is a conscientious student	.36	.03	**-.70**
has trouble with learning	.02	.05	**.51**
annoys other students*	.08	.23	.49

Note: Factor loadings above .50 appear in bold; * - item excluded from final scale

Confirmatory Factor Analysis

Confirmatory factor analysis was used to evaluate the factor structure revealed in the exploratory factor analysis. Three separate hypothetical models were developed for evaluation. Model 1 included all 14 items identified during the EFA – that is, 3 items on the School Connectedness (SC) factor; 5 items on Peer Relationships (PR) factor; and 6 items on Academic Achievement (AA) factor. Stemming from a preference to keep the final scale as brief as possible, two additional models were evaluated, based on Model 1 but with reduced items. Model 2 included only those items that were scored in the positive direction, comprising 3 items on SC, 4 items on PR and 4 items on AA. Model 3 contained only the three highest loading items per factor, as per Table 1. Analysis was carried out using SPSS *Analysis of Moment Structures (AMOS)*. For Model 1, the error terms of two items (*gets good results in exams and tests at school* and *has trouble with learning*) were co-varied as suggested by the modification indices of AMOS. Fit statistics for each model are given in Table 2. Model 1 and Model 2 both displayed adequate fit, but Model 3 fell outside our set criteria of acceptability.

Final Teacher RADAR Scale

Although Model 1 and Model 2 both demonstrated adequate model fit, Model 2 (Figure 1) was adopted as the preferred model for the final scale because it achieved satisfactory fit with fewer items (10 vs. 14 items). These 10 items, across three subscales were therefore combined to form the final Teacher RADAR screening instrument. Higher scores on the Teacher RADAR (and the individual subscales) indicated lower risk for the individual. Means and standard deviations of the Teacher RADAR and its subscales are given in Table 3, broken up by gender and school grade group.

Table 2
Fit statistics from the CFA across three alternate models (N = 203)

|	Chi-Square	RMSEA	SRMR	TLI	CFI
Model 1	$\chi2 = 143.123$	.07	.05	.96	.97
	$df = 73$				
	$p = .000$				
Model 2	$\chi2 = 93.016$	.08	.05	.96	.97
	$df = 41$				
	$p = .000$				
Model 3	$\chi2 = 50.282$	.10	.05	.94	.96
	$df = 24$				
	$p = .001$				

Note: RMSEA = root mean=square error of approximation; SRMR = standardised root mean square residual; TLI = Tucker-Lewis Index; CFI = comparative fit index

Reliability

The reliability of the 10 item Teacher RADAR was assessed using Cronbach's alpha. All coefficients, calculated separately for grade group and gender, remained above .8, with most being in excess of .9 (Table 3). This represents acceptable reliability, particularly for an instrument intended as a general group screener (Ponterotto & Ruckdeschel, 2007) and with so few items. Individual alpha coefficients for all subscales, by age and gender, are listed in Table 5.

Figure 1.

Factor loadings and correlations in final model
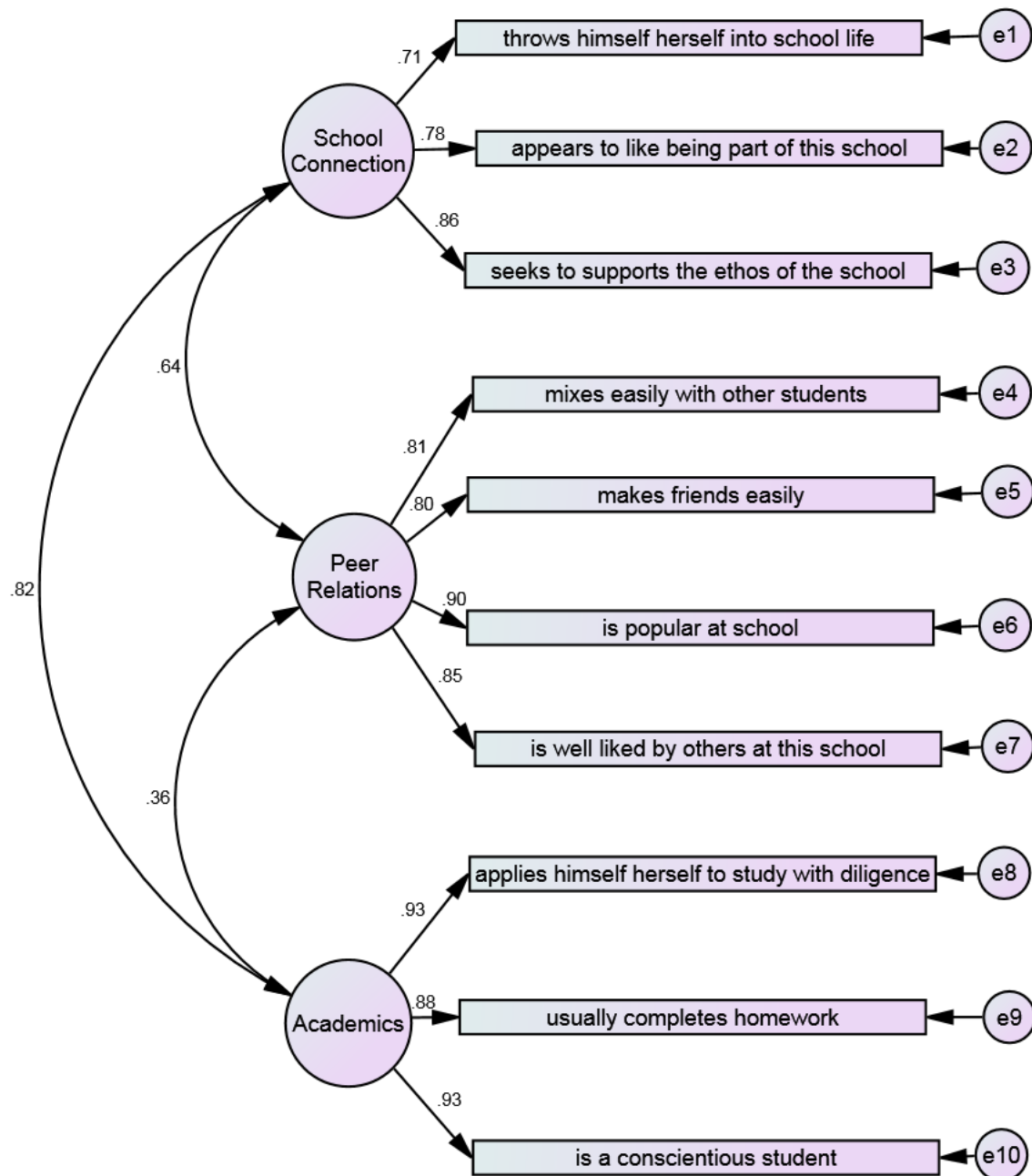
Convergent Validity

Correlations between Teacher RADAR scores and Youth RADAR scores are shown in Table 4. Correlations between same-construct scores (for example, Teacher Academic Success and Youth Academic Success) are in bold. Small but significant

Table 3

Descriptive data and Cronbach's Alpha of the Youth RADAR and subscales by gender and age group

	TTR	SC	AS	PR
	Mean (*SD*)	Mean (*SD*)	Mean (*SD*)	Mean (*SD*)
Total Sample (N=353)	40.16 (7.06)	12.33 (2.46)	12.54 (2.66)	15.29 (3.49)
All Boys (n=232)	39.59 (7.29)	12.16 (2.52)	12.36 (2.81)	15.08 (3.70)
Boys Yrs 7-9 (n=129)	38.98 (7.05)	11.99 (2.33)	12.26 (2.84)	14.72 (3.69)
Boys Yrs 10-12 (n=103)	40.37 (7.55)	12.36 (2.73)	12.49 (2.77)	15.52 (3.68)
All Girls (n=121)	41.24 (6.49)	12.65 (2.32)	12.88 (2.31)	15.70 (3.04)
Girls Yrs 7-9 (n=61)	40.08 (6.79)	12.51 (2.36)	12.46 (2.55)	15.11 (3.12)
Girls Yrs 10-12 (n=60)	42.42 (6.00)	12.80 (2.28)	13.32 (1.97)	16.30 (2.87)
α	.91	.84	.93	.91

Note: TTR = Total Teacher RADAR; SC = School Connectedness; AS = Academic Success;

PR = Peer Relations

correlations were found between all scores representing the same construct across all

domains, with the single exception of the School Connectedness scales for boys only,

which was not significant. Small but significant relationships were found between the

Total Teacher RADAR and the SDQ ($r = -.22$, $p < .001$) and between the Total Teacher

RADAR and the CES-DC ($r = -.11$, $p < .05$).

Table 4

Correlations between Teacher RADAR and Youth RADAR

	TR Total	TR SC	TR PR	TR AS	YR Total	YR SC	YR PR	YR AS
TR Total	1	.89**	.79**	.75**	**.27****	.29**	.19**	.29**
TR SC	.87**	1	.54**	.70**	.17*	**.12**	.06	.23**
TR PR	.85**	.60**	1	.25**	.31**	.24**	**.32****	.14*
TR AS	.80**	.64**	.45**	1	.15*	.08	.03	**.37****
YR Total	**.32****	.24**	.26**	.31**	1	.73**	.69**	.41**
YR SC	.26**	**.18***	.24**	.23*	.72**	1	.48**	.25**
YR PR	.24**	.14	**.28****	.17	.64**	.61**	1	.12
YR AS	.44**	.37**	.20*	**.60****	.56**	.30**	.22*	1

Note: Correlations above the diagonal are for boys only. Correlations below the diagonal are

for girls only; ** Correlation is significant at the 0.01 level (2-tailed); * Correlation is

significant at the 0.05 level (2-tailed)

TR = Teacher RADAR; YR = Youth RADAR; SC = School Connectedness; PR = Peer

Relations; AS = Academic Success

Table 5

Reliability Coefficients for Teacher RADAR and Subscales, by Grade Groupings

Scale	Boys Years 7-9 (n=129)	Boys Years 10-12 (n=103)	Girls Years 7-9 (n=61)	Girls Years 10-12 (n=60)	Whole Sample (N=353)
SC	.80	.89	.84	.81	.84
AS	.95	.92	.93	.87	.93
PR	.92	.92	.86	.90	.91
TTR	.90	.91	.91	.91	.91

Note: SC = School Connectedness; AS = Academic Success; PR = Peer Relations; TTR = Total Teacher RADAR

Discussion

The Teacher RADAR was developed as an alternative approach to currently available teacher screening instruments and to complement the Youth RADAR screener. Specifically, it was developed to help student welfare teachers identify and prioritise students who may be at risk of developing mental health difficulties according to the presence of several socially important risk or protective factors. Importantly, the RADAR model intentionally avoided using diagnostic categories or symptoms to screen for mental health risk in order to reduce stigma. Moreover, we wanted to use parameters which are considered to fall within the confidence and competence areas of teachers with a student welfare responsibility.

Exploratory factor analysis of item responses revealed a consistent 3-factor structure, in line with the original RADAR model, which was confirmed during CFA. However, the process of ensuring that items hung together satisfactorily did lead to the exclusion of some items which we believed to be 'strong' or important items. For

example, the item '*is teased or bullied by other students*' was not maintained as it did not load independently onto any one factor in the current scale. The fact that such an obvious item of mental health risk (i.e., teasing/bullying) did not find satisfactory expression within the existing three subscales reflects that the RADAR does not necessarily incorporate all possible factors. This instrument, like all universal screening scales, must balance the competing demands of brevity and thoroughness. Future research on the Teacher RADAR could seek to explore other relevant risk or protective factors.

Correlations between the Teacher RADAR and Youth RADAR were statistically significant but not high. This is not unexpected, given the notoriously low inter-informant agreement that is consistently reported across areas of mental health (De Los Reyes, 2013; Miller, Martinez, Shumka, & Baker, 2014). In their meta-analysis of 119 studies, Achenbach and colleagues (Achenbach, McConaughy, & Howell, 1987) found that the lowest inter-informant correlations were between teachers' reports and students' self-reports, with a mean *r* of only .20, and correlations were especially low between teachers and adolescents. Based on these patterns, the correlations between the Teacher and Youth RADAR, most of which are well above .2, are within a similar range to other 'teacher-self report' correlations. Agreement between Teacher RADAR and Youth RADAR scores showed some variation across the subscales. In particular, agreement about the Academic Success subscale was found to be relatively high, especially for girls, but School Connectedness was found to be considerably lower. This may be accounted for by the more 'objective' and overt nature of academic success, which is regularly quantified for students and teachers alike through the awarding and disseminating of academic marks. School Connectedness, on the other hand, is a more subjective and covert construct. In sum, the small but significant correlations between

the Teacher and Youth RADARs provides some support for the validity of the instrument, but also demonstrates that there is a considerable variance provided by the teacher report that is distinct from the student report.

Correlations between the Teacher RADAR and student reports of distress (SDQ and CES-DC) were statistically significant, providing some evidence for validity of the Teacher RADAR, however, they were quite modest at best. Again, these correlations must be interpreted in light of the known discrepancies between informants. An additional consideration when interpreting the relationship between the Teacher RADAR and the student distress scores is the nature of the wording of items across the scales. Scale items tend to correlate more strongly when they are scored in the same direction (i.e., all positive, or all negative), regardless of the constructs being measured (DiStefano & Motl, 2006). The fact that almost all student distress items were keyed in the negative while all Teacher RADAR items were keyed in the positive is likely to deflate their correlation on methodological grounds rather than based on the construct. Future research would benefit from having a more distinct "gold standard" (such as diagnostic interviews) against which to validate both versions of the RADAR.

The internal consistency of the scale was very acceptable, not only on the Total Teacher RADAR but also across the individual subscales. Internal consistency was maintained across student gender and age group. The lowest alpha coefficient was found on the School Connection subscale (.84) and the highest on the Academic Success subscale (.93). As already mentioned, this pattern is not surprising given that academic performance is supported by regular quantitative data from school assessments, but school connectedness is a more subjective construct.

Following teacher complaints about the length of longer screeners such as the SDQ (Lane et al., 2008), an explicit intention in the development of the Teacher RADAR was to create an instrument that was brief and easy to score. The fact that a 10 item scale was able to achieve satisfactory model fit and good reliability provides some indication that this intention was achieved. The exclusion of negatively worded items has the additional effect of simplifying the scoring process and further minimising stigma.

Although the RADAR screening system was developed with a primary purpose to help school communities identify students at risk of developing emotional disorders, a screener such as this can have an additional advantage of identifying factors which of themselves are important domains for schools' attention. For example, it is well established that peer relationship difficulties will affect academic performance (Erath, Bub, & Tu, 2014; Ryan, 2011; D. Schwartz, Gorman, Nakamoto, & Toblin, 2005). In this light, the value of the Teacher RADAR becomes far broader than purely an emotional risk screen and it may be of great value in helping prioritise students who require a variety of aspects of intervention.

Limitations and Future Directions

Interpretation of the results of this study should be made in light of some limitations. First, all participants – students and teachers - were drawn from fee-paying Anglican schools. It is possible that both of these parameters (i.e., fee-paying and Anglican) has some influence on the characteristics of students and teachers involved in the study and therefore the generalisability of the results. On the other hand, the schools represented both urban and rural areas. Second, because we did not ask teachers to identify themselves when completing the questionnaire we could not quantify how

many teachers completed more than one RADAR (i.e. for more than one student in their pastoral care class). The likelihood that some student welfare teachers completed more than one Teacher RADAR created a significant challenge for statistical analysis. One implication of this is that the actual number of 'cases' in the factor analysis was in all likelihood less than the number used for the analysis. Because we did not collect data on how many questionnaires each teacher completed we could not take intra-class clustering into account in our analysis.

This study has identified some important areas of further exploration for the Teacher RADAR. As highlighted already, this instrument would benefit from future exploration using a more heterogeneous sample of teachers and students. Second, the RADAR would benefit from further evaluation of its validity by comparison with more established teacher report measures, such as the Teacher SDQ or Achenbach Teacher Report, as well as with more independent measures such as diagnostic interview. Third, given that a key aim of the RADAR is ease of administration, future research should assess time and resource requirements of completing the questionnaire as well as other characteristics (such as perceived stigma) and compare these against the more widely used measures.

Conclusion

The present study reports on a potentially valuable new assessment instrument to identify risk for emotional distress in young people. Strengths of the Teacher RADAR are its focus on assessing school-based factors that are unlikely to cause stigma, its brevity (10 items), and its complement to the Youth RADAR to provide a multi-informant screening system for schools. While initial investigations reveal acceptable reliability, results from this study did not provide strong evidence of the instrument's ability to predict concurrent distress in students. Additionally, some methodological

difficulties undermine the confidence that can be placed in the results. We conclude that

further development is required before this instrument can be considered for general use

in schools.

PAPER 4

Predicting Mental Health Status in High School Students: An Analysis of Risk

and Protective Factors

Authors:

John R. Burns and Ronald M. Rapee

Centre for Emotional Health

Department of Psychology

Macquarie University

Abstract

A body of research exists evaluating the role of risk and protective factors in the development of mental health difficulties in young people. Several theories have been developed to explain the interplay between these factors, including the Cumulative Risk Model and the concept of equifinality and multifinality. Together these theories stress the importance of understanding mental health risk within the context of the interplay between risk and protective factors, rather than as a simple linear process. The better these factors are understood, the earlier that mental health clinicians can detect difficulties and seek to intervene. The current study sought to extend existing knowledge of the relations between risk and protective factors within the limits of two core, pragmatic parameters – factors that are modifiable and factors that can be adequately assessed within the context of a high school. A sample of 520 High school students from New South Wales, Australia, were assessed on a range of risk/protective factors as well as mental health status on two separate occasions over 12 months. A young person's assessment of their own appearance, as well as their sense of academic competence emerged as key predictors of both internalising and externalising disorders at Time 2. Moreover, support was found for a Cumulative Risk model, whereby the more risk factors a young person had at Time 1, the more likely they were to experience emotional and behavioural disorders 12 months later.

Keywords: *Adolescent mental health, risk factors, schools, prediction, internalizing, externalizing.*

Introduction

Many serious mental health problems first emerge during adolescence (de Girolamo, Dagani, Purcell, Cocchi, & McGorry, 2012; Merikangas et al., 2010; Paus, Keshavan, & Giedd, 2008) and often continue into adult life (Kessler et al., 2010; Patel et al., 2007). Early intervention is recognised as the best approach to reduce the ongoing burden of these mental health conditions (Byrne & Rosen, 2015). Identifying factors that contribute to the development of mental health difficulties along with reliable methods to assess these factors are critical steps to develop effective early intervention.

A considerable research base now exists about a wide range of risk and protective factors that shape the development of emotional and behavioural outcomes in young people. Risk factors refer to "conditions or variables associated with a lower likelihood of socially desirable or positive outcomes and a higher likelihood of negative or socially undesirable outcomes" while protective factors "have the reverse effect; they enhance the likelihood of positive outcomes and lessen the likelihood of negative outcomes from exposure to risk" (Jessor et al., 1998). O'Connell and colleagues note that it is often difficult to distinguish protective factors from risk factors and many variables may fit either definition, depending on scoring (National Research Council and Institute of Medicine, 2009). For example, in their evaluation of risk factors for depression in teenage girls, Seeley et al. make the point that school performance could be considered either a risk factor (if performance is poor) or a protective factor (if performance is good) (Seeley et al., 2009).

Risk factors for the development of adolescent emotional and behavioural difficulties have been summarised into four domains: individual, family, school/peer, and neighbourhood/community factors (National Research Council and Institute of Medicine, 2009). Neighbourhood and broader community factors, such as national

wealth, income inequality, access to education, exposure to war and conflict, and gender and ethnic inequalities have been shown to be vital in understanding the development of mental health difficulties (Aneshensel & Sucoff, 1996; Viner et al., 2012). Within the school system, however, the factors that have the greatest relevance for mental health practitioners working directly with students include individual, family, peer and school influences.

Most research to date has evaluated risk for specific types of mental health problems. For example, research into depression has identified a range of community factors, (Stirling, Toumbourou, & Rowland, 2015), drug and alcohol factors (including use of alcohol, tobacco, cannabis, and polydrug use) (Cairns, Yap, Pilkington, & Jorm, 2014), early sexual intercourse (Hallfors et al., 2004), school and peer connectedness (Millings et al., 2012), academic competence (Ward, Sylva, & Gresham, 2010) and parenting practices (McLeod et al., 2007). Similarly, in relation to child and adolescent anxiety, a broad range of risk factors has been identified. These include genetics, individual temperament, parenting and family factors, cognitive factors and life experiences (Dabkowska & Dabkowska-Mika, 2015; Rapee, 2012a; Rapee, Schniering, & Hudson, 2009). In relation to the development of externalising disorders, implicated risk and protective factors include genetic factors (Hicks, Foster, Iacono, & McGue, 2013; Samek et al., 2015), antenatal and early life risk factors (Latimer et al., 2012) and a recent strong focus on individual personality factors such as callous-unemotional traits (Frick, Ray, Thornton, & Kahn, 2014).

