Mental health prevention: design and evaluation of an internet-delivered universal program for use in schools with adolescents.

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MENTAL HEALTH PREVENTION: DESIGN AND EVALUATION OF AN INTERNET-DELIVERED UNIVERSAL PROGRAM FOR USE IN SCHOOLS WITH ADOLESCENTS.

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Abstract

This research describes the design and evaluation of an internet-based universal program for use in schools with adolescent students to prevent common mental disorders and promote mental health.

The research began in response to investigations that showed that rates of mental illness in Australian children, teenagers and adults were high, that these illnesses caused significant burden to individuals and society, and that there were insufficient services to treat. When current interventions are unable to alleviate disease burden it is important to focus on prevention. Mental health prevention should target youth before disorders cause disability and restriction of life choices.

A review of the mental health prevention literature supported a universal cognitive behavioural approach in schools. Internet delivery was used to maintain content integrity, enable access to people living in regional and remote areas, and to appeal to young people. Internet delivery makes universal prevention cost effective and feasible.

The Intervention Mapping approach was used to direct the design of the program. A feasibility study was conducted to gain opinions from students and teaching staff. Changes were made in light of results from this study and 463 students were then exposed to the program in an effectiveness trial.

The effectiveness trial was a before-after design with no control group. Results from this trial provided evidence that the program was acceptable and effective for use by teachers in the intervention schools. Also student behaviour and mood changed in beneficial ways after program administration. Specifically, student reported significantly increased knowledge about stress and coping, use of help-seeking behaviours, and life satisfaction, and significantly decreased use of avoidance behaviours, total difficulties and psychological distress. The study design allows causal inferences to be surmised concerning exposure to the intervention and changes in behaviour and mood, but further evidence is needed before firm conclusions about effectiveness can be posited and generalizations made concerning different populations, settings and times.

In conclusion, this thesis provides evidence that a computerised, cognitive behavioural mental health prevention program delivered to adolescent school students by teachers can potentially change student coping behaviours and mood in beneficial ways.

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INTRODUCTION

This research project aimed to design and evaluate an internet program that could be effectively and efficiently used by teachers with adolescent students in schools to prevent common mental disorders and promote mental wellbeing. Research and theory from the fields of health and education, along with advice from health and education practitioners guided development of the program to ensure that the content was both rigorous and appropriate for universal use in schools.

The first objective was to delineate the problems to be addressed. In summary the problems were the high and rising rates of mental illness in Australian children, teenagers and adults, the significant burden attached to these mental illnesses for both individuals and society, and the shortage of services to treat mental illness in Australia. These problems were explored by reviewing the literature concerning the epidemiology of mental disorders in Australia and in similar developed nations. This review made it clear that there was a need to concentrate efforts toward the prevention of mental illness in Australia.

The next objective was to establish a clear understanding of the field of health prevention, with a particular focus on mental health prevention, so that planning could proceed to develop an effective mental health prevention initiative. This was achieved in a number of steps. First the literature concerning health prevention was reviewed and the aims of health prevention were identified. In summary, health prevention aims to ameliorate risks for disease and strengthen factors that protect against the development of disease in an effort to ultimately bring about a decrease in rates of disease in a population. It generally takes decades to see the effects of health prevention initiatives because it takes time to deliver an intervention to the majority of the population of a country or region, and longer still to change behaviours to influence disease prevalence.

The next step was to review the literature concerned with risk and protective factors for mental illness and to identify those risk and protective factors that appeared most conducive to being modified by a mental health prevention initiative. It became apparent

that most risk and protective factors for mental illness had an effect early in life, most commonly in childhood or adolescence. This fact, along with the research that showed that many people experienced the onset of anxiety and depression in childhood or their teenage years, suggested that it would be important to direct prevention initiatives at children or adolescents.

Finally, research concerning existing mental health prevention initiatives was reviewed and characteristics that appeared to influence the effectiveness of these interventions were identified. It was evident that it was possible to prevent at least some of the more common mental disorders, namely depression and anxiety. It was also evident that most effective initiatives applied a cognitive behavioural approach, and required augmentation if the aim of health prevention was to be achieved: to deliver health prevention messages to the majority of the target population so that the prevalence of mental disorders could be altered.

The last objective of this research project was to design and test a mental health prevention initiative. The literature review concerning health prevention and the review of research concerning existing mental health prevention initiatives, revealed the importance of careful planning and development with a particular focus on the characteristics of the end-users and their situation. The Intervention Mapping approach was used to ensure careful planning and development of a new health prevention initiative because this approach provided step-by-step guidance expressly for the purpose of developing health prevention programs.

After taking care to develop an intervention that matched well with the characteristics of the end-users, namely adolescent school students and their teachers, an effectiveness trial was conducted to investigate a number of important hypotheses. First it was important to determine if teachers could implement the intervention in the school setting with no assistance from research staff or mental health experts because a health prevention program designed for use in schools needs to be able to be run as easily as any other school program if there is any hope that it will survive. It was also important to determine

that students learnt something from the program because schools need to be able to provide evidence of student learning.

From a health prevention perspective it was important to show that the intervention could influence risk and/or protective factors in a favourable way. It was hypothesised that, after exposure to the prevention program, students would feel more competent to cope with everyday stresses, that they would report using more helpful coping behaviours, namely support-seeking, pro-social behaviour, problem-solving behaviour and thought restructuring, and fewer unhelpful coping behaviours, namely avoidant behaviours and disruptive or difficult behaviours, and that they would report a lower level of psychological distress and a higher level of life satisfaction.

Summaries of each chapter provide a detailed overview of this thesis. Chapter 1 and chapter 2 address the first and second research objective respectively. The third research objective is addressed in chapters 4 and 5. Finally, chapter 6 provides a summary of the research project, identifies limitations of the project and posits some implications for further research.

Chapter One

In chapter one of this thesis the research problem is defined and a rationale for the project is presented. In summary, this project began in response to findings from the Australian National Survey of Mental Health and Wellbeing and the Burden of Disease and Injury in Australia study (Andrews, Hall, Teesson & Henderson, 1999; Mathers, Vos & Stevenson, 1999; Sawyer et al., 2000). These investigations showed that rates of mental illness in Australian children, teenagers and adults were high, that these illnesses caused significant burden to individuals and society, and that there were insufficient services to help the large number of Australians with these illnesses or at risk for developing them. When current interventions are unable to alleviate a large portion of the burden of a disease it becomes crucial to focus on prevention.