Importantly, there is no simple linear relation between a risk/protective factor and the development of an emotional or behavioural difficulty. One key theory that has been advanced to explain the complex interplay of risk and protective factors in the development and shaping of mental health difficulties in young people is the

113

Cumulative Risk model (CR). This model posits that developmental outcomes are influenced not so much by the presence or severity of any single specific type of risk factor, but rather by the cumulative effect of a number of risk factors across a variety of systems or contexts. In essence, the more risk factors that are present, the worse the developmental outcomes for the young person. This model developed primarily from Rutter's Isle of Wight studies (Rutter, 1979), where evidence was found that children with only one risk factor were no more likely to experience psychological disorders than those with no risk factors, while those with two, three or four risk factors experienced increased risk of psychological difficulties. While the earliest cumulative risk research focussed on broader socio-demographic risk, such as low income or poor housing, more recent studies have broadened their focus to include individual factors, including a young person's friendships, self-esteem and IQ (Atzaba-Poria, Pike, & Deater-Deckard, 2004). A second theory that helps explain the relation between risk factors and outcomes is that of equifinality and multifinality (Cicchetti & Rogosch, 1996). Equifinality refers to the observation that a variety of different pathways can lead to the same outcome. For example, risk factors of academic competence (Ward et al., 2010), parenting style (McLeod et al., 2007) and sedentary behaviour (Zhai, Zhang, & Zhang, 2014), have all been identified as risk factors that can lead to depression in young people. Multifinality refers to the idea that a single risk factor can lead to a multitude of developmental outcomes. For example, peer rejection during childhood and adolescence has been shown to be associated with later development of depressive disorders (Lund et al., 2009), psychosomatic difficulties (Gini & Pozzoli, 2009) and externalising problems (Reijntjes et al., 2011).

A limitation of much previous research on the development of emotional and behavioural difficulties in young people has been a focus on a single risk or protective

factor on a single psychological disorder. In light of the theories outlined above, a more sophisticated approach is to consider the cumulative effect of a range of risk and protective factors in the development of psychopathology.

The current study seeks to further explore the complex interplay of risk and protective factors in the development of adolescent psychopathology within the context of two pragmatic parameters. The first parameter is a focus on factors that are *modifiable*. Many well-validated risk factors are either not amenable to change (such as gender or ethnicity) or outside the scope of what therapists can change (such as poverty, war, or famine). The second and associated parameter relates to factors that researchers have *access* to assess and change. In considering access to young people, researchers now recognise the key role that schools can play in the identification (Albers et al., 2007a; Humphrey & Wigelsworth, 2016; Seeley et al., 2009) and intervention (Calear & Christensen, 2010b; Dray et al., 2015; Neil & Christensen, 2009; Weare & Nind, 2011) of mental health difficulties in young people and the factors that influence them. Accordingly, our interest in this study is on the risk and protective factors that are both assessable and acceptable to measure within a school context. For example, although factors such as substance use, sexual behaviours and parental psychopathology are all evidence-based risk factors (Borowsky, Ireland, & Resnick, 2001; Moore et al.), schools could not expect students to be candid when answering questions about such things. This is especially the case if such assessment is for individual screening purposes which require students to personally identify themselves. Stemming from the above parameters, we have developed and previously described a screening instrument designed to assess mental health risk and protective factors in high school students (Burns & Rapee, 2016). The instrument, called the Youth RADAR, consists of three risk factors (peer relationship difficulties, academic difficulties and family conflict) and

three protective factors (school connectedness, acceptance of appearance and sporting interest). These six factors form the basis of the risk and protective factors assessed in this study.

The current paper has two primary objectives. The first is to investigate the relative contribution of a range of risk and protective factors in predicting youth distress over a twelve month period. The second objective is to further examine the Cumulative Risk Model by investigating whether the presence of multiple risk factors increases the likelihood of behavioural and emotional health difficulties over time.

Method

Participants

Participants in this study were a subset from larger study used in the validation of the Youth RADAR screening instrument. Details of recruitment and consent procedures are described in detail elsewhere (Burns & Rapee, 2016). They were drawn from 5 high schools across the state of New South Wales, Australia. Three of the schools were co-educational; two were single sex (one male, one female). Two schools were from central suburbs of Sydney; two were from outer suburbs of Sydney; one was from regional New South Wales. An indication of each school's socio-economic status is available through the *Index of Community Socio-Educational Advantage* (ICSEA), calculated by the Australian Government and listed on the myschool website (www.myschool.edu.au). ICSEA values have a median of 1000 and a standard deviation of 100, with lower scores representing greater educational disadvantage. Schools in this study had ICSEA scores ranging from 1052 to 1191. All participants from the original RADAR validation study who were attending the same school 12 months later were invited to participate in the Time 2 study. In total 520 students agreed to participate (290

116

male, 230 female), aged 12 – 18 years ($M = 15.2$, $SD = 1.47$). These students were

drawn from across Grades 8 - 12, with numbers ranging from 73 students in Grade 11 to

123 students in Grade 8. The sample identified themselves as being predominantly

'Anglo/Caucasian' (88%), followed by 'Asian' (7%), 'other' (4%), 'Middle Eastern'

(1%) and 'Aboriginal' (1%).

Procedure

Participants completed questionnaires via an online survey tool (SurveyGizmo)

over two separate administrations, 12 months apart. Questionnaires were completed in

class-size groups during school time, in school computer laboratories, under the

supervision of school staff and/or the investigators.

Measures

The Youth RADAR: The Youth RADAR (Burns & Rapee, 2016) is a 30 item

self-report measure of risk and protective factors involved in the development of mental

health difficulties. The Youth RADAR has six subscales that each reflect a different risk

or protective factor associated with the development of emotional health difficulties.

Participants are asked to describe how much each item describes them on a 5 point

scale, ranging from 'not at all like me' (1) to 'very much like me' (5). The six

risk/protective factors are Peer Acceptance (e.g. *Other kids tease me or call me unkind*

names), Family Relations (e.g. *I live in a happy family*), Academic Success (e.g. *I get*

good marks in most school subjects), School Connectedness (e.g. *In this school I feel*

like I belong), Sporting Interest (e.g. *I am a sporty person*) and Acceptance of

Appearance (e.g. *I like the way I look*). Six subscales combine to give a Total RADAR

score, with lower scores signifying higher risk. The Total Youth RADAR has good

reliability (α = .91), with subscales having alpha values ranging from .73 to .90. Cronbach's alpha for the Total Youth RADAR in the current sample was .92.

The Strengths and Difficulties Questionnaire: The self-report version of the Strengths and Difficulties Questionnaire (SDQ) (R. Goodman, 1997) is one of the most frequently used screeners of mental health difficulties in young people. Consisting of 25 items, it contains 4 subscales of student difficulties (hyperactivity, emotional symptoms, conduct problems and peer problems) and one prosocial/strengths scale. Each subscale contains 5 items that are scored on a three-point scale of 'not true' (0), 'somewhat true' (1) and 'certainly true' (2). Its authors report adequate reliability (α = .80) and it has been found to predict risk of psychiatric diagnosis via diagnostic interview (R. Goodman, Ford, Simmons, Gatward, & Meltzer, 2000). Many studies over the past 20 years have confirmed the sound reliability and validity of the SDQ (R. Goodman, 2001; van de Looij-Jansen, Goedhart, de Wilde, & Treffers, 2011). On their website the authors provide categorisation scores as 'close to average' (0-14), 'slightly raised' (15-17), 'high' (18-19) and 'very high' (20-40) (Scoring the SDQ, n.d.). Cronbach's alpha for the SDQ Total Difficulties Score of the sample in this study was .84.

Data Analysis

Time 2 data were inspected to match each participant with their Time 1 scores. Any Time 2 participant who did not provide their name, or for whom their name could not be matched with Time 1 data was removed from the data set. The online survey tool used for data collection was programed so that participants could not proceed until they had answered the previous questions. As a result of the above two factors, there were no missing data in the data set. Frequency histograms of the three survey measures did not reveal any outliers of concern. Prior to analysis, Variance Inflation Factor (VIF) and

Tolerance scores were calculated to investigate for the possibility of multicollinearity of predictor variables. All VIF values fell below 2.5 while all Tolerance scores were above .10, indicating that there was no reason to conclude the assumption of collinearity was violated. An examination of plots of standardised residuals did not suggest that the assumption of homoscedasticity had been violated. To investigate the relative influence of each of the risk/protective domains assessed by the RADAR on youth distress over 12 months, we ran a series of linear multiple regression analyses. We created two new variables as Dependent Variables – a Time 2 Internalising variable, created by adding the SDQ Emotional Symptom and Peer Problems scales, and a Time 2 Externalising variable, created by adding the SDQ Hyperactivity and Conduct Problems scales. Corresponding Time 1 Internalising and Externalising variables were created in the same way to act as a baseline control. Support and advantages for the generation of such second order factors from the SDQ have been described elsewhere (Goodman, Lamping, & Ploubidis, 2010). Using the Time 2 Internalising and Externalising scores as dependent variables, we carried out two hierarchical linear, regression analyses, using the Time 1 internalising and externalising scores and the six RADAR subscales as predictors. We hypothesised that Time 1 Internalising/Externalising scores would be the strongest predictor of their Time 2 counterparts and so added them as the first step of the hierarchical regression, followed by risk/protective factors as the second step. In line with earlier research on cumulative risk (Appleyard, Egeland, van Dulmen, & Sroufe, 2005; Doan, Fuller-Rowell, & Evans, 2012), participants were allocated a risk group status for each risk factor from the RADAR subscales, dichotomised as either a '0' or '1'. That is, students were deemed to be 'at risk' (and given a score of 1) on a particular subscale if their score on that subscale fell more than one standard deviation below the mean, and 'not at risk'(and given a score of 0) if their score on that subscale was within

one standard deviation of the mean or better. Each participant was given a cumulative risk score of 0 - 6, according to how many subscales exceeded the one standard deviation limit. Given the low number of participants with a cumulative risk score of 5 ($n = 6$) and 6 ($n = 1$), these participants were combined with those who scored 4, to form a '4+' group, thus creating 5 cumulative risk groups in total. A one-way ANOVA was then performed to compare the mean scores on each symptom measure (CES-DC and SDQ) across the cumulative risk groups.

Results

Predicting Time 2 Internalising

Hierarchical multiple regression revealed that at Stage 1, Time 1 Internalising significantly contributed to the model, $F (1,518) = 268.60$, $p < .001$) and accounted for 34% of the variance (adjusted $R^2 = .34$). Introducing the six RADAR variables at Stage 2 again returned a significant model, $F(7,512) = 20.58$, $p < .001$. Together the IVs accounted for approximately 37% of the variance of Time 2 Internalising (adjusted $R^2 = .366$). In addition to Time 1 Internalising, the RADAR predictors Acceptance of Appearance ($p = .002$) and Academic Success ($p = .013$) were also significant predictors (Table 1).

Predicting Time 2 Externalising

Hierarchical multiple regression revealed that at Stage 1, Time 1 Externalising significantly contributed to the model, $F (1,518) = 489.70$, $p < .001$) and accounted for 49% of the variance (adjusted $R^2 = .485$). Introducing the six RADAR variables at Stage 2 again returned a significant model, $F(7,512) = 75.71$, $p < .001$. Together the IVs accounted for approximately 50% of the variance of Time 2 Externalising (adjusted $R^2 = .502$). In addition to Time 1 Externalising, the RADAR predictors Acceptance of

Appearance ($p = .009$), Academic Success ($p = .014$) and Family Relationship ($p = .041$) were also significant predictors (Table 2).

Table 1.

Predicting Time 2 Internalising from Time 1 Risk Factors (RADAR

Subscales) and Time 1 Internalising

Model	*b*	SE-*b*	Beta
Step 1			
Constant	1.79	.20	
Time 1 Int	.63	.04	.58***
Step 2			
Constant	7.35	1.35	
T1 Int	.49	.05	.457***
Time 1 AA	-.10	.03	-.13**
Time 1 AS	-.08	0.3	-.10*

Int = Internalising; AA = RADAR Acceptance of Appearance; AS = Academic Success

Step 1 Adjusted $R^2 = 34$; Step 2 $\Delta R^2 = .37$ (p = .001); * $p < .05$, ** $p < .01$, $< p < .001$

Cumulative Risk in Youth Distress

Means and SDs of each cumulative risk group are shown in Figure 1. Individual one-way ANOVA were calculated to compare the mean scores of each Cumulative Risk Group for the outcome measures of Time 2 Internalising and Time 2 Externalising. Given the unequal sample sizes and significantly different variances between groups, post hoc analysis was done using the Games-Howell test. In relation to internalising, there was a significant effect of cumulative risk group on Internalising, $F(4,515) = 30.35$, $p < .001$. Post hoc tests revealed significant differences in the mean scores of the

cumulative risk groups, referred to as CR0 (no risk), CR1 (1 risk), CR2 (2 risks) and so

on. CR1 scored significantly higher than CR0 ($p < .001$); CR1 and CR2 were not

significantly different ($p = .927$), although CR2 was significantly higher than CR0 ($p <$

.001) ; CR3 scored significantly higher than CR2 ($p = .017$); those with 4+ risks (CR4+)

did not score significantly higher than CR3 ($p = ..694$) but did score higher than CR2 (p

$= .01$). In relation to externalising difficulties, there was also a significant effect of

cumulative risk group on SDQ scores, $F(4,515) = 24.12$, $p < .001$. Post hoc tests again

revealed significant differences in the mean scores of the risk groups. CR1 scored

significantly higher than CR0 ($p < .003$); CR1 and CR2 were not significantly different

($p = ..443$); CR2 and CR3 were not significantly different ($p = .229$) but CR3 was

significantly higher than CR1 ($p = .003$); CR 4+ did not score significantly higher than

CR3 ($p = .972$) or CR 2 ($p = 131$) but was significantly higher than CR1 ($p = .001$).

Table 2.

Predicting Time 2 Externalising from Time 1 Risk Factors (RADAR

Subscales) and Time 1 Externalising

Model	b	SE-b	Beta
Step 1			
Constant	1.86	.19	
T1 Ext	.73	.03	.70***
Step 2			
Constant	5.75	1.12	
Time 1 Ext	.63	.04	.61***
Time 1 AA	-.07	.03	-.108**
Time 1 AS	-.08	.03	-.09*
Time 1 FR	-.06	.03	-.08*

Int = Internalising; AA = RADAR Acceptance of Appearance; AS = Academic Success; FR

= Family Relations

Step 1 Adjusted $R^2 = .48$; Step 2 $\Delta R^2 = .02$ (p = .001); * $p < .05$, ** $p < .01$, $< p < .001$

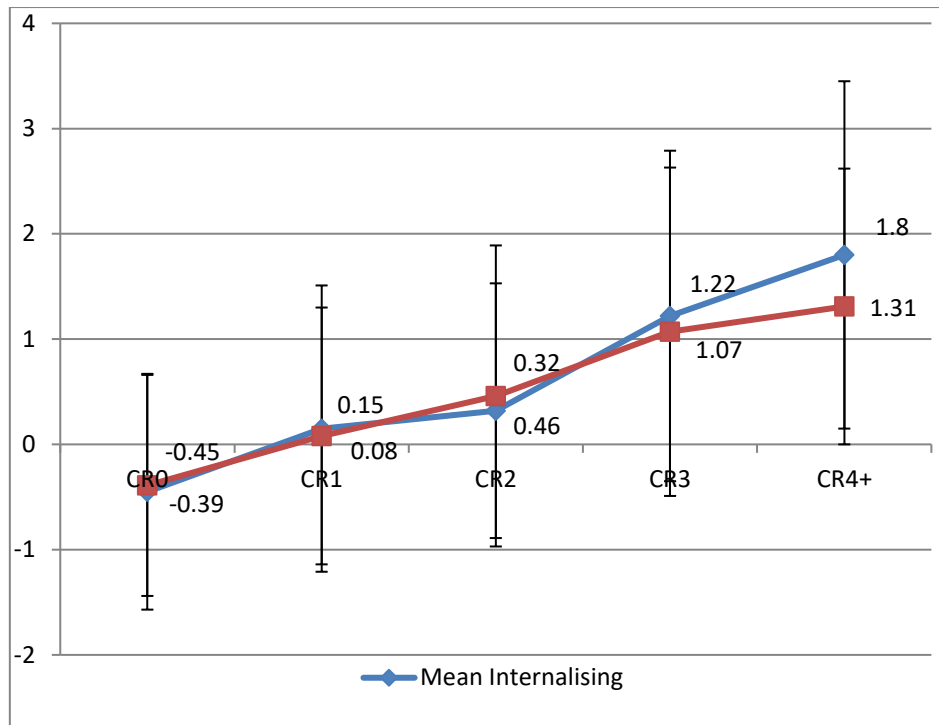Figure 1. *Means, SDs of Cumulative Risk Groups*

CR0 = No Cumulative Risk Group (*n* = 278) ; CR1 = 1 Cumulative Risk Group (*n* = 118);

CR2 = 2 Cumulative Risks Group (*n* = 61); CR3 = 3 Cumulative Risks Group (*n* = 44); CR4+

= 4+ Cumulative Risks Group (*n* = 19)

Discussion

This paper sought to address two related research questions around the theme of

predicting youth emotional and behavioural distress. We chose to focus specifically on a

set of six risk/protective factors that are modifiable and are accessible to measurement

within a school context. The first research question concerned the relative roles of six

risk/protective factors in predicting internalising and externalising disorders over time.

Not surprisingly, the best 12 month predictors of both internalising and externalising

symptoms were their own baseline levels. Our interest, however, was on the specific

and unique contribution of risk and protective factors in predicting emotional and

behavioural difficulties. Two significant predictors emerged for both internalising and

externalising symptoms over twelve months. Acceptance of Appearance was a significant predictor of both internalising symptoms and externalising symptoms. The association between body image and mental health difficulties is well established not only for girls (Bearman & Stice, 2008; Gilliland et al., 2007) but also for boys (Blashill & Wilhelm, 2014). Of particular concern is the association between body dissatisfaction and suicidal ideation/behaviours (Crow, Eisenberg, Story, & Neumark-Sztainer, 2008; D.-S. Kim, 2009; Whetstone, Morrissey, & Cummings, 2007). The development of body image dissatisfaction has been shown to be connected to various other factors, including physical exercise (Campbell & Hausenblas, 2009; Hausenblas & Fallon, 2006) and media exposure (Barlett, Vowels, & Saucier, 2008; Tiggemann, 2003). More recently, the internet and social media in particular has been shown to be a particularly important factor in the way young people perceive their bodies (Tiggemann & Slater, 2013, 2017). As such, the findings of the current study lend support to efforts designed to address these concerns. School-based initiatives may be particularly important in changing body image dissatisfaction, both through prevention programs designed to promote healthy body image (Bird et al., 2013; Yager et al., 2013), but also exercise programs (Dobbins et al., 2009; Taliaferro, Dodd, et al., 2008), and obesity prevention programs (Sobol-Goldberg, Rabinowitz, & Gross, 2013). The finding of this study that a student's sense of their own academic success and competence predicted both internalising and externalising symptoms is in accord with previous research. What is important from this finding, however, is that academic success outweighed various other important risk factors in predicting distress symptoms. This provides a salient reminder about the vital role that good education and teaching has in promoting emotional and behavioural wellbeing, particularly for those students who are educationally at-risk.

The second research question related to the relevance of the Cumulative Risk model with specific reference to school-based risk factors. As indicated in Figure 1, a clear pattern emerged to support the theory that the more risk factors that students experienced, the greater likelihood that they would display behavioural and emotional difficulties. This was evident for both internalising and externalising symptoms. Each additional cumulative risk group did not necessarily demonstrate a statistically higher mean than the previous group. This may be a reflection of a lack of statistical power rather than a genuine lack of difference across the groups. Accordingly, it is not possible to draw conclusions about a specific stepped structure of risks. None-the-less, we can conclude that young people with more risk factors can be expected to demonstrate more behavioural and emotional difficulties than those with fewer risks. Moreover, these findings highlight that an intervention that targets only one problematic area in a young person's life is less likely to be effective than interventions that work across a range of risk factors (Evans, Li, & Whipple, 2013).

Some important limitations in the design of this study should be acknowledged. First, the study relied solely on youth self-report questionnaire data to assess both behavioural/emotional symptoms and risk and protective factors. Future studies that incorporate additional measures of student difficulties from a variety of sources – including parent reports, teacher reports and clinician/interview assessment – would provide a more comprehensive indication of youth psychopathology. Second, this study drew on a sample from a narrow group of schools – that is, independent (fee paying) schools, all with a religious affiliation and all with an above average socio-educational background. As such, the sample was not representative of broader Australian society. It is possible that even stronger prediction might have been demonstrated with a more representative sample given the likelihood that youth from lower SES backgrounds

would have shown higher risk and symptom levels and thereby added to the variance in the sample. Future research should replicate these effects with a more population-representative sample.

THESIS DISCUSSION

<center>**Thesis Discussion**</center>

This thesis considered the key role that schools can play in the identification of children and adolescents at risk of developing, or already experiencing, mental health difficulties. The primary focus was on the development and preliminary validation of a new mental health risk screening tool for use in schools to aid identification of such young people. The conclusion to this thesis is organised into three sections. The first is a summary of what has been achieved and what conclusions can be drawn from the development of the RADAR screening tools. The second section summarises aspects that are yet to be achieved with considerations for future development of the RADAR screening system. Finally, this thesis concludes by making some broader comments on the future of mental health screening in schools, with a particular focus on the Australian context.