Depression and anxiety disorders were found to be responsible for over half of the burden associated with mental illness in Australia (Mathers et al., 1999). Therefore there should be a particular attempt to prevent these disorders. The World Health Organisation supports efforts to prevent these disorders in developed and developing nations because research shows high rates of anxiety and depression and associated burden in many countries across the world (World Health Organisation, 2004b).

Chapter Two

In chapter two of this thesis the literature concerning health prevention is reviewed, with a particular focus on mental health prevention. In summary, mental health prevention aims to decrease the number of people suffering from mental illness and to decrease the demand for limited and costly treatment and rehabilitation services (National Institute of Mental Health, 1998). It can be difficult to devise ways to effectively prevent mental illness because there are many risk factors, including biological and genetic factors as well as multiple and interacting socio-cultural factors (National Institute of Mental Health, 1998). Despite this, past research demonstrates that it is possible to prevent anxiety and depression, the most common mental disorders, and that many successful interventions target adolescents and take a cognitive behavioural approach (Mrazek & Haggerty, 1994).

As well as decreasing burden for individuals and society, mental health prevention initiatives can have health-promoting benefits because they can improve mental and physical health, increase wellbeing and improve social and economic outcomes (Snyder & Lopez, 2002; Wilkinson & Marmot, 1998; World Health Organisation, 2004a). Mental health promotion is concerned with increasing protective factors rather than decreasing risk factors and success is measured in terms of quality of life, life satisfaction, wellbeing, social cohesion and economic gains (Cicchetti, Rappaport, Sandler & Weissberg, 2000). Governments recognise the importance of mental health promotion and support such efforts (Australian Health Ministers, 2003).

Mental health promotion can be defined in terms of resilience building, that is, supporting people to develop knowledge and skills to cope better with the everyday challenges of life (Luthar, Cicchetti & Becker, 2000; Masten, 2001). Research has documented a link between ineffective coping (avoiding problems) and difficulties with emotion and behaviour control (Ayers, Sandler, West, & Roosa, 1996; Somerfield & McCrae, 2000). In contrast, coping by facing problems and tackling them, accepting help when warranted, and approaching life with an optimistic outlook have been linked to mental wellness (Suniya, Cicchetti & Becker, 2000).

It is important that mental health prevention programs target young people because the common mental disorders have their onset in late childhood and early adolescence and prevention needs to occur before disorders become established (Grant et al., 2006; Wilhelm et al., 2005). Schools represent a good site for implementing mental health prevention programs because almost all young people can be reached at school. Importantly, there is support from the education sector for such interventions because it is widely accepted that mental health status affects learning and behaviour (Adelman & Taylor, 2000). Also, schools accept that it is part of their job to support the wellbeing of students and to enable students to learn how to look after their own mental health and the mental health of others (Curriculum Corporation, 1994; Weist, Evans & Lever, 2003). Importantly, there is significant support in the education literature for school-based approaches aimed at building resilience in students for the benefits that can accrue for learning and healthy development (Ministerial Council on Employment, Education, Training & Youth Affairs, 1999).

A number of mental health prevention programs have been trialed in schools and have been shown to be variably successful in decreasing signs and symptoms of mental disorders (Weist et al., 2003). The problem with these programs is sustainability; they are used during research periods but there is little evidence that school staff continue to use the programs once research is over and researcher support is withdrawn (Andrews & Erskine, 2001). It is likely that these problems relate to the targeted nature of most of the programs. Targeted programs have caused problems with labelling and stigmatising

because students at risk are removed from their usual classes (Shochet et al., 2001). Such programs cannot be run as routine lessons because they are not designed for universal delivery. Time needs to be found outside of the school schedule to run the program and time pressures may lead to parts of the program being skipped or students dropping out (Jaycox, Reivick, Gillham & Seligman, 1994; Lowry-Webster, Barrett & Lock, 2003). The challenge is to create a program that can be effectively and efficiently delivered in schools and that has the potential for continued use well past initial implementation.

Mental health prevention programs for universal delivery in schools are rare even though this delivery method matches school practice and programs could be run as routine lessons. A universal mental health prevention program can be tailored to fit neatly within existing school health curricula because all schools across Australia are required to teach about mental health and wellbeing (Curriculum Corporation, 1994). Importantly, a universal school program has the potential to be successfully disseminated on a scale large enough to make mental health prevention truly feasible (Hosman, 2001).

Chapter Three

The third chapter of this thesis describes the process of designing a new program for adolescents to prevent the common mental disorders and promote wellbeing. Theory and practice shows that good program design can maximise the chances that a new intervention is effective in bringing about prescribed outcomes, is acceptable to the target audience (teachers and students, in this instance), and will be taken up and used widely (Dusenbury & Hansen, 2004; Rogers, 2004). The Intervention Mapping approach for designing new interventions is described and presented as an effective framework for guiding the development of health prevention programs (van Bokhoven, Kok & van der Weijden, 2003).

The first steps in the Intervention Mapping framework direct the program developer to write a rationale for the proposed new program and to consider the target audience and the context for implementation. A rationale is presented in chapter three in the form of a summary of the research that identifies the need for mental health prevention

interventions. Particular design decisions are discussed concerning pitching the program at adolescents, having it delivered universally by teachers in schools, adopting a cognitive behavioural approach and using computers and the internet. The target audience is described (teachers and students in the early years of secondary school), along with the context for delivery (the first years of high school).

Chapter three goes on to provide a more detailed description of the program. Specifically the program was designed to improve coping resources and build resilience in line with Australian school education goals (Curriculum Corporation, 1994; Ministerial Council for Employment, Education and Youth Affairs, 1999) rather than to ameliorate signs and symptoms of disease in a similar fashion to most other programs. National curriculum and syllabus documents were reviewed and learning outcomes relevant to mental health prevention and promotion were identified. The content of the program was designed to closely match these outcomes. Delivery, monitoring and assessment methods were chosen to fit well with common pedagogical practice and within the daily routines of schools (Board of Studies NSW, 2003). Theory and research concerning the process of learning informed content and delivery strategies, in particular literature concerning computer learning, Cognitive Load Theory, and the differentiation of learning material to account for student differences in prior knowledge, skills, motivation, ability, gender and culture (Board of Studies NSW, 2002; Danaher, McKay & Seeley, 2005; Godin, 2005; van Merriënboer, Clark & de Croock 2002).