<center>**The RADAR: What was achieved?**</center>

The primary focus of this thesis was the development of a new suite of screening instruments aimed at helping school mental health professionals determine which students may be at risk of developing mental health difficulties. To date, most mental health screening instruments being used in schools seek to identify symptoms of specific mental health disorder, such as anxiety or depression or suicidal thoughts, by providing students and/or teachers with symptom checklists. Such screeners are suitable when seeking to identify students for targeted intervention programs, where it is assumed that a student is already displaying specific symptoms of a disorder. In contrast to this, the RADAR instruments are based on a model of risk and protective factors that have consistently been demonstrated to be implicated in the development of emotional and behavioural difficulties in children and adolescents. At a theoretical level some mental health researchers have sought to differentiate risk and protective processes.

However, the RADAR model adopted the more pragmatic approach that within the complex interplay between social and psychological processes, the presence or absence of any/all of these factors has the potential to exert a positive or a negative influence on a young person's life. While not using any symptoms of mental health problems, the RADAR sought to specifically choose risk and protective factors that were considered both acceptable for use in a school and also potentially modifiable within a school context. As such, the RADAR sought to provide a more socially acceptable approach to school-based screening as well as being more suitable than symptom-based screeners to identify students for selective intervention programs, where it is assumed students are not symptomatic. The underlying model, and subsequently the subscales of the RADAR instruments are Academic Success, Peer Acceptance, Family Relations, Sporting Interest, School Connectedness and Acceptance of Appearance. The RADAR system consists of a suite of three screening instruments comprised of a Youth version (school years 7-12), a Child version (school years 3-6) and a Teacher version. Due to concern about teachers' abilities to make informed judgements on some aspects of students' risk and protective factors, the Teacher RADAR used only three of the six subscales.

Support for the validity of the Youth version of the RADAR was provided through a strong factor model evidenced in both an exploratory factor analysis as well as confirmatory factor analysis. Moreover, the concurrent validity of the Youth RADAR was demonstrated through robust and highly significant correlations with both depression symptoms on the CES-DC ($r = -.67$) and overall distress on the SDQ ($r = -.69$). Cronbach's alpha for the Total RADAR was excellent ($\alpha = .91$), with all RADAR subscales also having acceptable reliabilities, ranging from .73 (Peer Relationships subscale) to .90 (Sporting Interest subscale). Although no test- retest analysis was done

on the Youth RADAR, 12 month test stability was evaluated on a subsample of participants and found to be acceptable ($r = .72$).

The Child RADAR was based on the same items as the Youth RADAR, but with some minor modification of items to accommodate for the younger participants. A further intention was to make the Child RADAR a shorter instrument than the youth version, also based on the younger age of respondents. Moreover, in an effort to simplify the instrument, the response scale was reduced from a five to three point option. Investigation on the validity and reliability of the Child RADAR was carried out on a sample of 339 children drawn from school years 3-6. As the factor structure of the RADAR model had already been established among adolescents, factor structure for the Child RADAR was verified through a CFA. Two separate models were assessed – one based on having 5 items per subscale and the other on having 4 items per subscale. The model based on 4 items returned slightly better fit statistics than the 5-item model, exceeding the desired benchmarks on both the CFI and TFI, and had the added advantage of being a more parsimonious scale. On the basis that internalising disorders are more difficult for significant adults in a child's life to detect, the focus of validation of this instrument was on internalising disorders. Concurrent validity of the Child RADAR was demonstrated through a strong negative correlation with depressive symptoms on the CES-DC ($r = -.68$; $p < .001$), strong negative correlation with anxiety symptoms on the CAS-8 ($r = -.59$, $p < .001$) and positive correlation with a measure of students' overall life satisfaction ($r = .70$; $p < .001$). As with the Youth RADAR, the Child RADAR demonstrated adequate internal consistency ($\alpha = .86$) and test-retest reliability ($r = .85$).

In summary, both the Youth and Child versions of the RADAR returned promising initial data on their validity and reliability and appear to be instruments

worthy of ongoing development and implementation. In contrast, the development of the Teacher RADAR revealed some complications and difficulties during development. The intention of the Teacher RADAR was to create a parallel screener to the student versions that assessed the same set of risk and protective factors at operation in a student's life, and completed by a teacher having a pastoral/student welfare relationship with the student. From the outset it was apparent, however, that student welfare teachers are not in a position to make informed observations about all six of the subscales in the RADAR model. While such teachers could be expected to make an informed observation on a student's school connectedness, peer relationships, and academic success, they could not be expected to make an informed comment on a student's perception of their own body or of their family relationships. While a student welfare teacher may be able to make some comment on a student's sporting achievement or prowess, they could not be expected to make a credible judgement on a student's interest in sport, the way that interest affects their self-concept, nor their involvement in physical activity outside school. Consequently, three of the six RADAR subscales were excluded from the teacher RADAR, thereby substantially reducing the breadth of the data obtained by the scale. The relationship between the Teacher RADAR scores and the student report data were not strong. Although correlations with the SDQ and CES-DC were both statistically significant (r's = -.22 and -.11 respectively), these associations clearly showed little overlap between the measures and therefore the Teacher version does not appear to provide reliable predictions about a student's mental health risk. Overall, these factors seriously compromise the confidence that can be placed in the instrument and suggest that more work is needed to identify constructs and items that can be reported by teachers that reliably predict student risk.

The final paper in this thesis examined 12-month follow-up data from a subsample of the Youth RADAR study. Data on the 12 month stability of the Youth RADAR had already been reported in the original Youth RADAR paper. A particular focus of this paper was on the relative contribution of each of the six RADAR risk/protective factors in predicting youth distress over 12 months. Regression analysis using Time 1 Internalising and Externalising scores as baseline controls revealed that a young person's perception of their own body (Acceptance of Appearance subscale) as well as their sense of academic competence (Academic Success subscale) were additional predictors of both their internalising and externalising symptoms. This study also provided support for the Cumulative Risk model by showing that the greater the number of risk factors evident in a young person's life, the higher the chance of them displaying both internalising and externalising symptoms.

The RADAR: What next?

This thesis demonstrated promising preliminary support for the RADAR measures, particularly for the Youth and Child versions. However, further investigation is required to bolster and extend the evidence supporting the value of these instruments. Future research should consider at least five distinct domains of psychometric development to support the RADAR.

1. **Expanded validity**: The validity studies of the RADAR contained in this dissertation remain preliminary. The credibility of the instruments would be strengthened by establishing more robust validity across a range of parameters. First among these is establishing concurrent and/or prospective validity of the instruments through reference to data from the 'gold standard' of individual diagnostic clinical interviews, such as the Development and Well-Being Assessment (R. Goodman, Ford, Richards, Gatward, & Meltzer, 2000), The

Child and Adolescent Psychiatric Assessment (Angold & Costello, 2000) or the NIMH Diagnostic Interview Schedule for Children Version IV (Shaffer, Fisher, Lucas, Dulcan, & Schwab-Stone, 2000). Related to this is investigating the relationship between RADAR scores and specific emotional and behavioural disorders. To date the Youth RADAR has broadly considered depression, internalising symptoms and externalising symptoms. Future research may consider specific anxiety disorders, substance abuse, different types of disruptive behaviour disorders or eating disorders. Likewise, the Child RADAR is yet to be validated in relation to externalising disorders. Such analysis would allow for the development of predictive validity indices, including specificity and sensitivity, as well as the positive and negative predictive value of the RADAR instruments. Evaluation of RADAR scores against ratings obtained by other respondents, particularly parents and teachers would be another form of concurrent validity worth establishing. A final domain of concurrent validity to establish is the individual subtests of the RADAR. There are many well established and validated instruments against which each of the RADAR subscales could be compared.

2. **Establishing social validity of the RADAR**: A core assumption underlying the RADAR scales is that the measurement of risk and protective factors is more socially acceptable to stakeholders (such as parents and schools) than measuring symptoms of specific diagnostic disorders. This is, however, an untested assumption. Future research on the RADAR could seek to establish the extent to which this is true. For example, would school administrators be more likely to approve a screening program based on risk and protective factors than on symptom-based measures? Would parents be more likely to grant consent for

their child to complete a screener based on risk and protective factors rather than a symptom-based measure? Do young people find answering questions about risk/protective factors less stigmatising than being directly asked about the presence of symptoms?

3. **A robust normative sample:** Thus far the RADAR has been developed on a relatively small number of participants, within a specific geographic region, and limited to a particular educational sector (independent schools). An important step if the RADAR is to be used by individual schools to identify particular students of concern would be to establish a robust normative data base with a sample that is representative across geographical location, socio-economic status, ethnicity and educational sectors. Such a data set would be used to produce accurate cut-off scores for users. In accordance with the primary objectives of the RADAR, such cut-off scores would not be intended to suggest diagnosis, but rather provide an evidence-based rationale to direct school-personnel to students who require further follow-up.

4. **Rethinking the Teacher RADAR:** As already highlighted, development of the Teacher RADAR created some theoretical and technical difficulties that limit the confidence that can be placed in the instrument. Primary amongst these is the loss of explanatory capacity that comes from only including three of six risk factors within the scale. One option is to directly survey student well-being teachers to investigate whether they believe they could provide informed observations about the three omitted factors (that is, family relationships, physical appearance/body image and sporting interest). The results of such research may reveal that the original omission of these factors may have been a misjudgement. An alternative is to supplement the three existing factors with

some additional scales. Although a departure from the original risk-based RADAR model, teachers may be able to comment on certain observable 'symptoms' (such as withdrawn behaviour, aggressive behaviour or self-harming) or draw on other indicators of risk available within the school, such as rates of detentions, absenteeism, or attendance at the school sick bay.

5. **Collection of longitudinal data:** This thesis has provided follow-up data on participants over a 12 month period. Future research should investigate the value of RADAR data over more extended periods. In part, the rationale for this is the developmental nature of emotional and behavioural difficulties in young people. While the RADAR may detect peer or family difficulties in Year 8, for example, the student may not exhibit sequelae until Year 9 or 10. The longer term ability of the RADAR to predict such difficulties is yet to be determined. Importantly, schools have a developmental interest in students by virtue of the fact that students in many countries have a three to six-year journey in one school.

Mental health screening in Australian schools: Concluding comments and future directions

Despite the important contribution that school-based mental health screening can offer to ensure that young people in need of help are referred for assistance, it remains the case that very few schools in Australia engage in systematic mental health screening. In the absence of any data, it is difficult to know how many Australian schools run screening programs, or indeed any other early identification systems. Despite some early work by Campbell to promote universal identification programs in both primary (Campbell, 2003a) and secondary schools (Campbell, 2004), anecdotal evidence suggests that uptake of such programs remains minimal. In an Australian review of whole school prevention and intervention programs for anxiety, Campbell

notes that whole-school screening for emotional difficulties is not widespread (Campbell, 2003b). A recent review of the current status and future trends of school counselling in Australia does not make any mention of screening when discussing the roles and responsibilities of school counsellors or psychologists (Campbell & Colmar, 2014). One final expression of the way in which universal screening has been overlooked in Australia is seen in the Australian Psychological Society's (APS) recent publication of a framework for the effective delivery of school psychology services (Australian Psychological Society, 2016). While this framework does highlight the importance of whole school programs that are proactive and preventative, no mention is made of universal mental health screening.

The development of universal screening instruments such as the RADAR serve no purpose if schools do not use them. By way of conclusion, this thesis will offer a 'blueprint' of how psychologists in schools can work to ensure the effective delivery of screening within schools in Australia. The vast majority of literature on screening on schools has been developed in the United States for American schools. By virtue of the socio-cultural, legal and educational differences between the countries, it cannot be assumed that initiatives and programs that are used in the United States can be automatically transferred to other countries. The 'blueprint' that is offered here consists of seven core components that psychologists in Australian schools can follow to guide them as they introduce screening programs in their schools.

1. **Redefining the role of school psychologists:** Broadly speaking, the prevailing model of school-based psychology services in Australia has developed along a 'guidance officer' path, with psychologists in schools commonly called 'guidance officers' or 'school counsellors'. Historically, the key role of these guidance officers was to identify students with special educational needs so that

they could then be given specialist educational and vocational placements (Campbell & Glasheen, 2016). Importantly, continuing to the present day, most states in Australia have required that their government school 'guidance officers' are school teachers who then transition to the role of guidance officer after receiving additional training. Campbell and Glasheen (2016) note that individual IQ testing continues to be the most prevalent activity of school psychologists and acknowledge that IQ testing might be 'an historical hindrance in progressing the field of school psychology' (p. 31). There are two key shifts that are required amongst school psychologists – and school administrators - before mental health screening is likely to become more commonplace in Australia. The first is a shift away from being primarily assessors of learning difficulties towards being more focussed on the overall social and emotional wellbeing of students. The second is a shift away from being individual 'counsellors' for students who are experiencing difficulties, towards a greater focus on the provision of preventative and early intervention programs in schools. These shifts do present some likely barriers that will need to be overcome. First, school psychologists may have some reluctance to a change in their job expectation. Those psychologists who have transitioned from being teachers may in particular desire to hold on their educational focus. Moreover, there is some concerning evidence about the age of Australian school counsellors, with more than 55% of guidance counsellors in Queensland being aged 50 years or more, while in New South Wales approximately 40% of school counsellors are over the national retirement age but still employed (Campbell & Glasheen, 2016). In light of evidence that older employees are less willing to participate in training and career development activities (Ng & Feldman, 2012), being trained to implement

universal screening programs may be a barrier to address. A second reluctance is the potential fear that screening may uncover more students who require counselling. The heavy work demands placed on psychologists in Australian schools has been known for many years, with one report concluding that "it would require miracle workers to deal effectively with their current caseloads" (Vinson, 2002, p. 64). In such a context, a reluctance to undertake programs that may increase a psychologist's workload is understandable. Although evidence for such reluctance in the Australian context remains anecdotal, it has been acknowledged in other countries. For example, Dever and colleagues (2012) report on the concern of practitioners that screening will overburden the school mental health system, while another study reports that school staff chose to discontinue screening after an overwhelming percentage (almost 30%) of students were rated as being at risk of suicide (Hallfors et al., 2006). Once psychologists in Australian schools perceive themselves as mental health advocates equally as strongly as they are educational assessors, and once they begin to balance their roles implementing preventative and early intervention strategies just as much as responsive counselling services, then a climate for preventative mental health screening can develop. Importantly, any such changes require the support of educational administrators and executives within schools.

2. **Educating school psychologists on how to run screening programs:** School psychologists in Australia cannot promote or implement mental health screening programs unless they are familiar with what such an initiative involves. Such programs have not been a component of standard training for school psychologists in tertiary education programs, and with a few exceptions, nor are

they being offered outside universities. Put simply, most Australian school psychologists do not know how to implement a mental health screening program. Fortunately, the skills required are very familiar to any well-trained psychologist and therefore should be understood and learned very quickly. Although individual school psychologists could seek out relevant literature to train themselves in how to implement screening programs, the onus is on tertiary training institutions and senior psychologists in government education departments to include some training on such programs. Once trained, each school psychologist can then look to promote screening within the schools they work in.

3. **Developing post-screening follow-up:** In their seminal work the *Principles and Practice of Screening for Disease*, Wilson and Jungner (1968) identify that those in need of "treatment" should be able to obtain it. A school screening program is only effective to the degree that students identified as at risk can then be linked to suitable mental health follow-up. Broadly speaking, such follow-up falls into two options. The first is assessment and intervention within the school itself, including further individual assessment by the school psychologist and/or inclusion in an early intervention program run on school campus. The second option is referral to community-based mental health resources. Clearly this second option is dependent on the availability of such services within the broader community in which the school is located. Accessing mental health services poses difficulties for young Australians in rural and remote areas of Australia (Aisbett, Boyd, Francis, Newnham, & Newnham, 2007) and particularly for indigenous Australians (Hunter, 2007). For a school to

implement a mental health screening program without due consideration to the follow up of those students identified as at-risk is professionally unethical.

4. **Securing the support of school management and executive:** New initiatives in any new organisation are unlikely to succeed without the support of the senior management. Accordingly, in order to implement universal screening in schools, psychologists will need to secure the support of the senior management responsible for the school. Importantly, school/department leaders usually come from an education background rather than a mental health background and therefore may need to have a strong case put to them to convince them of the benefits of mental health screening. Different management structures apply across the three education sectors (state, catholic systemic and independent sectors) in Australia. Across all three sectors, the support of the School Principal, Deputy Principal and Head of Wellbeing is paramount. In relation to these managers/school executive, barriers to the acceptance of a screening program can be anticipated. Some managers may take the view that mental health is not the domain of schools and therefore screening for mental health risk in schools is not appropriate. In response to this argument, there is overwhelming evidence that mental health difficulties impair academic performance (Fröjd et al., 2008; Reid et al., 2004; Riglin et al., 2014) and therefore educators should be proactive in detecting such difficulties to limit educational deficits. An additional barrier to anticipate is that school managers may be concerned that they could be held legally responsible for any mental-health related casualty – and in particular, a suicide - in a student identified through school-based screening as being at risk of mental health difficulties. This is an important consideration and it would be unethical for a school to

identify a student at risk through screening and then not take some further steps to act on these concerns. School risk (and importantly, student risk) can be mitigated through the school response after screening. Primarily this will involve one, or both, of two options. The first involves further assessment of the student by a school mental health professional in order to more comprehensively ascertain the level of risk. The second involves informing the student's parent/guardian to inform them of the school's concern and facilitating a referral to a community-based agency, therefore transferring the responsibility for mental health follow-up to a more appropriate place.

5. **Securing the support of the school's parent body:** Australian schools can learn from the experience in the United States about the importance of having the support of parents – and indeed the broader community – before implementing a screening program. The TeenScreen program in particular was criticised for initially using only passive parental consent prior to screening. (Lenzer, 2005), Other general concerns raised include a concern that mental health care is the role of families rather than schools, concerns that parents may not be told about the results of the screening process and concerns that screening may be connected with the big pharmaceutical companies (Albers et al., 2007b; Ashford, 2005; Chafouleas et al., 2010). A clear implication for any school seeking to implement a screening program is to ensure that concerns such as these are visibly and transparently addressed with the parent body. Clear, comprehensive and timely communication with the parent body about the aims of the program, the types of tests used and what happens with students flagged as 'at risk' will allay many fears. Informed and voluntary written consent must be obtained from parents before a student can be screened. Parents will need to

hear that their decision about whether or not they allow their child to participate will be respected and will in no way affect their child's standing or progress within the school.

6. **Securing the support of the school's student body:** Just as the support of the parent body must be ensured, so too the student body should openly be supportive of the screening process. Central to any philosophy of health screening is that the screening tests must be acceptable to the population to which it is offered. (Wilson & Jungner, 1968). If an 'us vs. them' mentality exists between students and staff in a school, students will understandably be disinclined to participate or be honest during screening. In fact, if a school is aware of strong hostility between the staff and student body, they are advised to first improve the school climate before considering mental health screening. Mental health screening is a small part of a total student well-being program and will only be successful in the context of a broader sense for students of care and trust within the school. Assuming this exists, there are specific strategies school-based mental health staff can employ to increase the likelihood of a successful screening program. Just as for parents, giving the students clear and transparent information about the purposes, processes and outcomes of the screening process is paramount. Students will rightly want to know what happens with results and which staff within the school will have access to them. Informed consent from students remains vital, as does the right to withhold consent without penalty or prejudice.

7. **Getting logistics sorted:** Once the above conditions have been addressed, the final job of the school mental health professional is to consider the key logistics of the screening process within their particular school. In fact, these logistics

must be fully determined before the school psychologist promotes the program with the broader school community. While the above six points are considered to be generic across all schools and systems, the practical decisions about how a mental health screening program is implemented in individual schools will be unique to each school. Factors to consider include the particular culture of the school, the level of general mental health risk within the school (such as the socio-economic and ethnic mix, exposure to trauma), the availability of follow-up services, the number of staff and the budget available to implement the program. Eight key questions are offered to help guide the individual school psychologist on how to proceed with the individual logistics:

a. Which class or year group(s) will be screened?

b. Which screening instruments will be used?

c. How will consent be gained?

d. When (time of day/week/year) will screening be implemented?

e. How will data be collected? (eg, online survey tool, pencil/paper?)

f. Who will supervise the screening?

g. Who has access to the results?

h. What happens for students identified as being at risk?

In concluding, it is hoped that the blueprint contained above – and indeed the RADAR instruments - might better equip psychologists in Australian schools to implement universal screening programs. Although there are barriers to the establishment of screening programs, such hurdles are both predictable and surmountable. Ultimately, the evidence of a successful screening program will be seen in the alleviation of distress and the enhancement of young people in achieving their potential, unhindered by mental health restraints.

References

Achenbach, T. M. (1991). *Manual for the child behavior checklist 14-18 and 1991 profile. *. Burlington, VT: University of Vermont Department of Psychiatry.

Achenbach, T. M. (2009). *The Achenbach system of empirically based assessemnt (aseba): Development, findings, theory, and applications. *. Burlington, VT: University of Vermont Research Center for Children, Youth, & Families.

Achenbach, T. M., McConaughy, S. H., & Howell, C. T. (1987). Child/adolescent behavioral and emotional problems: Implications of cross-informant correlations for situational specificity. *Psychological Bulletin, 101*(2), 213-232.

Ahlen, J., Lenhard, F., & Ghaderi, A. (2015). Universal prevention for anxiety and depressive symptoms in children: A meta-analysis of randomized and cluster-randomized trials. *Journal of Primary Prevention, 36*(6), 387-403. doi:10.1007/s10935-015-0405-4

Ahn, S., & Fedewa, A. L. (2011). A meta-analysis of the relationship between children's physical activity and mental health. *Journal of Pediatric Psychology*. doi:10.1093/jpepsy/jsq107

Aisbett, D. L., Boyd, C. P., Francis, K. J., Newnham, K., & Newnham, K. (2007). Understanding barriers to mental health service utilization for adolescents in rural australia. *Rural Remote Health, 7*(1), 624.

Albers, C. A., Glover, T. A., & Kratochwill, T. R. (2007a). Introduction to the special issue: How can universal screening enhance educational and mental health outcomes? *Journal of School Psychology, 45*, 113-116.

Albers, C. A., Glover, T. A., & Kratochwill, T. R. (2007b). Where are we, and where do we go now?: Universal screening for enhanced educational and mental health

outcomes. *Journal of School Psychology, 45*(2), 257-263.

doi:http://dx.doi.org/10.1016/j.jsp.2006.12.003

Allanson, P. B., Lester, R. R., & Notar, C. E. (2015). A history of bullying.

International Journal of Education and Social Science, 2(12), 31-36.

Allington-Smith, P. (2006). Mental health of children with learning disabilities.

Advances in Psychiatric Treatment, 12(2), 130-138. doi:10.1192/apt.12.2.130

Allison, D., Faith, M., & Franklin, R. (1985). Antecedent exercise in the treatment of

disruptive behavior: A meta-analytic review. *Clin Psychol: Sci Pract, 2*, 279 -

303.

Aneshensel, C. S., & Sucoff, C. A. (1996). The neighborhood context of adolescent

mental health. *Journal of Health and Social Behavior, 37*(4), 293-310.

Angold, A., & Costello, E. J. (2000). The child and adolescent psychiatric assessment

(capa). *Journal of the American Academy of Child & Adolescent Psychiatry,

39*(1), 39-48. doi:http://dx.doi.org/10.1097/00004583-200001000-00015

Annesi, J. J. (2005). Correlations of depression and total mood disturbance with

physical activity and self-concept in preadolescents enrolled in an after-school

exercise program. *Psychological Reports, 96*(3_suppl), 891-898.

doi:10.2466/pr0.96.3c.891-898

Antaramian, S. P., Huebner, E. S., Hills, K. J., & Valois, R. F. (2010). A dual-factor

model of mental health: Toward a more comprehensive understanding of youth

functioning. *The American Journal Of Orthopsychiatry, 80*(4), 462-472.

doi:10.1111/j.1939-0025.2010.01049.x

Appleyard, K., Egeland, B., van Dulmen, M. H., & Sroufe, L. A. (2005). When more is

not better: The role of cumulative risk in child behavior outcomes. *J Child

Psychol Psychiatry, 46*(3), 235-245. doi:10.1111/j.1469-7610.2004.00351.x

Ashford, E. (2005). The fight over screening students to prevent suicide. *Education Digest, 71*(1), 52-56.

Atzaba-Poria, N., Pike, A., & Deater-Deckard, K. (2004). Do risk factors for problem behaviour act in a cumulative manner? An examination of ethnic minority and majority children through an ecological perspective. *J Child Psychol Psychiatry, 45*(4), 707-718.

Austin, S. B., Ziyadeh, N. J., Forman, S., Prokop, L. A., Keliher, A., & Jacobs, D. (2008). Screening high school students for eating disorders: Results of a national initiative. *Preventing Chronic Disease, 5*(4), A114.

Australian Bureau of Statistics. (2008). *National survey of mental health and wellbing: Summary of results*. Retrieved from

Australian Psychological Society. (2016). *The framework for effective delivery of school psychology services: A practice guide for psychologists and school leaders*. Retrieved from Melbourne, Australia:

Baggish, R., & Hardcastle, S. (2005). Schools and mental health: An evolving partnership. *Conn Med, 69*(9), 535-539.

Baggish, R., & Wells, P. H. (2014). *Suicide attempts in private school adolescents*. Paper presented at the American Psychiatric Association 167th Annual Meeting, New York. http://www.medscape.com/viewarticle/824667

Bailey, R. (2006). Physical education and sport in schools: A review of benefits and outcomes. *Journal of School Health, 76*(8), 397-401. doi:10.1111/j.1746-1561.2006.00132.x

Barker, L. A., & Adelman, H. S. (1994). Mental health and help-seeking among ethnic minority adolescents. *J Adolesc, 17*(3), 251-263.

Barkmann, C., Erhart, M., & Schulte-Markwort, M. (2008). The german version of the centre for epidemiological studies depression scale for children: Psychometric evaluation in a population-based survey of 7 to 17 years old children and adolescents – results of the bella study. *European Child & Adolescent Psychiatry, 17*, 116-124. doi:10.1007/s00787-008-1013-0

Barlett, C. P., Vowels, C. L., & Saucier, D. A. (2008). Meta-analyses of the effects of media images on men's body-image concerns. *Journal of Social and Clinical Psychology, 27*(3), 279-310. doi:10.1521/jscp.2008.27.3.279

Barrett, P. M., Farrell, L. J., Ollendick, T. H., & Dadds, M. (2006). Long-term outcomes of an australian universal prevention trial of anxiety and depression symptoms in children and youth: An evaluation of the friends program. *Journal of Clinical Child & Adolescent Psychology, 35*(3), 403-411. doi:10.1207/s15374424jccp3503_5

Barrett, P. M., & Pahl, K. M. (2006). School-based intervention: Examining a universal approach to anxiety management. *Journal of Psychologists and Counsellors in Schools, 16*(01), 55-75. doi:doi:10.1375/ajgc.16.1.55

Bastounis, A., Callaghan, P., Banerjee, A., & Michail, M. (2016). The effectiveness of the penn resiliency programme (prp) and its adapted versions in reducing depression and anxiety and improving explanatory style: A systematic review and meta-analysis. *J Adolesc, 52*, 37-48. doi:10.1016/j.adolescence.2016.07.004

Bearman, S. K., & Stice, E. (2008). Testing a gender additive model: The role of body image in adolescent depression. *Journal of Abnormal Child Psychology, 36*(8), 1251-1263. doi:10.1007/s10802-008-9248-2

Beecham, J. (2014). Annual research review: Child and adolescent mental health interventions: A review of progress in economic studies across different

disorders. *Journal of Child Psychology and Psychiatry, 55*(6), 714-732. doi:10.1111/jcpp.12216

Begg, S., Vos, T., Barker, B., Stevenson, C., Stanley, L., & Lopez, A. D. (2007). *The burden of disease and injury in australia 2003*. Retrieved from http://www.aihw.gov.au/WorkArea/DownloadAsset.aspx?id=6442459747

Belfer, M. L. (2008). Child and adolescent mental disorders: The magnitude of the problem across the globe. *J Child Psychol Psychiatry, 49*(3), 226-236. doi:10.1111/j.1469-7610.2007.01855.x

Benony, H., Van Der Elst, D., Chahraoui, K., Benony, C., & Marnier, J. P. (2007). Link between depression and academic self-esteem in gifted children. *Encephale, 33*(1), 11-20.

Berger, U., Schaefer, J. M., Wick, K., Brix, C., Bormann, B., Sowa, M., . . . Strauss, B. (2013). Effectiveness of reducing the risk of eating-related problems using the german school-based intervention program, "torera", for preadolescent boys and girls. *Prevention Science*, 1-13. doi:10.1007/s11121-013-0396-4

Bernard, S. H. (2009). Mental health and behavioural problems in children and adolescents with learning disabilities. *Psychiatry, 8*(10), 387-390. doi:http://dx.doi.org/10.1016/j.mppsy.2009.06.017

Biddle, S. J. H., & Asare, M. (2011). Physical activity and mental health in children and adolescents: A review of reviews. *British Journal of Sports Medicine, 45*(11), 886-895. doi:10.1136/bjsports-2011-090185

Bird, E. L., Halliwell, E., Diedrichs, P. C., & Harcourt, D. (2013). Happy being me in the uk: A controlled evaluation of a school-based body image intervention with pre-adolescent children. *Body Image, 10*(3), 326-334. doi:http://dx.doi.org/10.1016/j.bodyim.2013.02.008

Blashill, A. J., & Wilhelm, S. (2014). Body image distortions, weight, and depression in adolescent boys: Longitudinal trajectories into adulthood. *Psychology of Men & Masculinity, 15*(4), 445-451. doi:10.1037/a0034618

Boden, J. M., Fergusson, D. M., & Horwood, L. J. (2010). Risk factors for conduct disorder and oppositional/defiant disorder: Evidence from a new zealand birth cohort. *Journal of the American Academy of Child & Adolescent Psychiatry, 49*(11), 1125-1133. doi:http://dx.doi.org/10.1016/j.jaac.2010.08.005

Bögels, S. M., & Brechman-Toussaint, M. L. (2006). Family issues in child anxiety: Attachment, family functioning, parental rearing and beliefs. *Clinical Psychology Review, 26*(7), 834-856. doi:http://dx.doi.org/10.1016/j.cpr.2005.08.001

Bond, L., Butler, H., Thomas, L., Carlin, J., Glover, S., Bowes, G., & Patton, G. (2007). Social and school connectedness in early secondary school as predictors of late teenage substance use, mental health, and academic outcomes. *Journal of Adolescent Health, 40*(4), 357.e359-357.e318. doi:http://dx.doi.org/10.1016/j.jadohealth.2006.10.013

Borden, L. A., Schultz, T. R., Herman, K. C., & Brooks, C. M. (2010). The incredible years parent training program: Promoting resilience through evidence-based prevention groups. *Group Dynamics: Theory, Research, and Practice, 14*(3), 230-241.

Borowsky, I. W., Ireland, M., & Resnick, M. D. (2001). Adolescent suicide attempts: Risks and protectors. *Pediatrics, 107*(3), 485-493. doi:10.1542/peds.107.3.485

Boyd, C., Hayes, L., Nurse, S., Aisbett, D., Francis, K., Newnham, K., & Sewell, J. (2011). Preferences and intention of rural adolescents toward seeking help for mental health problems *Rural and Remote Health, 11*, 1582 (online).

Bradford, S., & Rickwood, D. J. (2014). Young people's views on electronic mental

    health assessment: Prefer to type than talk? *Journal of Child and Family Studies*,

    1-9. doi:10.1007/s10826-014-9929-0

Brausch, A. M., & Muehlenkamp, J. J. (2007). Body image and suicidal ideation in

    adolescents. *Body Image, 4*(2), 207-212.

    doi:http://dx.doi.org/10.1016/j.bodyim.2007.02.001

Brown, T. N., Sellers, S. L., Brown, K. T., & Jackson, J. S. (1999). Race, ethnicity, and

    culture in the sociology of mental health. In C. S. Aneshensel & J. C. Phelan

    (Eds.), *Handbook of the sociology of mental health* (pp. 167-182). Boston, MA:

    Springer US.

Bucchianeri, M. M., Arikian, A. J., Hannan, P. J., Eisenberg, M. E., & Neumark-

    Sztainer, D. (2013). Body dissatisfaction from adolescence to young adulthood:

    Findings from a 10-year longitudinal study. *Body Image, 10*(1), 1-7.

    doi:http://dx.doi.org/10.1016/j.bodyim.2012.09.001

Burns, J. R., & Rapee, R. M. (2016). Screening for mental health risk in high schools:

    The development of the youth radar. *Psychol Assess, 28*(10), 1220-1231.

    doi:10.1037/pas0000237

Byrne, P., & Rosen, A. (2015). Early intervention in psychiatry: Ei of nearly everything

    for better mental health (Vol. 2). Beaverton: Ringgold Inc.

Cairns, K. E., Yap, M. B. H., Pilkington, P. D., & Jorm, A. F. (2014). Risk and

    protective factors for depression that adolescents can modify: A systematic

    review and meta-analysis of longitudinal studies. *J Affect Disord, 169*, 61-75.

    doi:10.1016/j.jad.2014.08.006

Calear, A., & Christensen, H. (2010a). Review of internet-based prevention and treatment programs for anxiety and depression in children and adolescents. *Medical Journal of Australia, 192*(11), S12-S14.

Calear, A., & Christensen, H. (2010b). Systematic review of school-based prevention and early intervention programs for depression. *J Adolesc, 33*, 429 - 438.

Cammack, N. L., Brandt, N. E., Slade, E., Lever, N. A., & Stephan, S. (2014). Funding expanded school mental health programs. In M. D. Weist, N. A. Lever, C. P. Bradshaw, & J. S. Owens (Eds.), *Handbook of school mental health: Research, training, practice, and policy* (pp. 17-30). Boston, MA: Springer US.

Campbell, A., & Hausenblas, H. A. (2009). Effects of exercise interventions on body image: A meta-analysis. *Journal of Health Psychology, 14*(6), 780-793. doi:10.1177/1359105309338977

Campbell, M. A. (2003a). An innovative multidisciplinary approach to identifying at-risk students in primary schools. *Australian Journal of Guidance and Counselling, 13*(2), 159-166. doi:10.1017/S1037291100002855

Campbell, M. A. (2003b). Prevention and intervention for anxiety disorders in children and adolescents: A whole school approach. *Australian Journal of Guidance and Counselling, 13*, 47-62.

Campbell, M. A. (2004). Identification of "at-risk" students for prevention and early intervention programs in secondary schools. *Australian Journal of Guidance and Counselling, 14*(1), 65-77. doi:10.1017/S1037291100002673

Campbell, M. A., & Colmar, S. (2014). Current status and future trends of school counseling in australia. *Journal of Asia Pacific Counseling, 4*(2), 181-197.

Campbell, M. A., & Glasheen, K. (2016). A history of school psychology in australia. In M. Thielking & M. D. Terjesen (Eds.), *Handbook of australian school*

psychology: Integrating international research, practice, and policy (pp. 21-37). Cham, Switzerland: Springer.

Carroll, J. M., Maughan, B., Goodman, R., & Meltzer, H. (2005). Literacy difficulties and psychiatric disorders: Evidence for comorbidity. *Journal of Child Psychology and Psychiatry, 46*(5), 524-532. doi:10.1111/j.1469-7610.2004.00366.x

Catalano, R. F., Fagan, A., Gavin, L. E., Greenberg, M. T., Irwin, C. E., Ross, D. A., & Shek, D. T. (2012). Worldwide application of prevention science in adolescent health. *The Lancet, 379*(9826), 1653-1664.

Centers for Disease Control and Prevention. (2009). *School connectedness: Strategies for increasing protective factors among youth*. Retrieved from Atlanta, GA: https://www.cdc.gov/healthyyouth/protective/pdf/connectedness.pdf

Chafouleas, S. M., Kilgus, S. P., & Wallach, N. (2010). Ethical dilemmas in school-based behavioral screening. *Assessment for Effective Intervention, 35*(4), 245-252. doi:doi:10.1177/1534508410379002

Chan, S., & Quinn, P. (2012). Secondary school students' views of inhibiting factors in seeking counselling. *British Journal of Guidance & Counselling, 40*(5), 527-543. doi:10.1080/03069885.2012.719603

Chatterji, P., Caffray, C. M., Crowe, M., Freeman, L., & Jensen, P. (2004). Cost assessment of a school-based mental health screening and treatment program in new york city. *Mental Health Services Research, 6*(3), 155-166. doi:10.1023/B:MHSR.0000036489.50470.cb

Chen, X., Rubin, K. H., & Li, B. S. (1995). Depressed mood in chinese children: Relations with school performance and family environment. *J Consult Clin Psychol, 63*(6), 938-947.

Choukas-Bradley, S., & Prinstein, M. (2014). Peer relationships and the development of psychopathology. In M. Lewis & K. D. Rudolph (Eds.), *Handbook of developmental psychopathology* (pp. 185-204): Springer US.

Christensen, H., Pallister, E., Smale, S., Hickie, I. B., & Calear, A. L. (2010). Community-based prevention programs for anxiety and depression in youth: A systematic review. *The Journal of Primary Prevention, 31*(3), 139-170. doi:10.1007/s10935-010-0214-8

Chu, P. S., Saucier, D. A., & Hafner, E. (2010). Meta-analysis of the relationships between social support and well-being in children and adolescents. *Journal of Social and Clinical Psychology, 29*(6), 624-645. doi:10.1521/jscp.2010.29.6.624

Cicchetti, D., & Rogosch, F. A. (1996). Equifinality and multifinality in developmental psychopathology. *Development and Psychopathology, 8*(04), 597-600. doi:doi:10.1017/S0954579400007318

Citizens Commission on Human Rights International. (2006). *Teen screen: Life saving intervention, or orwellian nightmare? A report and recommendations about screening america's children for 'mental disorders'*. Retrieved from http://www.cchrstl.org/documents/TeenScreenWhitePaper.pdf

Cohane, G. H., & Pope, H. G. (2001). Body image in boys: A review of the literature. *International Journal of Eating Disorders, 29*(4), 373-379. doi:10.1002/eat.1033

Commission on Chronic Illness. (1957). *Chronic illness in the united states. Vol i. Prevention of chronic illness*. Cambridge, MA: Harvard University Press.

Conners, C. K., Sitarenios, G., Parker, J. A., & Epstein, J. (1998). Revision and restandardization of the conners teacher rating scale (ctrs-r): Factor structure, reliability, and criterion validity. *Journal of Abnormal Child Psychology, 26*(4), 279-291. doi:10.1023/A:1022606501530

Conrod, P. J., O'Leary-Barrett, M., Newton, N., & et al. (2013). Effectiveness of a selective, personality-targeted prevention program for adolescent alcohol use and misuse: A cluster randomized controlled trial. *JAMA Psychiatry, 70*(3), 334-342. doi:10.1001/jamapsychiatry.2013.651

Contreras-Valdez, J. A., Hernández-Guzmán, L., & Freyre, M.-Á. (2016). Body dissatisfaction, self-esteem, and depression in girls with obesity. *Revista Mexicana de Trastornos Alimentarios, 7*(1), 24-31. doi:http://dx.doi.org/10.1016/j.rmta.2016.04.001

Cooper, M. (2006). Scottish secondary school students' preferences for location, format of counselling and sex of counsellor. *School Psychology International, 27*(5), 627-638. doi:10.1177/0143034306073421

Corrieri, S., Heider, D., Conrad, I., Blume, A., Konig, H. H., & Riedel-Heller, S. G. (2014). School-based prevention programs for depression and anxiety in adolescence: A systematic review. *Health Promot Int, 29*(3), 427-441. doi:10.1093/heapro/dat001

Costello, A. B., & Osborne, J. W. (2005). Best practices in exploratory factor analysis: Four recommendations for getting the most from your analysis. *Practical Assessment, Research and Evaluation, 10*(7), 1-9.

Costello, D. M., Swendsen, J., Rose, J. S., & Dierker, L. C. (2008). Risk and protective factors associated with trajectories of depressed mood from adolescence to early adulthood. *J Consult Clin Psychol, 76*(2), 173-183.

Costello, E. J. (2016). Early detection and prevention of mental health problems: Developmental epidemiology and systems of support. *Journal of Clinical Child & Adolescent Psychology, 45*(6), 710-717. doi:10.1080/15374416.2016.1236728

Costello, E. J., Egger, H., & Angold, A. (2005). 10-year research update review: The epidemiology of child and adolescent psychiatric disorders: I. Methods and public health burden. *Journal of the American Academy of Child and Adolescent Psychiatry, 44*(10), 972-986. doi:10.1097/01.chi.0000172552.41596.6f

Costello, E. J., He, J.-p., Sampson, N. A., Kessler, R. C., & Merikangas, K. R. (2014). Services for adolescent psychiatric disorders: 12-month data from the national comorbidity survey-adolescent. *Psychiatric services (Washington, D.C.), 65*(3), 359-366. doi:10.1176/appi.ps.201100518

Crews, S. D., Bender, H., Cook, C. R., Gresham, F. M., Kern, L., & Vanderwood, M. (2007). Risk and protective factors of emotional and/or behavioral disorders in children and adolescents: A mega-analytic synthesis. *Behavioral Disorders, 32*(2), 64-77.