The decision to use internet delivery was discussed in light of the benefits it affords for maintaining content integrity, for making implementation easy in schools, and for enabling access to people living in regional and remote areas (Danaher, McKay & Seeley, 2005). It is important to ensure that the program is delivered uniformly to all students because school health programs that allow implementers to edit or alter content run the risk of being less effective (Graczyk, Domitrovich & Zins, 2003). Computer delivery also has benefits for student motivation, for instance students are able to receive immediate feedback concerning their progress and this can act to motivate students to continue with the program. Other characteristics of the program that were included to act

to motivate students to engage with the learning material were the cartoon format, interactive computer-based activities and the facility for students to move through the program at their own pace.

Chapter three concludes by presenting the first draft of the program. Program materials are described and examples are presented.

Chapter Four

Chapter four of this thesis is the first of two chapters that report research undertaken in the field to test and further develop the mental health prevention program. Chapter four reports an initial feasibility study undertaken to find out if the initial ideas for the program were acceptable to school students, educators and mental health experts. Seeking advice from the target audience and those who will be responsible for implementation of a program in the longer term is important if the program is to be acceptable to those who will ultimately be using it (Bartholomew, Parcel & Kok, 1998; Bernard, 2004). Qualitative and quantitative methods were employed in line with recommendations in the program design literature and for the informative data that can be gleaned by using a mixed methods research design (Bryman, 2001; Mrazek & Haggerty,1994; National Institute of Mental Health, 1998; van Bokhoven et al., 2003).

The feasibility study had two phases. First, students and school staff were shown a prototype of the program on the internet and asked to supply written and verbal feedback about content, delivery and usability. Participants were 88 school students in year 8 (average age 13 years) at 3 independent schools in the Sydney region, 10 school staff members with responsibility for planning and implementing the health curriculum and 2 health educators with responsibility for supporting schools to implement the health curriculum. School principals from 19 Independent schools in Sydney also supplied important feedback following a presentation given by the researcher and her supervisor at a meeting of a peak body representing Australian independent schools. The program was modified and further developed in light of the data collected from school students and staff, for instance the title was changed, the outer-space theme was tempered (the

narrative was changed so that the action occurred in the context of the lived experiences of the students rather than as part of a space adventure), sound effects and music were removed, repetitive segments were removed and activities were added that gave students more opportunities to apply knowledge and skills to situations in their own lives.

Phase two of the trial involved showing the modified version of the program to mental health experts, including four clinical and research psychologists and a psychiatrist, to ensure that the content reflected evidence-based practice. Mental health experts gave valuable feedback concerning the approach taken to teaching about problem solving and thought challenging. This feedback provided rationales for changes that were made to the segments dealing with these skills, for instance information about particular types of thought errors was added along with further examples of how to use structured problem solving. The experts also suggested including segments to teach about the concepts of 'acceptance' and 'attention focusing'. Segments teaching about these concepts were added to the program because there were students in the first phase of this study who raised issues concerning the fact that all problems are not easily solved and all negative emotions cannot be avoided. These students were interested to know about the best ways to cope when faced with unsolvable problems or unavoidable stress.

Chapter four concludes by presenting the second draft of the program. This version of the program reflects changes made to structure, content, illustrations, sound effects and text layout in light of findings from the feasibility study. It corresponds to Step 4 in the Intervention Mapping model, where adjustments are made to the program materials in light of feedback from the target population (Bartholomew, Parcel, Kok & Gottlieb, 2006).

Chapter Five

Chapter five describes an effectiveness trial of the program. This was a before-after design with no control group. Altogether 463 students at 6 independent schools in the Sydney region were exposed to the program. Two further schools with 189 students acted as a comparison group. Teachers at the intervention schools were visited and were shown

how to use the program and how to supervise data collection. They were advised to contact the researcher via phone or email if they had any concerns. They were asked to run the program with classes of year 8 students (average age 13 years) and were left to deliver the program on their own because an aim of this research was to develop a program that could be efficiently and effectively delivered by school teachers with minimal or no assistance from health experts.

Pre-intervention data were collected from the students at the beginning of the first lesson and post-intervention data were collected at the end of the final lesson. A third and final data collection took place 3 months after students had completed the program. All data were collected under the supervision of teachers. At the comparison group schools, data were collected from students at times that corresponded to data collection points in the intervention schools. Instead of completing the program, students at these schools were exposed to health education lessons as per the normal school program.

Questionnaires were chosen to provide quantitative data concerning the outcomes that were identified as being good indicators of the effectiveness of mental health prevention programs. The Children's Coping Strategies Checklist was used to assess changes in the use of certain types of coping strategies (Ayers & Sandler, 1999). The Strengths and Difficulties Questionnaire was used to measure difficulties (emotional symptoms, conduct problems, hyperactivity/inattention, peer relationship problems) and prosocial behaviour (Goodman, 2002). The Perceived Competence Scale was used to assess students' feelings about their competence to cope with stress (Williams & Deci, 1996). A knowledge test designed by the researcher assessed knowledge about stress and coping. The K6 was used to measure psychological distress (Kessler et al., 2002). The Delighted Terrible Scale was used to measure quality of life (Andrews & Withey 1976). Qualitative data were collected in the form of comments in emails. Students and staff were given an email address and were also guided to use an email contact button on the homepage of the website to send feedback directly to the researcher.

The effectiveness trial provided evidence that the universal internet mental health prevention program could be run effectively in schools by teachers with adolescent students. It also provided evidence that the intervention led to benefits for students, not only in terms of increased knowledge about stress and coping, but also in terms of increased helpful coping behaviours (specifically support-seeking), decreased unhelpful coping behaviours (specifically avoidant coping and difficulties), decreased psychological distress and improved life satisfaction.

Chapter Six

The sixth and final chapter of this thesis reviews the evidence provided by this research project concerning the effectiveness of a universal internet mental health prevention program for adolescents. In summary, there is evidence that the program was acceptable and effective for use in schools by teachers and that it had benefits for students in terms of increased knowledge about stress and coping, increased use of helpful coping behaviours, decreased use of unhelpful coping behaviours, decreased psychological distress and improved life satisfaction. This suggests that an internet-delivered universal cognitive behavioural program for use in schools with adolescent students is an effective way forward for mental health prevention.