Crow, S., Eisenberg, M. E., Story, M., & Neumark-Sztainer, D. (2008). Suicidal behavior in adolescents: Relationship to weight status, weight control behaviors, and body dissatisfaction. *International Journal of Eating Disorders, 41*(1), 82-87. doi:10.1002/eat.20466

Cuijpers, P., Boluijt, P., & van Straten, A. (2008). Screening of depression in adolescents through the internet. *European Child & Adolescent Psychiatry, 17*(1), 32-38. doi:10.1007/s00787-007-0631-2

Cunningham, C. E., & Boyle, M. H. (2002). Preschoolers at risk for attention-deficit hyperactivity disorder and oppositional defiant disorder: Family, parenting, and behavioral correlates. *Journal of Abnormal Child Psychology, 30*(6), 555-569. doi:10.1023/a:1020855429085

Currie, J., & Stabile, M. (2006). Child mental health and human capital accumulation: The case of adhd. *Journal of Health Economics, 25*(6), 1094-1118. doi:http://dx.doi.org/10.1016/j.jhealeco.2006.03.001

D'Souza, C. M., Forman, S. F., & Austin, S. B. (2005). Follow-up evaluation of a high school eating disorders screening program: Knowledge, awareness and self-referral. *Journal of Adolescent Health, 36*(3), 208-213. doi:http://dx.doi.org/10.1016/j.jadohealth.2004.01.014

Dabkowska, M., & Dabkowska-Mika, A. (2015). Risk factors of anxiety disorders in children. In F. Durbano (Ed.), A Fresh Look at Anxiety Disorders: InTech. Retrieved from http://www.intechopen.com/books/a-fresh-look-at-anxiety-disorders/risk-factors-of-anxiety-disorders-in-children. doi: 10.5772/61169

Dadds, M. R., Spence, S. H., Holland, D. E., Barrett, P. M., & Laurens, K. R. (1997). Prevention and early intervention for anxiety disorders: A controlled trial. *J Consult Clin Psychol, 65*(4), 627-635.

Danckaerts, M. (2010). The quality of life of children with attention deficit/hyperactivity disorder: A systematic review. *European Child & Adolescent Psychiatry, 19*(2), 83-105. doi:10.1007/s00787-009-0046-3

de Girolamo, G., Dagani, J., Purcell, R., Cocchi, A., & McGorry, P. D. (2012). Age of onset of mental disorders and use of mental health services: Needs, opportunities and obstacles. *Epidemiology and Psychiatric Sciences, 21*(01), 47-57. doi:doi:10.1017/S2045796011000746

de Jong, T., & Kerr-Roubicek, H. (2007). Approach to pastoral care: A proposed framework of principles and practices. *Australian Journal of Guidance and Counselling, 17*(1), 1-12.

De Los Reyes, A. (2013). Strategic objectives for improving understanding of informant

    discrepancies in developmental psychopathology research. *Dev Psychopathol,*

    25(3), 669-682. doi:10.1017/s0954579413000096

Degney, J., Hoplins, B., Hosie, A., Lim, S., Verma, A., & Vogl, G. (2012). *Counting the*

    cost: The impact of young men's mental health on the australian economy.

    Retrieved from http://www.youngandwellcrc.org.au/wp-

    content/uploads/2014/02/Counting-the-Cost-Inspire-Foundation-2012.pdf

Deighton, J., Tymms, P., Vostanis, P., Belsky, J., Fonagy, P., Brown, A., . . . Wolpert,

    M. (2012). The development of a school-based measure of child mental health.

    Journal of Psychoeducational Assessment, 31(3), 247-257.

    doi:10.1177/0734282912465570

Deslandes, A., Moraes, H., Ferreira, C., Veiga, H., Silveira, H., Mouta, R., . . . Laks, J.

    (2009). Exercise and mental health: Many reasons to move.

    Neuropsychobiology, 59(4), 191-198.

Dever, B. V., Raines, T. C., & Barclay, C. M. (2012). Chasing the unicorn: Practical

    implementation of universal screening for behavioral and emotional risk. *School*

    Psychology Forum, 6(4), 108-118.

Dishman, R. K., Hales, D. P., Pfeiffer, K. A., Felton, G., Saunders, R., Ward, D. S., . . .

    Pate, R. R. (2006). Physical self-concept and self-esteem mediate cross-sectional

    relations of physical activity and sport participation with depression symptoms

    among adolescent girls. *Health Psychology, 25*(3), 396-407.

DiStefano, C., & Motl, R. W. (2006). Further investigating method effects associated

    with negatively worded items on self-report surveys. *Structural Equation*

    Modeling: A Multidisciplinary Journal, 13(3), 440-464.

    doi:10.1207/s15328007sem1303_6

Doan, S. N., Fuller-Rowell, T. E., & Evans, G. W. (2012). Cumulative risk and
adolescent's internalizing and externalizing problems: The mediating roles of
maternal responsiveness and self-regulation. *Developmental Psychology, 48*(6),
1529-1539.

Dobbins, M., DeCorby, K., Robeson, P., Husson, H., & Tirilis, D. (2009). School-based
physical activity programs for promoting physical activity and fitness in children
and adolescents aged 6-18. *Cochrane Database of Systematic Reviews*(1).
doi:10.1002/14651858.CD007651

Donaldson, S. J., & Ronan, K. R. (2006). The effects of sports participation on young
adolescents' emotional well-being. *Adolescence, 41*(162), 369-389.

Dowdy, E., Doane, K., Eklund, K., & Dever, B. V. (2013). A comparison of teacher
nomination and screening to identify behavioral and emotional risk within a
sample of underrepresented students. *Journal of Emotional and Behavioral
Disorders, 21*(2), 127-137. doi:10.1177/1063426611417627

Dowdy, E., Ritchey, K., & Kamphaus, R. W. (2010). School-based screening: A
population-based approach to inform and monitor children's mental health
needs. *School Ment Health, 2*(4), 166-176. doi:10.1007/s12310-010-9036-3

Dray, J., Bowman, J., Wolfenden, L., Campbell, E., Freund, M., Hodder, R., &
Wiggers, J. (2015). Systematic review of universal resilience interventions
targeting child and adolescent mental health in the school setting: Review
protocol. *Systematic Reviews, 4*, 186. doi:10.1186/s13643-015-0172-6

Drummond, T. B. (1994). *The student risk screening scale (srss).* Grants Pass, OR:
Josephine County Mental Health Program.

Durlak, J. A. (1998). Common risk and protective factors in successful prevention programs. *American Journal of Orthopsychiatry, 68*(4), 512-520. doi:10.1037/h0080360

Durlak, J. A., Weissberg, R. P., Dymnicki, A. B., Taylor, R. D., & Schellinger, K. B. (2011). The impact of enhancing students' social and emotional learning: A meta-analysis of school-based universal interventions. *Child Dev, 82*(1), 405-432. doi:10.1111/j.1467-8624.2010.01564.x

Dwyer, S. B., Nicholson, J. M., & Battistutta, D. (2006). Parent and teacher identification of children at risk of developing internalizing or externalizing mental health problems: A comparison of screening methods. *Prevention Science, 7*(4), 343-357. doi:10.1007/s11121-006-0026-5

Eckert, T. L., Miller, D. N., DuPaul, G. J., & Riley-Tillman, T. C. (2003). Adolescent suicide prevention: School psychologists' acceptability of school-based programs. *School Psychology Review, 32*(1), 57-76.

Ehrenreich-May, J., & Bilek, E. L. (2012). The development of a transdiagnostic, cognitive behavioral group intervention for childhood anxiety disorders and co-occurring depression symptoms. *Cognitive and Behavioral Practice, 19*(1), 41-55. doi:http://dx.doi.org/10.1016/j.cbpra.2011.02.003

Eime, R. M., Young, J. A., Harvey, J. T., Charity, M. J., & Payne, W. R. (2013). A systematic review of the psychological and social benefits of participation in sport for children and adolescents: Informing development of a conceptual model of health through sport. *Int J Behav Nutr Phys Act, 10*, 98. doi:10.1186/1479-5868-10-98

Ekeland, E., Heian, F., & Hagen, K. B. (2005). Can exercise improve self esteem in children and young people? A systematic review of randomised controlled trials.

British Journal of Sports Medicine, 39(11), 792-798.

doi:10.1136/bjsm.2004.017707

Eklund, K., & Dowdy, E. (2014). Screening for behavioral and emotional risk versus

traditional school identification methods. School Ment Health, 6(1), 40-49.

doi:10.1007/s12310-013-9109-1

El Ansari, W., Stock, C., Phillips, C., Mabhala, A., Stoate, M., Adetunji, H., . . .

Snelgrove, S. (2011). Does the association between depressive symptomatology

and physical activity depend on body image perception? A survey of students

from seven universities in the uk. International Journal of Environmental

Research and Public Health, 8(2), 281-299.

Erath, S. A., Bub, K. L., & Tu, K. M. (2014). Responses to peer stress predict academic

outcomes across the transition to middle school. The Journal of Early

Adolescence. doi:10.1177/0272431614556350

Essau, C. A., Olaya, B., Pasha, G., Gilvarry, C., & Bray, D. (2013). Depressive

symptoms among children and adolescents in iran: A confirmatory factor

analytic study of the centre for epidemiological studies depression scale for

children. Child Psychiatry and Human Development, 44(1), 123-136.

Essex, M. J., Kraemer, H. C., Armstrong, J. M., Boyce, W. T., Goldsmith, H. H., Klein,

M. H., . . . Kupfer, D. J. (2006). Exploring risk factors for the emergence of

children's mental health problems. Archives Of General Psychiatry, 63(11),

1246-1256.

Evans, C. B. R., Fraser, M. W., & Cotter, K. L. (2014). The effectiveness of school-

based bullying prevention programs: A systematic review. Aggression and

Violent Behavior, 19(5), 532-544.

doi:http://dx.doi.org/10.1016/j.avb.2014.07.004

Evans, G. W., Li, D., & Whipple, S. S. (2013). Cumulative risk and child development. *Psychological Bulletin, 139*(6), 1342-1396.

Faggiano, F., Vigna-Taglianti, F., Burkhart, G., Bohrn, K., Cuomo, L., Gregori, D., . . . Galanti, M. R. (2010). The effectiveness of a school-based substance abuse prevention program: 18-month follow-up of the eu-dap cluster randomized controlled trial. *Drug and Alcohol Dependence, 108*, 56-64.

Farbstein, I., Mansbach-Kleinfeld, I., Levinson, D., Goodman, R., Levav, I., Vograft, I., . . . Apter, A. (2010). Prevalence and correlates of mental disorders in israeli adolescents: Results from a national mental health survey. *Journal of Child Psychology and Psychiatry, 51*(5), 630-639. doi:10.1111/j.1469-7610.2009.02188.x

Faulstich, M. E., Carey, M. P., Ruggiero, L., Enyart, P., & Gresham, F. (1986). Assessment of depression in childhood and adolescence: An evaluation of the center for epidemiological studies depression scale for children (ces-dc). *American Journal of Psychiatry, 143*, 1024-1027.

Fazel, M., Hoagwood, K., Stephan, S., & Ford, T. (2014). Mental health interventions in schools in high-income countries. *Lancet Psychiatry, 1*(5), 377-387.

Fazel, M., Patel, V., Thomas, S., & Tol, W. (2014). Mental health interventions in schools in low-income and middle-income countries. *Lancet Psychiatry, 1*(5), 388-398.

Fendrich, M., Weissman, M., & Warner, V. (1990). Screening for depressive disorder in children and adolescents: Validating the center for epidemiologic studees depression scale for children. *American Journal of Epidemiology, 131*(3), 538-551.

Fergusson, D. M., Boden, J. M., & Horwood, L. J. (2007). Recurrence of major depression in adolescence and early adulthood, and later mental health, educational and economic outcomes. *The British Journal of Psychiatry, 191*(4), 335-342. doi:10.1192/bjp.bp.107.036079

Fisak, B. J., Richard, D., & Mann, A. (2011). The prevention of child and adolescent anxiety: A meta-analytic review. *Prevention Science, 12*(3), 255-268. doi:10.1007/s11121-011-0210-0

Ford, T., Goodman, R., & Meltzer, H. (2003). The british child and adolescent mental health survey 1999: The prevalence of dsm-iv disorders. *Journal of the American Academy of Child and Adolescent Psychiatry, 42*(10), 1203-1211. doi:10.1097/00004583-200310000-00011

Forness, S., Freeman, S. F. M., Paparella, T., Kauffman, J. M., & Walker, H. M. (2012). Special education implications of point and cumulative prevalence for children with emotional or behavioral disorders. *Journal of Emotional and Behavioral Disorders, 20*(1), 4-18.

Foster, S., Rollefson, M., Doksum, T., Noonan, D., Robinson, G., & Teich, J. (2005). *School mental health services in the united states, 2002–2003*. Retrieved from Rockville, MD:

Fox, K. R. (1999). The influence of physical activity on mental well-being. *Public Health Nutrition, 2*(Supplement 3a), 411-418. doi:doi:10.1017/S1368980099000567

French, D. C., & Waas, G. A. (1985). Teachers' ability to identify peer-rejected children: A comparison of sociometrics and teacher ratings. *Journal of School Psychology, 23*(4), 347-353. doi:http://dx.doi.org/10.1016/0022-4405(85)90047-0

Frick, P. J., Ray, J. V., Thornton, L. C., & Kahn, R. E. (2014). Annual research review: A developmental psychopathology approach to understanding callous-unemotional traits in children and adolescents with serious conduct problems. *Journal of Child Psychology and Psychiatry, 55*(6), 532-548. doi:10.1111/jcpp.12152

Fröjd, S. A., Nissinen, E. S., Pelkonen, M. U. I., Marttunen, M. J., Koivisto, A.-M., & Kaltiala-Heino, R. (2008). Depression and school performance in middle adolescent boys and girls. *J Adolesc, 31*(4), 485-498. doi:http://dx.doi.org/10.1016/j.adolescence.2007.08.006

Galambos, N., Leadbeater, B., & Barker, E. (2004). Gender differences in and risk factors for depression in adolescence: A 4-year longitudinal study. *International Journal of Behavioral Development, 28*(1), 16-25. doi:10.1080/01650250344000235

Gilbody, S., Sheldon, T., & Wessely, S. (2006). Should we screen for depression? *BMJ, 332*(7548), 1027-1030.

Gillham, J. E., Reivich, K., Freres, D. R., Chaplin, T. M., Shatté, A. J., Samuels, B., . . . Seligman, M. E. P. (2007). School-based prevention of depressive symptoms: A randomized controlled study of the effectiveness and specificity of the penn resiliency program. *J Consult Clin Psychol, 75*(1), 9-19. doi:10.1037/0022-006X.75.1.9

Gilliland, M. J., Windle, M., Grunbaum, J. A., Yancey, A., Hoelscher, D., Tortolero, S. R., & Schuster, M. A. (2007). Body image and children's mental health related behaviors: Results from the healthy passages study. *Journal of Pediatric Psychology, 32*(1), 30-41.

Gini, G., & Pozzoli, T. (2009). Association between bullying and psychosomatic problems: A meta-analysis. *Pediatrics, 123*(3), 1059-1065. doi:10.1542/peds.2008-1215

Glew, G. M., Fan, M., Katon, W., Rivara, F. P., & Kernic, M. A. (2005). Bullying, psychosocial adjustment, and academic performance in elementary school. *Arch Pediatr Adolesc Med, 159*(11), 1026-1031. doi:10.1001/archpedi.159.11.1026

Glover, T.A, and Albers, C.A. (2007) Considerations for evaluating universal screening assessments. *Journal of School Psychology*, *45*, 117-135.

Goodman, A., Lamping, D. L., & Ploubidis, G. B. (2010). When to use broader internalising and externalising subscales instead of the hypothesised five subscales on the strengths and difficulties questionnaire (sdq): Data from british parents, teachers and children. *Journal of Abnormal Child Psychology, 38*(8), 1179-1191. doi:10.1007/s10802-010-9434-x

Goodman, R. (1997). The strengths and difficulties questionnaire: A research note. *Journal of Child Psychology and Psychiatry, 38*(5), 581-586. doi:10.1111/j.1469-7610.1997.tb01545.x

Goodman, R. (2001). Psychometric properties of the strengths and difficulties questionnaire. *Journal of the American Academy of Child & Adolescent Psychiatry, 40*(11), 1337-1345.

Goodman, R., Ford, T., Richards, H., Gatward, R., & Meltzer, H. (2000). The development and well-being assessment: Description and initial validation of an integrated assessment of child and adolescent psychopathology. *J Child Psychol Psychiatry, 41*(5), 645-655.

Goodman, R., Ford, T., Simmons, H., Gatward, R., & Meltzer, H. (2000). Using the strengths and difficulties questionnaire (sdq) to screen for child psychiatric

disorders in a community sample. *The British Journal of Psychiatry, 177*(6), 534-539.

Goodman, R., Meltzer, H., & Bailey, V. (1998). The strengths and difficulties questionnaire: A pilot study on the validity of the self-report version. *European Child & Adolescent Psychiatry, 7*(3), 125-130. doi:10.1007/s007870050057

Gore, F. M., Bloem, P. J. N., Patton, G. C., Ferguson, J., Joseph, V., Coffey, C., . . . Mathers, C. D. (2011). Global burden of disease in young people aged 10–24 years: A systematic analysis. *The Lancet, 377*(9783), 2093-2102. doi:http://dx.doi.org/10.1016/S0140-6736(11)60512-6

Greenberg, M. T., Domitrovich, C., & Bumbarger, B. (2001). The prevention of mental disorders in school-aged children: Current state of the field. . *Prevention and Treatment, 4*

Gresham, F. M. (2005). Response to intervention: An alternative means of identifying students as emotionally disturbed. *Education and Treatment of Children, 28*(4), 328-344.

Griffiths, K., & Christensen, H. (2007). Internet-based mental health programs: A powerful tool in the rural medical kit. *Aust J Rural Health, 15*(2), 81 - 87.

Gulliver, A., Griffiths, K. M., & Christensen, H. (2010). Perceived barriers and facilitators to mental health help-seeking in young people: A systematic review. *BMC Psychiatry, 10*, 113.

Guzman, M. P., Jellinek, M., George, M., Hartley, M., Squicciarini, A. M., Canenguez, K. M., . . . Murphy, J. M. (2011). Mental health matters in elementary school: First-grade screening predicts fourth grade achievement test scores. *Eur Child Adolesc Psychiatry, 20*(8), 401-411. doi:10.1007/s00787-011-0191-3

Haines, J., Ziyadey, N. J., Franko, D. L., McDonald, J., Mond, J. M., & Austin, S. B. (2011). Screening high school students for eating disorders: Validity of brief behavioral and attitudinal measures. *Journal of School Health, 81*(9), 530-535.

Hallfors, D., Brodish, P. H., Khatapoush, S., Sanchez, V., Cho, H., & Steckler, A. (2006). Feasibility of screening adolescents for suicide risk in 'real world' high school settings. *American Journal of Public Health, 96*(2), 282-287.

Hallfors, D., Waller, M. W., Ford, C. A., Halpern, C. T., Brodish, P. H., & Iritani, B. (2004). Adolescent depression and suicide risk: Association with sex and drug behavior. *American Journal of Preventive Medicine, 27*(3), 224-231. doi:http://dx.doi.org/10.1016/j.amepre.2004.06.001

Hanisch, C., Freund-Braier, I., Hautmann, C., Jänen, N., Plück, J., Brix, G., . . . Döpfner, M. (2010). Detecting effects of the indicated prevention programme for externalizing problem behaviour (pep) on child symptoms, parenting, and parental quality of life in a randomized controlled trial. *Behavioural and Cognitive Psychotherapy, 38*(1), 95-112. doi:10.1017/S1352465809990440

Hausenblas, H. A., & Fallon, E. A. (2006). Exercise and body image: A meta-analysis. *Psychology & Health, 21*(1), 33-47. doi:10.1080/14768320500105270

Hawkins, J. D., Guo, J., Hill, K. G., Battin-Pearson, S., & Abbott, R. D. (2001). Long-term effects of the seattle social development intervention on school bonding trajectories. *Applied Developmental Science, 5*(4), 225-236. doi:10.1207/S1532480XADS0504_04

Headley, C. J., & Campbell, M. A. (2011). Teachers' recognition and referral of anxiety disorders in primary school children. *Australian Journal of Educational & Developmental Psychology, 11*, 78-90.

Heilbron, N., & Prinstein, M. J. (2010). Adolescent peer victimization, peer status, suicidal ideation, and nonsuicidal self-injury: Examining concurrent and longitudinal associations. *Merrill-Palmer Quarterly, 56*, 388+.

Hicks, B. M., Foster, K. T., Iacono, W. G., & McGue, M. (2013). Genetic and environmental influences on the familial transmission of externalizing disorders in adoptive and twin offspring. *JAMA Psychiatry, 70*(10), 1076-1083. doi:10.1001/jamapsychiatry.2013.258

Hoare, E., Skouteris, H., Fuller-Tyszkiewicz, M., Millar, L., & Allender, S. (2014). Associations between obesogenic risk factors and depression among adolescents: A systematic review. *Obesity Reviews, 15*(1), 40-51. doi:10.1111/obr.12069

Hong, J. S., & Espelage, D. L. (2012). A review of research on bullying and peer victimization in school: An ecological system analysis. *Aggression and Violent Behavior, 17*(4), 311-322. doi:http://dx.doi.org/10.1016/j.avb.2012.03.003

Hood, K. K., Huestis, S., Maher, A., Butler, D., Volkening, L., & Laffel, L. M. B. (2006). Depressive symptoms in children and adolescents with type 1 diabetes. *Association with diabetes-specific characteristics, 29*(6), 1389-1389. doi:10.2337/dc06-0087

Horgan, J. (2011). Why screening teens for mental illness is a terrible idea.

Horowitz, J. L., & Garber, J. (2006). The prevention of depressive symptoms in children and adolescents: A meta-analytic review. *J Consult Clin Psychol, 74*(3), 401-415. doi:10.1037/0022-006x.74.3.401

Hu, L. t., & Bentler, P. M. (1999). Cutoff criteria for fit indexes in covariance structure analysis: Conventional criteria versus new alternatives. *Structural Equation*

Modeling: A Multidisciplinary Journal, 6(1), 1-55.
doi:10.1080/10705519909540118

Hudson, C. G. (2005). Socioeconomic status and mental illness: Tests of the social
causation and selection hypotheses. *Am J Orthopsychiatry, 75*(1), 3-18.
doi:10.1037/0002-9432.75.1.3

Huebner, E. S. (1991). Initial development of the student's life satisfaction scale. *School
Psychology International, 12*(3), 231-240. doi:10.1177/0143034391123010

Huebner, E. S., & Hills, K. J. (2013). Assessment of subjective well-being in children
and adolescents In D. H. Saklofske, C. R. Reynolds, & V. Schwean (Eds.), *The
oxford handbook of child psychological assessment*. Oxford: Oxford University
Press.

Humphrey, N., & Wigelsworth, M. (2016). Making the case for universal school-based
mental health screening. *Emotional and Behavioural Difficulties, 21*(1), 22-42.
doi:10.1080/13632752.2015.1120051

Hunter, E. (2007). Disadvantage and discontent: A review of issues relevant to the
mental health of rural and remote indigenous australians. *Australian Journal of
Rural Health, 15*(2), 88-93. doi:10.1111/j.1440-1584.2007.00869.x

Hutchinson, D. M., Rapee, R. M., & Taylor, A. (2010). Body dissatisfaction and eating
disturbances in early adolescence: A structural modeling investigation
examining negative affect and peer factors. *The Journal of Early Adolescence,
30*(4), 489-517. doi:10.1177/0272431609340522

Inderbitzen, H. M., Walters, K. S., & Bukowski, A. L. (1997). The role of social anxiety
in adolescent peer relations: Differences among sociometric status groups and
rejected subgroups. *Journal of Clinical Child Psychology, 26*(4), 338-348.
doi:10.1207/s15374424jccp2604_2

Institute of Medicine Committee on Prevention of Mental Disorders. (1994). In P. J. Mrazek & R. J. Haggerty (Eds.), *Reducing risks for mental disorders: Frontiers for preventive intervention research*. Washington (DC): National Academies Press (US) Copyright 1994 by the National Academy of Sciences . All rights reserved.

Ito, A. (2011). Enhancing school connectedness in japan: The role of homeroom teachers in establishing a positive classroom climate *Asian Journal of Counselling, 18*(1&2), 41-62.

Ivancic, L., Perrens, B., Fildes, J., Perry, Y., & Christensen, H. (2014). *Youth mental health report*. Retrieved from

Ivarsson, T., Svalander, P., Litlere, O., & Nevonen, L. (2006). Weight concerns, body image, depression and anxiety in swedish adolescents. *Eat Behav, 7*(2), 161-175. doi:10.1016/j.eatbeh.2005.08.005

Jackson, G. E. (2006). Mental health screening in schools: Essentials of informed consent. *Ethical Human Psychology and Psychiatry, 8*(3), 217-224. doi:10.1891/ehppij-v8i3a004

Jessor, R., Turbin, M. S., & Costa, F. M. (1998). Risk and protection in successful outcomes among disadvantaged adolescents. *Applied Developmental Science, 2*(4), 194-208. doi:10.1207/s1532480xads0204_3

Jimerson, S. R., Campos, E., & Greif, J. L. (2003). Toward an understanding of definitions and measures of school engagement and related terms. *The California School Psychologist, 8*(1), 7-27. doi:10.1007/bf03340893

Johnston, C., & Mash, E. J. (2001). Families of children with attention-deficit/hyperactivity disorder: Review and recommendations for future research.

Clinical Child and Family Psychology Review, 4(3), 183-207. doi:10.1023/a:1017592030434

Jonsson, U., Bohman, H., von Knorring, L., Olsson, G., Paaren, A., & von Knorring, A.-L. (2011). Mental health outcome of long-term and episodic adolescent depression: 15-year follow-up of a community sample. *J Affect Disord, 130*(3), 395-404.

Jorm, A. F. (2000). Mental health literacy: Public knowledge and beliefs about mental disorders. *The British Journal of Psychiatry, 177*(5), 396-401. doi:10.1192/bjp.177.5.396

Jorm, A. F., Kitchener, B., Sawyer, M., Scales, H., & Cvetkovski, S. (2010). Mental health first aid training for high school teachers: A cluster randomized trial. *BMC Psychiatry, 10*(1), 51.

Jorm, A. F., Korten, A., Jacomb, P., Christensen, H., Rodgers, B., & Pollitt, P. (1997). "Mental health literacy": A survey of the public's ability to recognise mental disorders and their beliefs about the effectiveness of treatment. *Medical Journal of Australia, 166*(4), 182 - 186.

Jorm, A. F., Wright, A., & Morgan, A. J. (2007). Beliefs about appropriate first aid for young people with mental disorders: Findings from an australian national survey of youth and parents. *Early Interv Psychiatry, 1*(1), 61-70. doi:10.1111/j.1751-7893.2007.00012.x

Juvonen, J., Yueyan, W., & Espinoza, G. (2010). Bullying experiences and compromised academic performance across middle school grades. *The Journal of Early Adolescence, 31*(1), 152-173. doi:10.1177/0272431610379415

Kamphaus, R. W., & Reynolds, C. R. (2007). *Behavior assessment system for children – second edition (basc-2): Behavioral and emotional screening system (bess).* Bloomington, MN: Pearson.

Kamphaus, R. W., & Reynolds, C. R. (2015). *Behavior assessment system for children - third edition (basc-3): Behavioral and emotional screening system (bess).* Bloomington, MN: Pearson.

Kaplan, A. (2006, 2006/03/01/). Battling a national killer: Teenscreen aims to prevent teen suicide. *Psychiatric Times, 23,* 1.

Kater, K. J., Rohwer, J., & Londre, K. (2002). Evaluation of an upper elementary school program to prevent body image, eating, and weight concerns. *Journal of School Health, 72*(5), 199.

Katz, C., Bolton, S.-L., Katz, L. Y., Isaak, C., Tilston-Jones, T., Sareen, J., & Swampy Cree Suicide Prevention, T. (2013). A systematic review of school-based suicide prevention programs. *Depression and Anxiety, 30*(10), 1030-1045. doi:10.1002/da.22114

Kessler, R. C., Amminger, G. P., Aguilar-Gaxiola, S., Alonso, J., Lee, S., & Ustun, T. B. (2007). Age of onset of mental disorders: A review of recent literature. *Curr Opin Psychiatry, 20*(4), 359-364. doi:10.1097/YCO.0b013e32816ebc8c

Kessler, R. C., Avenevoli, S., & Merikangas, K. R. (2001). Mood disorders in children and adolescents: An epidemiologic perspective. *Biological Psychiatry, 49*(12), 1002-1014. doi:10.1016/S0006-3223(01)01129-5

Kessler, R. C., Berglund, P., Demler, O., Jin, R., Merikangas, K. R., & Walters, E. E. (2005). Lifetime prevalence and age-of-onset distributions of dsm-iv disorders in the national comorbidity survey replication. *Archives Of General Psychiatry, 62*(6), 593-602. doi:10.1001/archpsyc.62.6.593

Kessler, R. C., McLaughlin, K. A., Green, J. G., Gruber, M. J., Sampson, N. A., Zaslavsky, A. M., . . . Williams, D. R. (2010). Childhood adversities and adult psychopathology in the who world mental health surveys. *The British Journal of Psychiatry, 197*(5), 378-385. doi:10.1192/bjp.bp.110.080499

Kettler, R. J., Glover, T. A., Albers, C. A., & Feeney-Kettler, K. A. (2014). *Universal screening in educaitonal settings: Evidence-based decision making for schools.* Washington, DC, USA: American Psychological Association.

Kidger, J., Araya, R., Donovan, J., & Gunnell, D. (2012). The effect of the school environment on the emotional health of adolescents: A systematic review. *Pediatrics, 129*(5), 925-949. doi:10.1542/peds.2011-2248

Kieling, C., Baker-Henningham, H., Belfer, M., Conti, G., Ertem, I., Omigbodun, O., . . . Rahman, A. (2011). Child and adolescent mental health worldwide: Evidence for action. *The Lancet, 378*(9801), 1515-1525. doi:http://dx.doi.org/10.1016/S0140-6736(11)60827-1

Kim, D.-S. (2009). Body image dissatisfaction as an important contributor to suicidal ideation in korean adolescents: Gender difference and mediation of parent and peer relationships. *Journal of Psychosomatic Research, 66*(4), 297-303. doi:http://dx.doi.org/10.1016/j.jpsychores.2008.08.005

Kim, E. K., Furlong, M. J., Dowdy, E., & Felix, E. D. (2014). Exploring the relative contributions of the strength and distress components of dual-factor complete mental health screening. *Canadian Journal of School Psychology, 29*(2), 127-140. doi:10.1177/0829573514529567

Kim, Y. J., Moon, S. S., & Kim, M. J. (2011). Physical and psycho-social predictors of adolescents' suicide behaviors. *Child and Adolescent Social Work Journal, 28*(6), 421-438. doi:10.1007/s10560-011-0241-1

King, K. A., Vidourek, R. A., Davis, B., & McClellan, W. (2002). Increasing self-esteem and school connectedness through a multidimensional mentoring program. *Journal of School Health, 72*(7), 294-299. doi:10.1111/j.1746-1561.2002.tb01336.x

Kline, M. (2013). Exploratory and confirmatory factor analysis. In Y. Petscher & C. Schatschneider (Eds.), *Applied quantitative analysis in the social sciences* (pp. 171-207). New York: Routledge.

Kline, R. B. (2005). *Principles and practice of structural equation modeling* (Second ed.). New York: Guilford Press.

Knapp, M., McDaid, D., & Parsonage, M. (2011). *Mental health promotion and mental illness prevention: The economic case*. Retrieved from London: http://eprints.lse.ac.uk/32311/1/Knapp_et_al__MHPP_The_Economic_Case.pdf

Kostanski, M., & Gullone, E. (1998). Adolescent body image dissatisfaction: Relationships with self-esteem, anxiety, and depression controlling for body mass. *Journal of Child Psychology and Psychiatry, 39*(2), 255-262.

Kowalenko, N., Rapee, R. M., Simmons, J., Wignall, A., Hoge, R., Whitefield, K., . . . Baillie, A. J. (2005). Short-term effectiveness of a school-based early intervention program for adolescent depression. *Clinical Child Psychology and Psychiatry, 10*(4), 493-507. doi:10.1177/1359104505056311

Kratochwill, T. R. (2007). Preparing psychologists for evidence-based school practice: Lessons learned and challenges ahead. *American Psychologist, 62*(8), 829-843. doi:doi : 10.1037/0003-066X.62.8.829

Kuo, E., Stoep, A. V., McCauley, E., & Kernic, M. A. (2009). Cost-effectiveness of a school-based emotional health screening program. *Journal of School Health, 79*(6), 277-285. doi:10.1111/j.1746-1561.2009.00410.x

Lane, K. L., Kalberg, J. R., Parks, R. J., & Carter, E. W. (2008). Student risk screening

    scale: Initial evidence for score reliability and validity at the high school level.

    Journal of Emotional and Behavioral Disorders, 16(3), 178-190.

    doi:10.1177/1063426608314218

Langford, R., Bonell, C., Jones, H., Pouliou, T., Murphy, S., Waters, E., . . . Campbell,

    R. (2015). The world health organization's health promoting schools framework:

    A cochrane systematic review and meta-analysis. *BMC Public Health, 15*, 130.

    doi:10.1186/s12889-015-1360-y

Langford, R., Bonell, C. P., Jones, H. E., Pouliou, T., Murphy, S. M., Waters, E., . . .

    Campbell, R. (2014). The who health promoting school framework for

    improving the health and well-being of students and their academic

    achievement. *Cochrane Database Syst Rev, 4*, Cd008958.

    doi:10.1002/14651858.CD008958.pub2

Lanza, H. I., Echols, L., & Graham, S. (2013). Deviating from the norm: Body mass

    index (bmi) differences and psychosocial adjustment among early adolescent

    girls. *Journal of Pediatric Psychology, 38*(4), 376-386.

    doi:10.1093/jpepsy/jss130

Lapan, R. T., Wells, R., Petersen, J., & McCann, L. A. (2014). Stand tall to protect

    students: School counselors strengthening school connectedness. *Journal of*

    Counseling & Development, 92(3), 304-315. doi:10.1002/j.1556-

    6676.2014.00158.x

Larson, R. W., Moneta, G., Richards, M. H., & Wilson, S. (2002). Continuity, stability,

    and change in daily emotional experience across adolescence. *Child Dev, 73*(4),

    1151-1165. doi:10.1111/1467-8624.00464

Latimer, K., Wilson, P., Kemp, J., Thompson, L., Sim, F., Gillberg, C., . . . Minnis, H. (2012). Disruptive behaviour disorders: A systematic review of environmental antenatal and early years risk factors. *Child: Care, Health and Development, 38*(5), 611-628. doi:10.1111/j.1365-2214.2012.01366.x

Lawlor, D. A., & Hopker, S. W. (2001). *The effectiveness of exercise as an intervention in the management of depression: Systematic review and meta-regression analysis of randomised controlled trials* (Vol. 322).

Lawrence, D., Johnson, S., Hafekost, J., Boterhoven De Haan, K., Sawyer, M. G., Ainley, J., & Zubrick, S. R. (2015). *The mental health of children and adolescents. Report on the second australian child and adolescent survey of mental health and wellbeing*. Retrieved from Canberra:

Lenzer, J. (2004). Bush plans to screen whole us population for mental illness. *BMJ, 328*(7454), 1458.

Lenzer, J. (2005). Us teenager's parents sue school over depression screening test. *British Medical Journal, 331*, 714.

Levitt, J., Saka, N., Romanelli, L. H., & Hoagwood, K. (2007). Early identification of mental health problems in schools: The status of instrumentation. *Journal of School Psychology, 45*, 163-191.

Lewinsohn, P. M., Holm-Denoma, J. M., Small, J. W., Seeley, J. R., & Joiner Jr, T. E. (2008). Separation anxiety disorder in childhood as a risk factor for future mental illness. *Journal of the American Academy of Child & Adolescent Psychiatry, 47*(5), 548-555. doi:http://dx.doi.org/10.1097/CHI.0b013e31816765e7

Lund, R., Nielsen, K. K., Hansen, D. H., Kriegbaum, M., Molbo, D., Due, P., & Christensen, U. (2009). Exposure to bullying at school and depression in

adulthood: A study of danish men born in 1953. *The European Journal of Public Health, 19*(1), 111-116. doi:10.1093/eurpub/ckn101

Lyon, A. R., Maras, M. A., Pate, C. M., Igusa, T., & Vander Stoep, A. (2016). Modeling the impact of school-based universal depression screening on additional service capacity needs: A system dynamics approach. *Administration and Policy in Mental Health and Mental Health Services Research, 43*(2), 168-188. doi:10.1007/s10488-015-0628-y

Marmorstein, N. R., & Iacono, W. G. (2004). Major depression and conduct disorder in youth: Associations with parental psychopathology and parent–child conflict. *Journal of Child Psychology and Psychiatry, 45*(2), 377-386. doi:10.1111/j.1469-7610.2004.00228.x

Marraccini, M. E., & Brier, Z. M. (2017). School connectedness and suicidal thoughts and behaviors: A systematic meta-analysis. *Sch Psychol Q, 32*(1), 5-21. doi:10.1037/spq0000192

Matlin, S. L., Molock, S. D., & Tebes, J. K. (2011). Suicidality and depression among african american adolescents: The role of family and peer support and community connectedness. *American Journal of Orthopsychiatry, 81*(1), 108-117. doi:10.1111/j.1939-0025.2010.01078.x

Matta Mello Portugal, E., Cevada, T., Sobral Monteiro-Junior, R., Teixeira Guimarães, T., da Cruz Rubini, E., Lattari, E., . . . Camaz Deslandes, A. (2013). Neuroscience of exercise: From neurobiology mechanisms to mental health. *Neuropsychobiology, 68*(1), 1-14.

McLaughlin, K. A., Costello, E. J., Leblanc, W., Sampson, N. A., & Kessler, R. C. (2012). Socioeconomic status and adolescent mental disorders. *American Journal of Public Health, 102*(9), 1742-1750. doi:10.2105/AJPH.2011.300477

McLeod, B. D., Wood, J. J., & Weisz, J. R. (2007). Examining the association between parenting and childhood anxiety: A meta-analysis. *Clinical Psychology Review, 27*(2), 155-172. doi:http://dx.doi.org/10.1016/j.cpr.2006.09.002

McLoone, J., Hudson, J. L., & Rapee, R. M. (2006). Treating anxiety disorders in a school setting. *Education & Treatment of Children, 29*(2), 219.

McNeely, C. A., Nonnemaker, J. M., & Blum, R. W. (2002). Promoting school connectedness: Evidence from the national longitudinal study of adolescent health. *Journal of School Health, 72*(4), 138-146. doi:10.1111/j.1746-1561.2002.tb06533.x

Mehrotra, K., Ahamad Manzur, S., Ooi, Y. P., Lim, C. G., Fung, D. S. S., & Ang, R. P. (2011). Prevalence of behavioral and emotional problems in children at-risk for learning difficulties. *European Psychiatry, 26, Supplement 1*(0), 326. doi:http://dx.doi.org/10.1016/S0924-9338(11)72035-1

Mendenhall, A. (2012). Predictors of service utilization among youth diagnosed with mood disorders. *Journal of Child & Family Studies, 21*(4), 603-611. doi:10.1007/s10826-011-9512-x

Merglen, A., Flatz, A., Bélanger, R. E., Michaud, P.-A., & Suris, J.-C. (2014). Weekly sport practice and adolescent well-being. *Archives of Disease in Childhood, 99*(3), 208-210. doi:10.1136/archdischild-2013-303729

Merikangas, K. R., He, J., Burstein, M., Swanson, S. A., Avenevoli, S., Cui, L., . . . Swendsen, J. (2010). Lifetime prevelence of mental disorders in us adolescents: Results from the national comorbidity study-adolescent supplement (ncs-a). *Journal of the American Academy of Child and Adolescent Psychiatry, 49*(10), 980-989.

Merikangas, K. R., Nakamura, E. F., & Kessler, R. C. (2009). Epidemiology of mental disorders in children and adolescents. *Dialogues in Clinical Neuroscience, 11*(1), 7-20.

Merry, S. N., Hetrick, S. E., Cox, G. R., Brudevold-Iversen, T., Bir, J. J., & McDowell, H. (2011). Psychological and educational interventions for preventing depression in children and adolescents. *Cochrane Database Syst Rev*(12), Cd003380. doi:10.1002/14651858.CD003380.pub3

Merry, S. N., Hetrick, S. E., Cox, G. R., Brudevold-Iversen, T., Bir, J. J., & McDowell, H. (2012). Cochrane review: Psychological and educational interventions for preventing depression in children and adolescents. *Evidence-Based Child Health: A Cochrane Review Journal, 7*(5), 1409-1685. doi:10.1002/ebch.1867

Mihalopoulos, C., & Vos, T. (2013). Cost-effectiveness of preventive interventions for depressive disorders: An overview. *Expert Review of Pharmacoeconomics & Outcomes Research, 13*, 237+.

Mihalopoulos, C., Vos, T., Pirkis, J., & Carter, R. (2012). The population cost-effectiveness of interventions designed to prevent childhood depression. *Pediatrics, 129*(3), e723-e730. doi:10.1542/peds.2011-1823

Mihalopoulos, C., Vos, T., Pirkis, J., Smit, F., & Carter, R. (2011). Do indicated preventive interventions for depression represent good value for money? *Australian and New Zealand Journal of Psychiatry, 45*(1), 36-44. doi:doi:10.3109/00048674.2010.501024

Miller, D. N., Eckert, T. L., DuPaul, G. J., & White, G. P. (1999). Adolescent suicide prevention: Acceptability of school-based programs among secondary school principals. *Suicide and Life Threatening Behavior, 29*(1), 72-85.

Miller, L. D., Martinez, Y. J., Shumka, E., & Baker, H. (2014). Multiple informant agreement of child, parent, and teacher ratings of child anxiety within community samples. *Can J Psychiatry, 59*(1), 34-39.