While this research project provides support for the use of the program that was developed as part of the project, it must be acknowledged that this research was concerned with design and initial trialing of the program. Further research is required, in line with the protocols set out in the design literature, to test effectiveness. The positive findings from the effectiveness trial conducted as part of this research justify further trials to be conducted with larger numbers of participants over a longer time period. Participants should be diverse in relation to gender, socio-economic status, culture and school characteristics (for instance public, religious or independent) because the program has been designed for universal audiences. Further trials should involve matched control groups to investigate whether outcomes are solely related to completing the program or if developmental trajectories are involved. The program could be trialed with participants of

varying ages to determine if there is an optimal age for presenting a universal cognitive behavioural prevention program.

Broader implications that this research might have for mental health prevention and promotion, especially school-based interventions are discussed. This project has the potential to inform mental health policy and service development by providing empirical evidence for recommendations put forward in the literature for new approaches to youth mental health prevention and promotion. Specifically, this program employs a universal approach, actively promotes mental wellbeing, uses computers for delivery and employs cognitive behavioural strategies. These approaches are recommended in the research literature as ways to make school mental health programs more effective. Government bodies from both the health and education sectors support the implementation of these approaches (Ministerial Council on Employment, Education, Training & Youth Affairs 1999; Australian Health Ministers, 2003). It is important to provide empirical evidence for these particular approaches (Roans & Hoagwood 2000).

Finally, this research project provides support for the use of the Intervention Mapping approach to design and test new health prevention programs. This approach enabled the program to be designed in such a way to appeal to both school teachers and students. The positive responses collected as part of this project from teachers, students and other school personnel concerning the program supports the care taken in the design process. The chapter concludes with suggestions for further development and evaluation of the program, based on the Intervention Mapping framework.

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CHAPTER 1 REVIEW OF RESEARCH ON THE EPIDEMIOLOGY OF MENTAL DISORDERS

1.1 Introduction

This first chapter provides a rationale for the research project. In summary, a number of investigations, including the National Survey of Mental Health and Wellbeing and the Burden of Disease and Injury in Australia study (Andrews et al., 1999; Mathers, et al., 1999; Sawyer et al., 2000) showed that rates of mental illness in Australian children, teenagers and adults were high relative to other diseases, that these illnesses caused significant burden to individuals and society, and that there were insufficient services to help the large number of Australians with these illnesses or at risk for developing them. These investigations highlighted the importance of approaches aimed at preventing mental illness, because the current interventions were unable to alleviate a large portion of the burden associated with these illnesses. Anxiety and depressive disorders were by far the most common disorders and they have their onset in adolescence and early adulthood. Therefore prevention efforts should target youth before these disorders cause disability and restriction of life choices (Mathers et al., 1999).

Australian data are compared to data from other developed nations and a case is made, in line with World Health Organisation recommendations, for investing in efforts directed at young people to prevent mental illness and promote wellbeing (World Health Organisation, 2004a).

1.2 Prevalence of Mental Disorders

The first Australian National Survey of Mental Health and Wellbeing was conducted in 1997 and involved subjects aged from 4 to 89 years from 3456 households across all States and Territories in Australia (Australian Bureau of Statistics, 1998). The survey showed that approximately 20% of the adult population and 18% of the youth population

(4-17 year-olds) met criteria for a mental disorder within the 12 months prior to the survey being conducted (Andrews et al., 1999; Sawyer et al., 2000). Importantly, it was found that only about a quarter of both adults and youth meeting criteria for a disorder had accessed appropriate care (Andrews et al., 1999; Sawyer et al., 2000). Similar high rates of mental disorders have been found in adults and youth in other developed nations, including the United States and Canada and a number of European countries (Costello et al., 1996; Kessler et al., 2005; The WHO World Mental Health Survey Consortium, 2004).

The Australian National Survey of Mental Health and Wellbeing showed that most common mental disorders in the Australian adult population (those aged 18 years and over) were the internalising disorders (anxiety and depression) and substance use disorders (Australian Bureau of Statistics, 1998). Almost a quarter of the adult population met criteria for either an anxiety disorder (9.7%), depression (5.8%) or a substance use disorder (7.7%) (McLennan, 1998) Young adults aged 18 to 24 years were particularly at risk for meeting criteria for a mental disorder, with more than 25% suffering from at least one mental disorder compared to 6.1% of adults aged over 65 years (McLennan, 1998). Across the entire adult population (those aged 18 years and over), both anxiety and affective disorders (depression and dysthymia) were twice as common among females than males (12% of women reported an anxiety disorder compared to 7% of men, and 7% of women reported an affective disorder compared to 4% of men) (Australian Bureau of Statistics, 1998). Men were more than twice as likely to report a substance use disorder (11% of men compared with 4% of women) (Andrews et al., 1999).

The Child and Adolescent Component of the National Survey of Mental Health and Wellbeing measured 3 disorders, namely Depression, Conduct Disorder and Attention Deficit Hyperactivity Disorder (ADHD) in people aged from 4 to 17 years (Sawyer et al., 2000). ADHD was the most common mental disorder, with a 12-month prevalence of 11% compared to 3.7% for conduct disorder and 3% for depression (Sawyer et al., 2000). Zubrick, Silburn, Burton & Blair (1999) collated findings from a number of smaller Australian studies and estimated prevalences for any mental disorder of 20% in 4 to 11

year olds, 20-25% in 12-17 year olds and 25-40% in 18-24 year olds. From these figures it was estimated that at any one time approximately 1 in 4 or 5 young people in Australia suffered from a mental disorder (Zubrick et al., 1999). This rate was slightly better than that found in the national survey and, as the authors suggest, probably reflects differences in methods used to collect data. Even so, it is relatively high. The Australian survey was similar to a national survey conducted in the United States that found a similar rate of 1 in 5 for mental disorders in youth (Costello et al., 2003; Voelker, 2003).