Millings, A., Buck, R., Montgomery, A., Spears, M., & Stallard, P. (2012). School connectedness, peer attachment, and self-esteem as predictors of adolescent depression. *J Adolesc, 35*(4), 1061-1067. doi:http://dx.doi.org/10.1016/j.adolescence.2012.02.015

Mission Australia. (2013). *Youth survey 2013*. Retrieved from https://cica.org.au/wp-content/uploads/mission-australia-youth-survey-2013-final-report.pdf

Mojtabai, R., & Olfson, M. (2008). Parental detection of youth's self-harm behavior. *Suicide and Life-Threatening Behavior, 38*(1), 60-73. doi:10.1521/suli.2008.38.1.60

Mooney, R. L. (1942). Surveying high-school students' problems by means of a problem check list. *Educational Research Bulletin, 21*(3), 57-69.

Moor, S., Maguire, A., McQueen, H., Wells, E., Elton, R., Wrate, R., & Blair, C. (2007). Improving the recognition of depression in adolescence: Can we teach the teachers? *J Adolesc, 30*, 81 - 95.

Moore, T. H. M., Zammit, S., Lingford-Hughes, A., Barnes, T. R. E., Jones, P. B., Burke, M., & Lewis, G. (2007). Cannabis use and risk of psychotic or affective mental health outcomes: A systematic review. *The Lancet, 370*(9584), 319-328. doi:http://dx.doi.org/10.1016/S0140-6736(07)61162-3

Morgan, A. J., Parker, A., Alvarez-Jimenez, M., & Jorm, A. F. (2013). Exercise and mental health: An exercise and sports science australia commissioned review. *Journal of Exercise Physiologyonline, 16*(4).

Mugnaini, D., Lassi, S., La Malfa, G., & Albertini, G. (2009). Internalizing correlates of dyslexia. *World Journal of Pediatrics, 5*(4), 255-264. doi:10.1007/s12519-009-0049-7

Mũkoma, W., & Flisher, A. J. (2004). Evaluations of health promoting schools: A review of nine studies. *Health Promotion International, 19*(3), 357-368. doi:10.1093/heapro/dah309

Murray, C., & Greenberg, M. T. (2000). Children's relationship with teachers and bonds with school an investigation of patterns and correlates in middle childhood. *Journal of School Psychology, 38*(5), 423-445. doi:http://doi.org/10.1016/S0022-4405(00)00034-0

Nadeem, E., Jaycox, L., Langley, A., Wong, M., Kataoka, S., & Stein, B. (2014). Effects of trauma on students: Early intervention through the cognitive behavioral intervention for trauma in schools. In M. D. Weist, N. A. Lever, C. P. Bradshaw, & J. S. Owens (Eds.), *Handbook of school mental health* (pp. 145-157): Springer US.

National Research Council and Institute of Medicine. (2009). *Preventing mental, emotional and behavioral disorders among young people: Progress and possibilities*. Retrieved from Washington, D.C.: http://www.ncbi.nlm.nih.gov/books/NBK32775/

Neil, A. L., & Christensen, H. (2009). Efficacy and effectiveness of school-based prevention and early intervention programs for anxiety. *Clinical Psychology Review, 29*, 208-215.

Nelson, J. M. (2011). Learning disabilities and anxiety: A meta-analysis. *Journal of Learning Disabilities, 44*(1), 3-17. doi:10.1177/0022219409359939

Netemeyer, R. G., Bearden, W. O., & Sharma, S. (2003). *Scale development: Issues and applications*. Thousand Oaks, CA: Sage.

Newman, S. C., Bland, R. C., & Thompson, A. H. (2012). Long-term course and outcome in schizophrenia: A 34-year follow-up study in alberta, canada. *Psychol Med, 42*(10), 2137-2143. doi:10.1017/S0033291712000177

Newton, N. C., Andrews, G., Teesson, M., & Vogl, L. E. (2009). Delivering prevention for alcohol and cannabis using the internet: A cluster randomised controlled trial. *Prev Med, 48*. doi:10.1016/j.ypmed.2009.04.009

Newton, N. C., Teesson, M., Vogl, L., & Andrews, G. (2010). Internet-based prevention for alcohol and cannabis use: Final results of the climate schools course. *Addiction, 105*. doi:10.1111/j.1360-0443.2009.02853.x

Ng, T. W. H., & Feldman, D. C. (2012). Evaluating six common stereotypes about older workers with meta-analytical data. *Personnel Psychology, 65*(4), 821-858. doi:10.1111/peps.12003

Nolen-Hoeksema, S., & Girgus, J. S. (1994). The emergence of gender differences in depression during adolescence. *Psychological Bulletin, 115*(3), 424-443. doi:10.1037/0033-2909.115.3.424

Nolen-Hoeksema, S., & Watkins, E. R. (2011). A heuristic for developing transdiagnostic models of psychopathology: Explaining multifinality and divergent trajectories. *Perspectives on Psychological Science, 6*(6), 589-609. doi:10.1177/1745691611419672

O'Dea, J., & Maloney, D. (2000). Preventing eating and body image problems in children and adolescents using the health promoting schools framework. *Journal of School Health, 70*(1), 18-21.

O'Dea, J. A. (2005). School-based health education strategies for the improvement of body image and prevention of eating problems: An overview of safe and successful interventions. *Health Education, 105*(1), 11-33. doi:doi:10.1108/09654280510572277

Offord, D. R., Kraemer, H. C., Kazdin, A. E., Jensen, P. S., & Harrington, R. (1998). Lowering the burden of suffering from child psychiatric disorder: Trade‐offs among clinical, targeted, and universal interventions. *Journal of the American Academy of Child & Adolescent Psychiatry, 37*(7), 686-694. doi:10.1097/00004583-199807000-00007

Ogburn, K. M., Sanches, M., Williamson, D. E., Caetano, S. C., Olvera, R. L., Pliszka, S., . . . Soares, J. C. (2010). Family environment and pediatric major depressive disorder. *Psychopathology, 43*(5), 312-318.

Ohannessian, C. M., Hesselbrock, V. M., Kramer, J., Kuperman, S., Bucholz, K. K., Schuckit, M. A., & Nurnberger, J. I. (2005). The relationship between parental psychopathology and adolescent psychopathology. *Journal of Emotional and Behavioral Disorders, 13*(2), 67-76. doi:doi:10.1177/10634266050130020101

Olivardia, R., Pope Jr, H. G., Borowiecki Iii, J. J., & Cohane, G. H. (2004). Biceps and body image: The relationship between muscularity and self-esteem, depression, and eating disorder symptoms. *Psychology of Men & Masculinity, 5*(2), 112-120. doi:10.1037/1524-9220.5.2.112

Olsson, G., & von Knorring, A. L. (1997). Depression among swedish adolescents measured by the self-rating scale center for epidemiology studies-depression child (ces-dc). *Eur Child Adolesc Psychiatry, 6*(2), 81-87.

Ozmen, D., Ozmen, E., Ergin, D., Cetinkaya, A. C., Sen, N., Dundar, P. E., & Taskin, E. O. (2007). The association of self-esteem, depression and body satisfaction

with obesity among turkish adolescents. *BMC Public Health, 7*, 80.

doi:10.1186/1471-2458-7-80

Parfitt, G., & Eston, R. G. (2005). The relationship between children's habitual activity

level and psychological well-being. *Acta Paediatr, 94*(12), 1791-1797.

doi:10.1080/08035250500268266

Patel, V., Flisher, A. J., Hetrick, S., & McGorry, P. (2007). Mental health of young

people: A global public-health challenge. *Lancet, 369*(9569), 1302-1313.

doi:10.1016/s0140-6736(07)60368-7

Paus, T., Keshavan, M., & Giedd, J. N. (2008). Why do many psychiatric disorders

emerge during adolescence? *Nat Rev Neurosci, 9*(12), 947-957.

doi:10.1038/nrn2513

Penedo, F. J., & Dahn, J. R. (2005). Exercise and well-being: A review of mental and

physical health benefits associated with physical activity. *Curr Opin Psychiatry,

18*(2), 189-193.

Pescosolido, B. A., Jensen, P. S., Martin, J. K., Perry, B. L., Olafsdottir, S., & Fettes, D.

(2008). Public knowledge and assessment of child mental health problems:

Findings from the national stigma study-children. *Journal of the American

Academy of Child & Adolescent Psychiatry, 47*(3), 339-349.

doi:http://dx.doi.org/10.1097/CHI.0b013e318160e3a0

Pierce, C. D., Lambert, M., & Alamer, H. (2016). Convergent, criterion and social

validity of the emotional and behavioral screener. *Journal of Child and Family

Studies, 25*(1), 77-85. doi:10.1007/s10826-015-0206-7

Polanczyk, G. V., Salum, G. A., Sugaya, L. S., Caye, A., & Rohde, L. A. (2015).

Annual research review: A meta-analysis of the worldwide prevalence of mental

disorders in children and adolescents. *J Child Psychol Psychiatry, 56*(3), 345-365. doi:10.1111/jcpp.12381

Ponterotto, J., & Ruckdeschel, D. E. (2007). An overview of coefficient alpha and a reliability matrix for estimating adequacy of internal consistency coefficients with psychological measures. *Perceptual and Motor Skills, 105*, 997-1014.

Poulin, F., & Chan, A. (2010). Friendship stability and change in childhood and adolescence. *Developmental Review, 30*(3), 257-272. doi:http://dx.doi.org/10.1016/j.dr.2009.01.001

Puig-Antich, J., Kaufman, J., Ryan, N. D., Williamson, D. E., Dahl, R. E., Lukens, E., . . . Nelson, B. (1993). The psychosocial functioning and family environment of depressed adolescents. *Journal of the American Academy of Child and Adolescent Psychiatry, 32*(2), 244-253.

Quinn, P., & Chan, S. (2009). Secondary school students' preferences for location, format of counselling and gender of counsellor: A replication study based in northern ireland. *Counselling and Psychotherapy Research, 9*(3), 204-209. doi:10.1080/14733140903031119

R Core Team. (2013). R: A language and environment for statistical computing. Vienna, Austria: R Foundation for Statistical Computing. Retrieved from http://www.R-project.org/

Rapee, R. M. (1997). Potential role of childrearing practices in the development of anxiety and depression. *Clinical Psychology Review, 17*(1), 47-67. doi:http://dx.doi.org/10.1016/S0272-7358(96)00040-2

Rapee, R. M. (2012a). Anxiety disorders in children and adolescents: Nature, development, treatment and prevention. In J. M. Rey (Ed.), IACAPAP Textbook of Child and Adolescent Mental Health. Geneva: International Association for

Child and Adolescent Psychiatry and Allied Professions. Retrieved from
http://iacapap.org/iacapap-textbook-of-child-and-adolescent-mental-health.

Rapee, R. M. (2012b). Family factors in the development and management of anxiety
disorders. *Clinical Child and Family Psychology Review, 15*(1), 69-80.
doi:10.1007/s10567-011-0106-3

Rapee, R. M., Schniering, C. A., & Hudson, J. L. (2009). Anxiety disorders during
childhood and adolescence: Origins and treatment. *Annual Review of Clinical
Psychology, 5*(1), 311-341. doi:doi:10.1146/annurev.clinpsy.032408.153628

Rasberry, C. N., Lee, S. M., Robin, L., Laris, B. A., Russell, L. A., Coyle, K. K., &
Nihiser, A. J. (2011). The association between school-based physical activity,
including physical education, and academic performance: A systematic review
of the literature. *Preventive Medicine, 52, Supplement*(0), S10-S20.
doi:http://dx.doi.org/10.1016/j.ypmed.2011.01.027

Raufelder, D., Waak, S., Melchior, A., & Ittel, A. (2013). The role of sport involvement
and general self-worth in the interplay between body dissatisfaction, worry, and
school disaffection in preadolescent boys and girls. *Child Development
Research, 2013*, 11. doi:10.1155/2013/835149

Ravens-Sieberer, U., Wille, N., Erhart, M., Bettge, S., Wittchen, H.-U., Rothenberger,
A., . . . Döpfner, M. (2008). Prevalence of mental health problems among
children and adolescents in germany: Results of the bella study within the
national health interview and examination survey. *European Child & Adolescent
Psychiatry, 17*, 22-33. doi:10.1007/s00787-008-1003-2

Rees, D., & Sabia, J. (2010). Exercise and adolescent mental health: New evidence from
longitudinal data. *Journal of Mental Health Policy and Economics, 13*(1), 13-25.

Reid, R., Gonzalez, J. E., Nordness, P. D., Trout, A., & Epstein, M. H. (2004). A meta-analysis of the academic status of students with emotional/behavioral disturbance. *The Journal of Special Education, 38*(3), 130-143. doi:10.1177/00224669040380030101

Reijntjes, A., Kamphuis, J. H., Prinzie, P., Boelen, P. A., van der Schoot, M., & Telch, M. J. (2011). Prospective linkages between peer victimization and externalizing problems in children: A meta-analysis. *Aggressive Behavior, 37*(3), 215-222. doi:10.1002/ab.20374

Reijntjes, A., Kamphuis, J. H., Prinzie, P., & Telch, M. J. (2010). Peer victimization and internalizing problems in children: A meta-analysis of longitudinal studies. *Child Abuse & Neglect, 34*(4), 244-252. doi:http://dx.doi.org/10.1016/j.chiabu.2009.07.009

Reinke, W. M. (2011). Supporting children's mental health in schools: Teacher perceptions of needs, roles, and barriers. *School psychology quarterly, 26*(1), 1-13. doi:10.1037/a0022714

Reiss, F. (2013). Socioeconomic inequalities and mental health problems in children and adolescents: A systematic review. *Social Science & Medicine, 90*, 24-31. doi:http://dx.doi.org/10.1016/j.socscimed.2013.04.026

Resnick, M. D. (2000). Protective factors, resiliency, and healthy youth development. *Adolescent Medicine, 11*(1), 157-164.

Revelle, W., & Zinbarg, R. E. (2009). Coefficients alpha, beta, omega, and the glb: Comments on sijtsma. *Psychometrika, 74*(1), 145-154. doi:10.1007/s11336-008-9102-z

Rickwood, D. J. (2010). Promoting youth mental health through computer-mediated communication. *International Journal of Mental Health Promotion, 12*(3), 32-44. doi:10.1080/14623730.2010.9721817

Rickwood, D. J., Deane, F., Wilson, C. J., & Ciarrochi, J. (2005a). Young people's help-seeking for mental health problems. *AeJAMH (Australian e-Journal for the Advancement of Mental Health), 4*(3).

Rickwood, D. J., Deane, F. P., & Wilson, C. J. (2007). When and how do young people seek professional help for mental health problems? . *Medical Journal of Australia, 187*(7), S35-S39.

Rickwood, D. J., Deane, F. P., Wilson, C. J., & Ciarrochi, J. V. (2005b). Young people's help-seeking for mental health problems. *e-Journal for the Advancement of Mental Health, 4*(3), 1-34.

Rierdan, J., Koff, E., & Stubbs, M. L. (1989). A longitudinal analysis of body image as a predictor of the onset and persistence of adolescent girls' depression. *The Journal of Early Adolescence, 9*(4), 454-466. doi:10.1177/0272431689094006

Riglin, L., Petrides, K. V., Frederickson, N., & Rice, F. (2014). The relationship between emotional problems and subsequent school attainment: A meta-analysis. *J Adolesc, 37*(4), 335-346. doi:10.1016/j.adolescence.2014.02.010

Robb, J., Sibley, M., Pelham, W., Jr., Michael Foster, E., Molina, B. G., Gnagy, E., & Kuriyan, A. (2011). The estimated annual cost of adhd to the us education system. *School Ment Health, 3*(3), 169-177. doi:10.1007/s12310-011-9057-6

Rogers, C. R. (1942). Mental health findings in three elementary schools. *Educational Research Bulletin, 21*(3), 69-79+86.

Romer, D., & McIntosh, M. (2005). The roles and perspectives of school mental health professionals in promoting adolescent mental health. In D. L. Evans, E. B. Foa,

R. E. Gur, H. Hendin, C. P. O'Brien, M. E. P. Seligman, & B. T. Walsh (Eds.), *Treating and preventing adolescent mental health disorders: What we know and what we don't know* (pp. 597-615). New York, New York: Oxford University Press.

Ross, A. G., Shochet, I. M., & Bellair, R. (2010). The role of social skills and school connectedness in preadolescent depressive symptoms. *Journal of Clinical Child and Adolescent Psychology, 39*(2), 269-275. doi:10.1080/15374410903532692

Ross, M. R., Powell, S. R., & Elias, M. J. (2002). New roles for school psychologists: Addressing the social and emotional learning needs of students. *School Psychology Review, 31*(1), 43.

Rothbaum, F., & Weisz, J. R. (1994). Parental caregiving and child externalizing behavior in nonclinical samples: A meta-analysis. *Psychol Bull, 116*(1), 55-74.

Rutter, M. (1979). Protective factors in children's responses to stress and disadvantage. In M. W. Kent & J. E. Rolf (Eds.), *Social competence in children* (pp. 49-74). Hanover, NH: University Press of New England.

Rutter, M. (1987). Psychosocial resilience and protective mechanisms. *American Journal of Orthopsychiatry, 57*(3), 316-331. doi:10.1111/j.1939-0025.1987.tb03541.x

Ryan, A. M. (2011). Peer relationships and academic adjustment during early adolescence. *The Journal of Early Adolescence, 31*(1), 5-12. doi:10.1177/0272431610387605

Samek, D. R., Hicks, B. M., Keyes, M. A., Bailey, J., McGue, M., & Iacono, W. G. (2015). Gene–environment interplay between parent–child relationship problems and externalizing disorders in adolescence and young adulthood. *Psychol Med, 45*(02), 333-344. doi:doi:10.1017/S0033291714001445

Scherff, M. S., Eckert, T. L., & Miller, D. N. (2005). Youth suicide prevention: A
    survey of public school superintendents' acceptability of school-based programs.
    Suicide and Life Threatening Behavior, 35(2), 154-169.

Schwartz, D., Gorman, A. H., Nakamoto, J., & Toblin, R. L. (2005). Victimization in
    the peer group and children's academic functioning. *Journal of Educational
    Psychology, 97*(3), 425-435.

Schwartz, I. S., & Baer, D. M. (1991). Social validity assessments: Is current practice
    state of the art? *Journal of Applied Behavior Analysis, 24*(2), 189-204.
    doi:10.1901/jaba.1991.24-189

Scoring the SDQ. (n.d.).   Retrieved from http://www.sdqinfo.com/py/sdqinfo/c0.py

Scott, M. A., Wilcox, H. C., Schonfeld, I. S., Davies, M., Hick, R. C., Turner, J. B., &
    Shaffer, D. (2009). School-based screening to identify at-risk students not
    already known to school professionals: The columbia suicide screen. *American
    Journal of Public Health, 99*(2), 334-339.

Seeley, J. R., Stice, E., & Rohde, P. (2009). Screening for depression prevention:
    Identifying adolescent girls at high risk for future depression. *Journal of
    abnormal psychology, 118*(1), 161-170. doi:10.1037/a0014741

Shaffer, D., Fisher, P., Lucas, C. P., Dulcan, M. K., & Schwab-Stone, M. E. (2000).
    Nimh diagnostic interview schedule for children version iv (nimh disc-iv):
    Description, differences from previous versions, and reliability of some common
    diagnoses. *J Am Acad Child Adolesc Psychiatry, 39*(1), 28-38.
    doi:10.1097/00004583-200001000-00014

Shaffer, D., Scott, M., Wilcox, H., Maslow, C., Hicks, R., Lucas, C. P., . . . Greenwald,
    S. (2004). The columbia suicidescreen: Validity and reliability of a screen for
    youth suicide and depression. *Journal of the American Academy of Child &*

Adolescent Psychiatry, 43(1), 71-79. doi:http://dx.doi.org/10.1097/00004583-200401000-00016

Shochet, I. M., Dadds, M. R., Ham, D., & Montague, R. (2006). School connectedness is an underemphasized parameter in adolescent mental health: Results of a community prediction study. *Journal of Clinical Child and Adolescent Psychology, 35*(2), 170-179. doi:10.1207/s15374424jccp3502_1

Shochet, I. M., Dadds, M. R., Holland, D., Whitefield, K., Harnett, P. H., & Osgarby, S. M. (2001). The efficacy of a universal school-based program to prevent adolescent depression. *Journal of Clinical Child & Adolescent Psychology, 30*(3), 303-315. doi:10.1207/S15374424JCCP3003_3

Shochet, I. M., Homel, R., Cockshaw, W. D., & Montgomery, D. T. (2008). How do school connectedness and attachment to parents interrelate in predicting adolescent depressive symptoms? *Journal of Clinical Child & Adolescent Psychology, 37*(3), 676-681. doi:10.1080/15374410802148053

Shroff, H., & Thompson, J. K. (2006). Peer influences, body-image dissatisfaction, eating dysfunction and self-esteem in adolescent girls. *Journal of Health Psychology, 11*(4), 533-551. doi:doi:10.1177/1359105306065015

Simon, E., & Bogels, S. M. (2009). Screening for anxiety disorders in children. *Eur Child Adolesc Psychiatry, 18*(10), 625-634. doi:10.1007/s00787-009-0023-x

Simons, J., Capio, C. M., Adriaenssens, P., Delbroek, H., & Vandenbussche, I. (2012). Self-concept and physical self-concept in psychiatric children and adolescents. *Research in Developmental Disabilities, 33*(3), 874-881. doi:http://dx.doi.org/10.1016/j.ridd.2011.12.012

Slater, A., & Tiggemann, M. (2011). Gender differences in adolescent sport

   participation, teasing, self-objectification and body image concerns. *J Adolesc,*

   34(3), 455-463. doi:http://dx.doi.org/10.1016/j.adolescence.2010.06.007

Slominski, L., Sameroff, A. J., Rosenblum, K., & Kasser, T. (2011). Longitudinal

   predictors of adult socioeconomic attainment: The roles of socioeconomic status,

   academic competence, and mental health. *Development and Psychopathology,*

   23(01), 315-324. doi:doi:10.1017/S0954579410000829

Small, S. and Memmo, M. (2004) Contemporary models of youth development and

   problem prevention: Towards an integration of terms, concepts, and models.