A gender difference was noted in the Child and Adolescent Component of the National Survey of Mental Health and Wellbeing, with 24% of boys meeting criteria for a disorder compared to 11.6% of girls (Sawyer et al., 2000). This may reflect the fact that the Child and Adolescent Component of the Survey measured behavioural disorders, namely Conduct Disorder and ADHD but did not measure specific anxiety disorders. Behaviour problems tend to be more common in young males whereas anxiety disorders tend to be more common in young females (Lask, Taylor & Nunn, 2003). The higher rates of anxiety disorders measured in adult females in the national survey provide evidence that high rates of anxiety in females continues into adult life. The high rates of behaviour problems measured in boys in the Child and Adolescents component of the Survey are probably reflected in the high rates of drug and alcohol disorders in adult males. It is possible that the Child and Adolescent Component of the National Survey of Mental Health and Wellbeing underestimated the prevalence of mental disorders in youth because it did not measure specific anxiety disorders, such as generalized anxiety disorder, separation anxiety, specific phobias and social phobia. Other studies have shown these disorders to be relatively common in youth with a prevalence of 10%-20%, depending on the methodology used, in developed countries such as the United States, (Costello, 1989; Kashani & Orvaschel, 1990; Werry, 1986).

As well as measuring the specific disorders mentioned above, the Child and Adolescent Component of the National Survey also measured mental health problems. These included internalising problems (including difficulties due to anxiety and depression), externalising problems (including deliquency and aggression), somatic complaints

(chronic physical conditions), attention problems, social problems, withdrawn behaviour and thought problems (Sawyer et al., 2000). These problems were assessed by calculating the number of emotional and behavioural difficulties a child was experiencing and comparing this to the range typically reported for children and adolescents attending mental health clinics in Australia. This methodology did not allow for a direct estimate of prevalence of disorder but rather gave an indication of the proportion of youth experiencing significant distress, reported as mental health problems. In the national survey, 14.1% of 4-17 year-olds met the criteria for a mental health problem. The Western Australian Child Health Survey found a higher rate of 20% for mental health problems in youth (Garton, Zubrick & Silburn, 1998). Sawyer and collegues (2000) suggested that the discrepancy in rates of mental health problems in youth in these 2 studies was most likely due to differences in research methodology because parent-reported and adolescent-reported mental health problems were described separately in the national survey, whereas results reported in the Western Australian survey were based on the combined reports of parents and teachers. When the prevalence of parent-reported and adolescent-reported problems in each survey is compared, the results are very similar across studies.

Gender difference was not marked for mental health problems, with a prevalence of 15% for males and 14.4% for females. Males showed slightly higher rates for both externalising problems (aggressive, antisocial, or undercontrolled behaviour) and internalising problems (fearful, inhibited, or overcontrolled behaviour). Specifically, 13.6% of males met criteria for an externalising problem compared to 12.2% of females, and 15% of males met criteria for an internalising problem compared to 11.3% of females (Sawyer, et al., 2000).

The presence of more than one mental disorder, or comorbidity, was found to be common at all ages (McLennan, 1998; Sawyer et al., 2000). Approximately 23 % of children and adolescents with one disorder met criteria for a second disorder. Young males had a higher rate of comorbidity (27%) than females (15%). In adults, more than a third with an anxiety disorder also had an affective disorder (depression or dysthymia), a fifth with an

anxiety disorder also had a substance use disorder and a large proportion of those with an affective disorder also had an anxiety disorder (78.6%). (Australian Bureau of Statistics, 1998).

High rates of comorbidity have been found in other countries. For instance, a national survey conducted in the United States found 45% of those with a disorder met criteria for two or more disorders (Kessler et al., 2005). It is common to find a mental disorder co-morbid with an alcohol or other drug disorder, especially in young people (Moon, Meyer & Grau, 1999; Proudfoot & Teesson, 2003). Comorbidity adds considerably to the burden suffered by individuals, increases the risk of self-harm and suicide in youth and is costly to society (Commonwealth Department of Health and Aged Care 2000b; Mathers et al., 1999).

Reviews of recent studies suggest an increase in the prevalence of mental illness in a number of countries across the world and a downward developmental trend, such that disorders, especially affective disorders, are being diagnosed in ever younger people (Bland, 1997; The WHO World Mental Health Survey Consortium, 2004). Research supports a link between mental disorder in early life and mental disorder in adulthood (Ferdinand & Verhulst, 1995; Keating & Hertzman, 1999). Even sub-clinical symptoms of depression and anxiety early in life increase the probability of developing an internalising disorder or other psychopathology later in life (Birmaher et al., 1996; Lewinsohn, Solomon, Seeley & Zeiss, 2000; Weissman, et al., 1999).

1.3 Treatment Coverage

The national survey showed that only 38% of adults and 29% of children and adolescents identified as having a mental disorder accessed appropriate help (McLennan, 1998; Sawyer et al., 2000). This is most likely due to an inadequate supply of mental health treatment and rehabilitation services in Australia (Andrews, Sanderson, Corry & Lapsley, 2000; Andrews & Wilkinson, 2002; Sawyer & Patton, 2000). This is troubling because

there are evidence-based, cost effective treatments for the common mental disorders, as well as effective prevention strategies (Andrews & Henderson, 2000).

Research shows similar unmet need for treatment in other developed and developing countries (Jané-Llopis & Anderson, 2005; World Health Organisation, 2004a and 2004b; The WHO World Mental Health Survey Consortium, 2004; US Department of Health and Human Services, 1999). The Ontario Child Health Study found that only one in six youth with mental disorders received help (Offord, 1987). A national survey in the United States showed that 60% of people with mental disorders accessed no help at all and, of those who did access help only 32.7% accessed a service that met minimal criteria for adequate mental health care (The WHO World Mental Health Survey Consortium, 2004). The same survey showed substantial delays between illness onset and first diagnosis and treatment; for mood disorders the delay to first treatment contact was 6 to 8 years and for anxiety disorders, 9 to 23 years. A review of the research concerning the epidemiology of affective disorders revealed that these disorders are poorly recognised, under-diagnosed and under-treated in many developed and developing countries (Bland, 1997).

In the case of youth in Australia, most of the 18% in the national survey meeting criteria for disorder had tried to get help but failed for reasons including services were too expensive, waiting lists were too long, care facilities were too far away, or people did not know where to go to get help (Sawyer et al., 2000). Fear of stigma was not a common reason given, ranking number 10 on the list (Sawyer et al., 2000). Problems obtaining care in the mental health sector might explain, in part, why young people aged 13-17 years are most likely to access help at school rather than from health care providers (Sawyer et al., 2000).

1.4 Burden

The Burden of Disease and Injury in Australia study measured burden associated with 176 diseases in the Australian population (Mathers, et al., 1999). Burden was defined in

terms of the money expended to cope with the mortality, disability, impairment, illness and injury that a disease caused across the entire population. Diseases were compared in terms of a total burden score as well as separate burden scores for mortality, disability, impairment, illness and injury. Mental disorders were estimated to be the fourth most burdensome disease group, after diseases of the digestive system, the circulatory system and the musculoskeletal system. Depression was found to cause significantly more burden due to disability and death than infectious diseases, cancer or dementia (Mathers et al., 1999). Mental disorders were found to be the leading cause of burden due to disability in Australia. This is because mental illnesses tend to be chronic, relapsing and disabling, so the burden they cause is due mainly to years lived with disease rather than years of life lost due to premature death (Raphael, 2000). Mental health problems and behavioural disorders were found to be responsible for over half the burden of disease (mortality, disability, impairment, illness and injury) suffered by Australian youth (Moon, Myer & Grau, 1999).

Internalising disorders, namely anxiety disorders and depression were found to be responsible for the greatest disability burden caused by mental disorders, contributing over half of the total disability burden (Andrews & Wilkinson, 2002). This was due mainly to the high prevalence and chronic course of these internalising disorders compared to other disorders (Andrews, 2003). In contrast, psychotic conditions such as Schizophrenia and Bipolar Disorder were found to contribute far less to the mental health burden because, even though they are disabling conditions, they are low prevalence disorders.

Over all developed nations, mental disorders accounted for 15% of the burden of disease, ranking third after heart disease and cancers in a table of disease burden presented by Andrews & Erskine (2001). Mental disorders accounted for 5 of the 10 leading causes of disability worldwide (Murray & Lopez, 1996). It is estimated by the World Health Organisation (1996) that mental ill health will account for 15% of the global burden of disease and that depression will be second on a list of diseases causing the most burden worldwide by 2020.

There are significant direct and indirect costs associated with mental illness. The direct financial burden associated with mental disorders in Australia in 1989-90 was estimated at AUS$2 billion and in 1993-94 AUS$2.58 billion, representing about 8% of the total health system costs (Australian Institute of Health and Welfare 1996; Mathers & Penm 1999). The cost of hospitals and nursing homes accounted for almost two thirds of the total amount. These figures did not incIude the cost of absenteeism, lost productivity, burden on carers and family, legal costs, and loss of quality and years of life (Raphael, 2000). The impact of mental ill health on society includes higher rates of homelessness, prolonged unemployment, higher rates of crime and incarceration and increased reliance on social welfare (Commonwealth Department of Health and Aged Care, 2000a). The impact on individuals and their families includes stigma, discrimination and social exclusion, along with financial costs (Jane-Llopis, Barry, Hosman & Patel, 2005).

1.5 Prevention

Stanley (2003) suggested that the level of morbidity associated with mental health problems demanded a preventive approach aimed at reaching large numbers of children and adolescents, and she challenged health and school services to respond. Although it is clear that burden associated with mental disorders could be averted if the disorders themselves were prevented, it is difficult to convince stakeholders to invest in prevention when health organisations have historically been responsible for mental health spending and these groups have tended to invest limited budgets in treatment services because this is where immediate demand is most obvious (Bobadilla, Cowley, Musgrove & Saxenian 1994). Andrews and Erskine (2001) suggested that the core issue for deciding upon the feasibility of prevention was whether it was ethical to use funds that could be allocated to treat the sick to attempt to prevent future disease in those who are presently well. These authors recommended the use of Eisenberg's (1994) criteria for determining the feasibility of prevention: the size of the burden caused by a particular disease, the effectiveness and feasibility of a preventive intervention, and the cost of diverting funds from other programs, including treatment programs.

In the case of mental disorders, the first of Eisenberg's criteria is addressed in the research concerning prevalence, treatment coverage and burden: mental disorders are high prevalence conditions, they are responsible for a significant amount of burden in Australia and elsewhere, and treatment services are inadequate to meet demand (Andrews, 2003; Mathers et al., 1999). Concerning effectiveness and feasibility of prevention programs, there are now a number of review articles that have concluded that education programs can modify known risk and protective factors and can decrease symptoms and rates of diagnosis (Durlak & Wells 1997; Neil & Christensen, 2007; Rones & Hoagwood, 2000; World Health Organisation, 2004b).

Eisenberg's final criterion is addressed by research showing that, for the internalising disorders, there are economic and health benefits to be had for diverting funds from treatment services into prevention initiatives (Andrews & Wilkinson, 2002; Raphael, 2000; World Health Organisation, 2004b). Andrews, Sanderson, Corry and Lapsley (2002) estimated the cost of indicated prevention for depression at 1/20th the cost of treatment of mild cases and 1/30th the cost of treatment of severe cases. Andrews and Erskine (2001) pointed out that the cost of such prevention was comparable to the cost of measles vaccination in developed countries and therefore, they argue, mental health prevention is feasible.

The importance of addressing mental health prevention is recognised in a number of recent government initiatives. The National Mental Health Plan 2003-2008 (Australian Health Ministers, 2003), endorsed by all Australian Health Ministers in July 2003, stressed the importance of investing in research and development aimed at mental health prevention and promotion. The National Action Plan for Promotion, Prevention and Early Intervention for Mental Health 2000 (Commonwealth Dept of Health and Aged Care, 2000a) expressed the opinion that prevention and promotion are long-term investments in the Australian community and outlined ways that national, state and regional groups might go about developing and implementing initiatives. This national plan outlined the research evidence that supports a link between mental wellbeing and benefits for

learning, employment, social cohesion and crime reduction (Eckersley, 2005b; Eckersley, Wierenga & Wyn, 2006; Smart & Sanson, 2005). A consultation report concerning this document encouraged direct resource allocation for the translation of policy into practice and suggested a particular focus on developing education initiatives (Parham & Rickwood, 2003).