   Family Relations, 53, 3-11.

Sobol-Goldberg, S., Rabinowitz, J., & Gross, R. (2013). School-based obesity

   prevention programs: A meta-analysis of randomized controlled trials. *Obesity*

   (Silver Spring), 21(12), 2422-2428. doi:10.1002/oby.20515

Solomon, D. A., Leon, A. C., Coryell, W. H., Endicott, J., Li, C., Fiedorowicz, J. G., . . .

   Keller, M. B. (2010). Longitudinal course of bipolar i disorder: Duration of

   mood episodes. *Archives Of General Psychiatry, 67*(4), 339-347.

   doi:10.1001/archgenpsychiatry.2010.15

Spence, S. H. (1998). A measure of anxiety symptoms among children. *Behav Res Ther,*

   36(5), 545-566.

Spence, S. H., Sawyer, M. G., Sheffield, J., Patton, G., Bond, L., Graetz, B., & Kay, D.

   (2014). Does the absence of a supportive family environment influence the

   outcome of a universal intervention for the prevention of depression? *Int J*

   Environ Res Public Health, 11(5), 5113-5132. doi:10.3390/ijerph110505113

Stallard, P., Richardson, T., Velleman, S., & Attwood, M. (2011). Computerized cbt

   (think, feel, do) for depression and anxiety in children and adolescents:

Outcomes and feedback from a pilot randomized controlled trial. *Behavioural and Cognitive Psychotherapy, 39*(03), 273-284. doi:doi:10.1017/S135246581000086X

Stein, B. D., Jaycox, L. H., Kataoka, S. H., & et al. (2003). A mental health intervention for schoolchildren exposed to violence: A randomized controlled trial. *Jama, 290*(5), 603-611. doi:10.1001/jama.290.5.603

Stice, E., & Shaw, H. E. (2002). Role of body dissatisfaction in the onset and maintenance of eating pathology: A synthesis of research findings. *Journal of Psychosomatic Research, 53*(5), 985-993. doi:http://dx.doi.org/10.1016/S0022-3999(02)00488-9

Stice, E., Shaw, H. E., Bohon, C., Marti, N., & Rohde, P. (2009). A meta-analytic review of depression prevention programs for children and adolescents: Factors that predict magnitude of intervention effects. *Journal of Consulting & Clinical Psychology, 77*(3), 486-503. doi:10.1037/a0015168

Stiffler, M. C., & Dever, B. V. (2015). *Mental health screening at school: Instrumentation, implementation, and critical issues*. Cham, Switzerland: Springer.

Stirling, K., Toumbourou, J. W., & Rowland, B. (2015). Community factors influencing child and adolescent depression: A systematic review and meta-analysis. *Australian and New Zealand Journal of Psychiatry, 49*(10), 869-886. doi:10.1177/0004867415603129

Taliaferro, L. A., Dodd, V. J., Miller, M. D., Pigg, R. M., Jr., & Rienzo, B. A. (2008). High school youth and suicide risk: Exploring protection afforded through physical activity and sport participation. *Journal of School Health, 78*, 545+.

Taliaferro, L. A., Rienzo, B. A., Miller, M. D., Pigg Jr, R. M., & Dodd, V. J. (2008). High school youth and suicide risk: Exploring protection afforded through physical activity and sport participation. *Journal of School Health, 78*(10), 545-553.

Teesson, M., Newton, N. C., & Barrett, E. (2012). Australian school-based prevention programs for alcohol and other drugs: A systematic review. *Drug Alcohol Rev, 31*. doi:10.1111/j.1465-3362.2012.00420.x

Tellez-Zenteno, J. F., Patten, S. B., Jetté, N., Williams, J., & Wiebe, S. (2007). Psychiatric comorbidity in epilepsy: A population-based analysis. *Epilepsia, 48*(12), 2336-2344. doi:10.1111/j.1528-1167.2007.01222.x

Teubert, D., & Pinquart, M. (2011). A meta-analytic review on the prevention of symptoms of anxiety in children and adolescents. *Journal of Anxiety Disorders, 25*(8), 1046-1059. doi:http://dx.doi.org/10.1016/j.janxdis.2011.07.001

Thomas, R., & Zimmer-Gembeck, M. J. (2007). Behavioral outcomes of parent-child interaction therapy and triple p—positive parenting program: A review and meta-analysis. *Journal of Abnormal Child Psychology, 35*(3), 475-495. doi:10.1007/s10802-007-9104-9

Tiggemann, M. (2003). Media exposure, body dissatisfaction and disordered eating: Television and magazines are not the same! *European Eating Disorders Review, 11*(5), 418-430. doi:10.1002/erv.502

Tiggemann, M., & Slater, A. (2013). Netgirls: The internet, facebook, and body image concern in adolescent girls. *International Journal of Eating Disorders, 46*(6), 630-633. doi:10.1002/eat.22141

Tiggemann, M., & Slater, A. (2017). Facebook and body image concern in adolescent girls: A prospective study. *International Journal of Eating Disorders, 50*(1), 80-83. doi:10.1002/eat.22640

Tol, W. A., Komproe, I. H., Susanty, D., Jordans, M. D., Macy, R. D., & De Jong, J. M. (2008). School-based mental health intervention for children affected by political violence in indonesia: A cluster randomized trial. *Jama, 300*(6), 655-662. doi:10.1001/jama.300.6.655

Tolan, P., Dodge, K., & Rutter, M. (2013). Tracking the multiple pathways of parent and family influence on disruptive behavior disorders. In P. H. Tolan & B. L. Leventhal (Eds.), *Disruptive behavior disorders* (Vol. 1, pp. 161-191): Springer New York.

Topor, D. R., Keane, S. P., Shelton, T. L., & Calkins, S. D. (2010). Parent involvement and student academic performance: A multiple mediational analysis. *Journal of prevention & intervention in the community, 38*(3), 183-197. doi:10.1080/10852352.2010.486297

Trout, A. L., Nordness, P. D., Pierce, C. D., & Epstein, M. H. (2003). Research on the academic status of children with emotional and behavioral disorders: A review of the literature from 1961 to 2000. *Journal of Emotional and Behavioral Disorders, 11*(4), 198-210. doi:10.1177/10634266030110040201

van de Looij-Jansen, P. M., Goedhart, A. W., de Wilde, E. J., & Treffers, P. D. A. (2011). Confirmatory factor analysis and factorial invariance analysis of the adolescent self-report strengths and difficulties questionnaire: How important are method effects and minor factors? *British Journal of Clinical Psychology, 50*(2), 127-144. doi:10.1348/014466510X498174

van Lier, P. A. C., Vitaro, F., Barker, E. D., Brendgen, M., Tremblay, R. E., & Boivin, M. (2012). Peer victimization, poor academic achievement, and the link between childhood externalizing and internalizing problems. *Child Dev, 83*(5), 1775-1788. doi:10.1111/j.1467-8624.2012.01802.x

Vander Stoep, A., McCauley, E., Thompson, K. A., Herting, J. R., Kuo, E. S., Stewart, D. G., . . . Kushner, S. (2005). Universal emotional health screening at the middle school transition. *Journal of Emotional & Behavioral Disorders, 13*(4), 213-223.

Vernberg, E. M., Abwender, D. A., Ewell, K. K., & Beery, S. H. (1992). Social anxiety and peer relationships in early adolescence: A prospective analysis. *Journal of Clinical Child Psychology, 21*(2), 189-196. doi:10.1207/s15374424jccp2102_11

Viner, R. M., Ozer, E. M., Denny, S., Marmot, M., Resnick, M. D., Fatusi, A., & Currie, C. (2012). Adolescence and the social determinants of health. *The Lancet, 379*, 1641-1652. doi:http://dx.doi.org/10.1016/S0140-6736(12)60149-4

Vinson, T. (2002). *Inquiry into the provision of public education in nsw* (2). Retrieved from Sydney, Australia: https://www.nswtf.org.au/files/second_report.pdf

Vreeman, R. C., & Carroll, A. E. (2007). A systematic review of school-based interventions to prevent bullying. *Arch Pediatr Adolesc Med, 161*(1), 78-88. doi:10.1001/archpedi.161.1.78

Waddell, C., Hua, J., Garland, O., Peters, R., & McEwan, K. (2007). Preventing mental disorders in children: A systematic review to inform policy-making. *Canadian Journal of Public Health, 98*(3), 166 - 173.

Wagner, M., & Cameto, R. (2004). *The characteristics, experiences, and outcomes of youth with emotional disturbances*. Retrieved from

Wagner, M., Kutash, K., Duchnowski, A. J., & Epstein, M. H. (2005). The special

    education elementary longitudinal study and the national longitudinal transition

    study: Study designs and implications for children and youth with emotional

    disturbance. *Journal of Emotional and Behavioral Disorders, 13*(1), 25-41.

    doi:10.1177/10634266050130010301

Wald, N. J. (2008). Guidance on terminology. *Journal of Medical Screening, 15*(1), 50.

    doi:10.1258/jms.2008.008got

Walker, H. M., & Severson, H. H. (2014). *Systematic screening for behavior disorders:*

    Ssbd (2nd edition). Eugene, OR.: Pacific Northwest Publishing Co.

Walker, H. M., Severson, H. H., Stiller, B., Williams, G., Haring, N., Shinn, M., &

    Todis, B. (1988). Systematic screening of pupils in the elementary age range at

    risk for behaviour disorders: Development and trial testing of a multiple gating

    model. *Remedial and Special Education, 9*(3), 8-20.

Walker, H. M., Small, J. W., Severson, H., Seeley, J. R., & Feil, E. G. (2014). Multiple-

    gating approaches in universal screening within school and community settings.

    In R. J. Kettler, T. A. Glover, C. A. Albers, & K. A. Feeney-Kettler (Eds.),

    Universal screening in educational settings: Evidence-based decision making

    for schools (pp. 47-75).

Ward, S., Sylva, J., & Gresham, F. (2010). School-based predictors of early adolescent

    depression. *School Ment Health, 2*(3), 125-131. doi:10.1007/s12310-010-9028-3

Weare, K., & Nind, M. (2011). Mental health promotion and problem prevention in

    schools: What does the evidence say? *Health Promotion International, 26*(suppl

    1), i29-i69. doi:10.1093/heapro/dar075

Weissman, M. M., Wolk, S., Goldstein, R. B., Moreau, D., Adams, P., Greenwald, S., . . . Wickramaratne, P. (1999). Depressed adolescents grown up. *Jama, 281*(18), 1707-1713.

Weist, M. D. (2001). Toward a public mental health promotion and intervention system for youth. *Journal of School Health, 71*(3), 101-104. doi:10.1111/j.1746-1561.2001.tb07301.x

Weist, M. D., Goldstein, J., Evans, S. W., Lever, N. A., Axelrod, J., Schreters, R., & Pruitt, D. (2003). Funding a full continuum of mental health promotion and intervention programs in the schools. *Journal of Adolescent Health, 32*(6), 70-78. doi:http://dx.doi.org/10.1016/S1054-139X(03)00067-3

Weist, M. D., & Murray, M. (2008). Advancing school mental health promotion globally. *Advances in School Mental Health Promotion, 1*(sup1), 2-12. doi:10.1080/1754730X.2008.9715740

Weist, M. D., Rubin, M., Moore, E., Adelsheim, S., & Wrobel, G. (2007). Mental health screening in schools. *Journal of School Health, 77*(2), 53-58. doi:10.1111/j.1746-1561.2007.00167.x

Weisz, J. R., & Kazdin, A. E. (2010). *Evidence-based psychotherapies for children and adolescents - second edition*. New York: Guilford Press.

Werner-Seidler, A., Perry, Y., Calear, A. L., Newby, J. M., & Christensen, H. (2017). School-based depression and anxiety prevention programs for young people: A systematic review and meta-analysis. *Clin Psychol Rev, 51*, 30-47. doi:10.1016/j.cpr.2016.10.005

Whetstone, L. M., Morrissey, S. L., & Cummings, D. M. (2007). Children at risk: The association between perceived weight status and suicidal thoughts and attempts

in middle school youth. *Journal of School Health, 77*(2), 59-66. doi:10.1111/j.1746-1561.2007.00168.x

Whiteford, H. A., Degenhardt, L., Rehm, J., Baxter, A. J., Ferrari, A. J., Erskine, H. E., . . . Vos, T. (2013). Global burden of disease attributable to mental and substance use disorders: Findings from the global burden of disease study 2010. *The Lancet, 382*(9904), 1575-1586. doi:10.1016/S0140-6736(13)61611-6

Willcutt, E. G., & Pennington, B. F. (2000). Psychiatric comorbidity in children and adolescents with reading disability. *Journal of Child Psychology and Psychiatry, 41*(8), 1039-1048. doi:10.1111/1469-7610.00691

Wille, N., Bettge, S, Ravens-Sieberer, U, BELLA Study Group. (2008). Risk and protective factors for children's and adolescents' mental health: Results of the bella study. *European Child and Adolescent Psychiatry, 17*(Supp 1), 133-147.

Wilson, A. M., Deri Armstrong, C., Furrie, A., & Walcot, E. (2009). The mental health of canadians with self-reported learning disabilities. *Journal of Learning Disabilities, 42*(1), 24-40. doi:10.1177/0022219408326216

Wilson, J. M. G., & Jungner, G. (1968). *Principles and practice of screening for disease*. Retrieved from Geneva:

Wolf, M. M. (1978). Social validity: The case for subjective measurement or how applied behavior analysis is finding its heart1. *Journal of Applied Behavior Analysis, 11*(2), 203-214. doi:10.1901/jaba.1978.11-203

World Health Organisation. (1986). The ottawa charter for health promotion. Retrieved from http://www.who.int/healthpromotion/conferences/previous/ottawa/en/index.html .

World Health Organisation. (2005). *Child and adolescent mental health atlas*. Retrieved from Geneva, Switzerland: http://apps.who.int/iris/bitstream/10665/43307/1/9241563044_eng.pdf?ua=1

World Health Organisation. (2012). *Adolescent mental health: Mapping actions of nongovernment orgaizations and other international development organisations*. Retrieved from Geneva:

Wuthrich, V. M., Rapee, R. M., Cunningham, M. J., Lyneham, H. J., Hudson, J. L., & Schniering, C. A. (2012). A randomized controlled trial of the cool teens cd-rom computerized program for adolescent anxiety. *Journal of the American Academy of Child and Adolescent Psychiatry, 51*(3), 261-270. doi:http://dx.doi.org/10.1016/j.jaac.2011.12.002

Xing, X.-Y., Tao, F.-B., Wan, Y.-H., Xing, C., Qi, X.-Y., Hao, J.-H., . . . Huang, L. (2010). Family factors associated with suicide attempts among chinese adolescent students: A national cross-sectional survey. *Journal of Adolescent Health, 46*(6), 592-599. doi:http://dx.doi.org/10.1016/j.jadohealth.2009.12.006

Yager, Z., Diedrichs, P. C., Ricciardelli, L. A., & Halliwell, E. (2013). What works in secondary schools? A systematic review of classroom-based body image programs. *Body Image, 10*(3), 271-281. doi:http://dx.doi.org/10.1016/j.bodyim.2013.04.001

Yap, M. B. H., Pilkington, P. D., Ryan, S. M., & Jorm, A. F. (2014). Parental factors associated with depression and anxiety in young people: A systematic review and meta-analysis. *J Affect Disord, 156*, 8-23. doi:http://dx.doi.org/10.1016/j.jad.2013.11.007

Yap, M. B. H., Reavley, N., & Jorm, A. F. (2013). Where would young people seek help for mental disorders and what stops them? Findings from an australian

national survey. *J Affect Disord, 147*(1–3), 255-261.

doi:http://dx.doi.org/10.1016/j.jad.2012.11.014

Zablocki, M., & Krezmien, M. P. (2013). Drop-out predictors among students with

high-incidence disabilities: A national longitudinal and transitional study 2

analysis. *Journal of Disability Policy Studies, 24*(1), 53-64.

doi:10.1177/1044207311427726

Zhai, L., Zhang, Y., & Zhang, D. (2014). Sedentary behaviour and the risk of

depression: A meta-analysis. *British Journal of Sports Medicine*.

doi:10.1136/bjsports-2014-093613

APPENDICES

Appendix A - The Youth RADAR

This questionnaire contains sentences about what young people are like. Think about how much each sentence describes you, then rate yourself on a scale from 1 to 5, where 1 means the sentence is '*not at all like me/my life*' and 5 means '*very much like me /my life*'.

There are no right or wrong answers – just click on the answer which best describes how much the sentence is like you and your life. You should answer every question, even if you are not 100% sure of your answer.

Remember:

1 = not at all like me/my life

2

3

4

5 = very much like me/my life

	1	2	3	4	5
People at my school care about me					
I feel supported by other people in this school					
In this school I feel safe					
In this school I feel like I belong					
I feel free to be who I am in this school					

I live in a happy family					
In my family we can trust each other					
My family argues a lot					
I feel a strong connection to my family					
People don't get along very well in my family					
I get good results in exams and tests at school					
I get good marks in most school subjects					
I'm not very smart when it comes to school work					
At school my marks are at the lower end of my grade					
Overall school is just too hard for me					
I am a sporty person					
Compared to other kids I am good at sport					
I am in the sporty group at school					
I enjoy doing physical exercise					
I like PE classes at school					
I get bullied at school					
Other kids tease me or call me unkind names					
I am not very popular at my school					
I find it hard to make friends					

I am usually on my own					
I like the way I look					
I like how my body looks					
I like how my face looks					
I think I am ugly					
I wish my body was different					

Appendix B - The Child RADAR

This questionnaire contains sentences about what boys and girls are like. Your job is to read each sentence and decide how much the sentence sounds like you and your life.

You can choose one of three answers:

☐ This sentence is not at all like me and my life

☐ This sentence is a little bit like me and my life

☐ This sentence is a lot like me and my life

There are no right or wrong answers, because everyone is different. Just click on the answer which best describes how much the sentence is like you and your life. You should answer every question, even if you are not 100% sure of your answer.

	No, not at all like me and my life	A little bit like me and my life	Yes, a lot like me and my life
I like the way I look			
Compared to other kids I am good at sport			
I know that my family cares about me			
Schoolwork is usually too hard for me			
Other kids include me in their games			
In this school I feel safe			
I like how my body looks			

I like PE classes at school			
In my family we support each other			
I like doing school work			
I get bullied at school			
The teachers at my school are kind to me			
I like how my face looks			
I am in the sporty group at school			
I live in a happy family			
I get good marks at school			
Other kids seem to like me			
I like being part of this school			
I wish my body was different			
I am a sporty person			
I get on well with the other people in my family			
I find it hard to pay attention at school			
Other kids tease me or call me unkind names			
I like the teachers at my school			

Appendix C – The Teacher RADAR

This questionnaire contains sentences about what young people are like. Think about how much each sentence describes (student's name), then rate him/her yourself on a scale from 1 to 5, where 1 means the sentence is '*not at all like this student*' and 5 means '*very much like this student*'. There are no right or wrong answers. You should answer every question, even if you are not 100% sure of your answer.

1 = not at all like this student

2

3

4

5 = very much like this student

	1	2	3	4	5
throws himself/herself into school life					
appears to like being part of this school					
seeks to support the ethos of the school					
mixes easily with other students					
makes friends easily					
is popular at school					
is well liked by others at this school					
applies himself/herself to study with diligence					
usually completes homework					
is a conscientious student					

Appendix D of this thesis has been removed as it may contain sensitive/confidential content

Appendix E – Reliability Coefficients for Total Youth RADAR and Subscales by Sex and Grade

Appendix E.

Reliability Coefficients for Total RADAR and Subscales, by Grade Groupings

Scale	Boys Years 7-9	Boys Years 10-12	Girls Years 7-9	Girls Years 10-12	Whole Sample
School Connectedness	.88	.86	.88	.86	**.87**
Family Relations	.82	.86	.87	.90	**.87**
Academic Success	.85	.88	.84	.89	**.86**
Sporting Interest	.88	.90	.90	.92	**.90**
Peer Acceptance	.79	.75	.67	.63	**.73**
Acceptance of Appearance	.85	.84	.86	.93	**.88**
Total Youth RADAR	**.92**	**.90**	**.90**	**.90**	**.91**