In 1996 the Australian government, through the National Mental Health Strategy, the National Suicide Prevention Strategy and the Public Health Division, allocated AUS$915,000 to be used to develop a comprehensive national mental health school program (MindMatters Evaluation Consortium, 2000). This action represented an important move towards collaboration between the Australian health and education sectors to produce an effective intervention for the prevention of mental disorders and the promotion of mental wellbeing in children and adolescents. This collaboration resulted in a resource called *MindMatters* that provided a framework for Australian schools to use to develop their own programs to address mental health education (Commonwealth Department of Health and Aged Care, 2000d; Wyn, Cahill, Rowling, Holdsworth & Carson, 1999).

Youth are being targeted for mental health prevention because the common mental disorders have their onset in late childhood and early adolescence, and prevention needs to occur before disorders become established and cause educational and psychosocial damage (Grant et al., 2006; Wilhelm et al., 2005). United States data suggest that the median age of onset for specific phobias and separation anxiety disorder is 7 years, and for social phobia, 13 years (Kessler et al., 2005). Anxiety disorders commonly manifest in the teenage years (Grant, et al., 2005). Depression commonly manifests in early adulthood (Wilhelm, et al., 2006). The Great Smoky Mountains Study revealed that, as children grew older, psychiatric disorders were more likely to be accompanied by significant functional impairment (Costello, 2003).

Another reason to target youth is to counter the apparent rise in the prevalence of mental disorders in the young (World Health Organisation, 2004a). In Australia there are

increasing numbers of young people who may not meet criteria for a mental disorder but who are at risk because they feel disconnected from society, despondent about the future, and are facing difficulties such as homelessness and unemployment (Eckersley & Dear, 2002; Smart & Sanson, 2005).

Research supports a link between mental disorder in early life and mental disorder in adulthood (Ferdinand & Verhulst, 1995; Keating & Hertzman, 1999). Also, exposure to many of the risk factors for mental disorders occurs early in life, such as bonding with a caregiver and learning relational skills, and having a safe environment in which to trial and galvanize positive coping behaviours in early life is also important (Stanley, 2003). This suggests that prevention needs to start early. If programs directed at children are successful then prevalence and burden should decrease over time not only in the youth population but also in the adult population, due to flow-on effects.

1.6 Conclusion

Even though internalising disorders are high prevalence disorders that cause substantial burden to the sufferer and to society, it has been estimated that present services in Australia avert only 15% of the burden of affective disorders and 14% of the burden of anxiety disorders (Andrews et al., 2000). This scenario has been mirrored in other nations and has been said to represent a worldwide public health challenge (The WHO World Mental Health Survey Consortium, 2004).

Increasing treatment coverage is one way to avert burden associated with mental health problems. Yet it has been suggested that it is unlikely that treatment coverage can be increased significantly, and very unlikely that coverage will approximate that for physical disorders (approximately 60% coverage rates) because there are not enough trained mental health care workers in Australia to meet demand (Andrews, 2003). The process of training more skilled workers and up-skilling those already working in the field is likely to take considerable time and money and may not improve access to care in regional and remote areas or improve patient compliance with treatment (Commonwealth Department

of Health and Aged Care, 2000a). Andrews and Henderson (2000) estimated that, even if it was possible to create the ideal situation where clinician competence, coverage and patient compliance were all maximized, less than half of the burden of mental disorders would be able to be averted.

Another way to decrease burden associated with mental health problems is to attempt to prevent disorders occurring in the first place. There is good evidence that prevention can be effectively achieved for the common mental disorders (anxiety and depression) (Andrews, 2003; Andrews & Erskine, 2001; Durlak & Wells, 1997, Jenkins & Ustun, 1998). Preventing the common mental disorders could have a major effect on decreasing the burden caused by all mental illness because these disorders cause most of the disability burden caused by mental illness (Andrews, 2003). The World Health Organisation has recently placed mental health prevention and promotion high on the global public health agenda (World Health Organisation, 2004a and 2004b).

CHAPTER 2 REVIEW OF RESEARCH ON MENTAL HEALTH PREVENTION

2.1 Introduction

This chapter begins by discussing the theory concerning health prevention. It then focuses specifically on mental health prevention. In summary, mental health prevention initiatives aim to decrease the number of people suffering from mental illness and decrease the demand for limited and costly treatment and rehabilitation services (National Institute of Mental Health, 1998). Efforts to prevent mental disorders have the potential to prevent or at least limit the impact of other disorders that commonly co-occur with mental disorders such as other mental health problems, drug and alcohol problems and even physical disorders like cardiovascular disease and respiratory disorders (Bunker et al., 2003; Cohen, Tyrell & Smith, 1991; Scanlon, Williams & Raphael, 1997).

As well as decreasing disease burden for individuals and society, mental health prevention initiatives have the potential to improve the mental health and wellbeing of individuals and, in so doing, improve health and economic outcomes for societies (Mrazek & Haggerty 1994; Snyder & Lopez, 2002; World Health Organisation, 2004a). Efforts to promote health aim to increase positive health outcomes such as life satisfaction and wellbeing rather than decrease signs and symptoms of disease (Cicchetti et al., 2000; World Health Organisation, 2004b). Psychology and social science research strengthens the argument for mental health promotion since it has measured far-reaching benefits for individuals and societies in the form of improved mental health outcomes, positive gains for education and employment, increased social cohesiveness, and even economic and productivity gains (Diener & Seligman, 2004; Eckersley, Wierenga & Wyn, 2006; Gillham, 2000; Snyder & Lopez, 2002).

The chapter then focuses on mental health prevention designed specifically for young people. Risk and protective factors are explored in terms of their impact on mental health and as possible modifiable targets for prevention and promotion initiatives aimed particularly at adolescents. Stress and coping are defined in terms of their relatedness to

mental health, for instance research is presented that shows the link between ineffective coping and difficulties with emotion and behaviour control (Ayers, Sandler, West, & Roosa, 1996; Somerfield & McCrae, 2000). A number of risk and protective factors that appear most suited for special consideration in a mental health prevention and promotion initiative have been identified in the stress and coping literature, for instance coping by facing problems and tackling them rather than avoiding them, having support networks and accepting help when warranted, and approaching life with an optimistic outlook (Suniya, Cicchetti & Becker, 2000).

Schools are identified as good sites for implementing mental health prevention programs for youth because almost all young people can be reached at school. Importantly, there is support from the education sector for such interventions because it is widely accepted that mental health status affects learning and behaviour (Adelman & Taylor, 2000). A number of mental health prevention programs have been trialed in schools and have been shown to be variably successful in decreasing signs and symptoms of mental disorders (Weist et al., 2003). Successful programs, in the main, have taken a cognitive behavioural approach. The problem with these programs is sustainability; they are used during research periods but there is little evidence that school staff continue to use the programs once research is over and researcher support is withdrawn (Andrews & Erskine, 2001). The challenge is to create a program that can be effectively and efficiently delivered in schools and that has the potential for continued use well past initial implementation.

There is a discussion about why existing programs may have failed to be adopted for routine use in schools. In summary, it is suggesting that the problem is that programs were not designed to fit well within the context of schools. Interestingly, a review of existing programs reveals that health prevention programs for universal delivery in schools are rare even though this delivery method aligns well with school practice and universal programs could be run as routine lessons. Also, a universal school program has the potential to be successfully disseminated on a scale large enough to make health prevention truly feasible (Hosman, 2001).

There is significant support in the education literature for school-based approaches aimed at improving wellbeing and building resilience in students for the benefits that can accrue for learning and healthy development (Ministerial Council on Employment, Education, Training & Youth Affairs, 1999). The concepts of wellbeing and resilience are thus discussed in terms of how they relate to mental health and how they might be addressed in a school prevention program (Diener & Seligman, 2004; Eckersley 2005b; Masten, 2001; Prior & Richardson, 2005; Smart & Sanson, 2005).

This chapter concludes by presenting the case for taking a new approach to mental health prevention that is universal in nature and includes efforts to promote mental wellbeing and resilience. A summary is given of the elements that appear to be important to include in an initiative designed to enable such an approach in schools.

2.2 Health prevention

Prevention programs aim to modify factors that influence the chance that someone will develop a disease, or, if early signs are already present, to decrease the likelihood of progression from early, sub-clinical syndromes to diagnosable disorders (Fletcher & Fletcher, 2005). Such programs focus on modifying factors that increase the risk of developing disease, so called risk factors (Australian Health Ministers, 2003). For example, modifiable risk factors for mental disorders include social isolation, lack of control over one's life, trauma, abuse, negative thinking patterns, and maladaptive coping strategies, including alcohol and other drug abuse (Commonwealth Department of Health and Aged Care, 2000a).

Prevention can be classified as universal, selective or indicated according to audience, as illustrated in Figure 1.

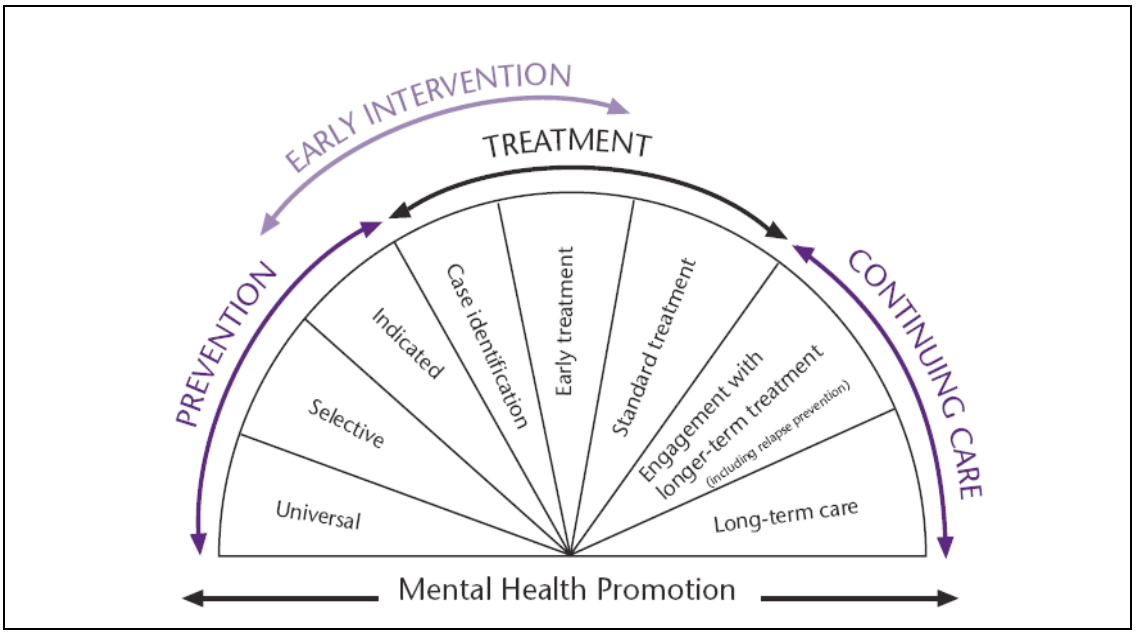

Figure 1. The spectrum of interventions for mental health problems and mental disorders (Mrazek & Haggerty 1994, as reproduced in Commonwealth Department of Health and Aged Care, 2000a, p7)

A universal prevention program is designed for delivery to an entire population. A selective prevention program is designed for a subgroup in the population who possess known population risk factors for a certain disorder, for instance, in the case of mental disorders, the selective population may live in a low income area or may have a parent with a mental disorder. Indicated prevention programs are designed for individuals showing signs and symptoms of a disorder but who do not yet meet criteria for diagnosis.

Many prevention programs can also be classified as health promotion programs because they not only act to prevent disease but can also produce positive health gains, such as improved living conditions and increased life satisfaction (Mrazek & Haggerty, 1994). As such, a health promotion approach can benefit people without a disorder (prevention categories) as well as those with a disorder (treatment and continuing care categories), as illustrated in Figure 1 (Mrazek & Haggerty, 1994). Breslow (2004) suggests that health initiatives aimed at prevention and promotion are particularly important at this time because people are living longer and aging populations need to stay active and self-sufficient, as well as disease free, to avoid huge demands on the health care system.

Health promotion can be defined as any activity that strengthens the skills and capabilities of individuals or communities to positively influence factors that determine their health (Pencheon, Guest, Melzer & Gray, 2001). Promotion programs might aim to alter environments (social, physical, economic, educational, cultural) or to enhance the coping capacity of communities, families and individuals (Pencheon et al., 2001).

Universal health prevention and promotion programs aim to shift the population distribution for recognized and modifiable risk and protective factors in a direction that reduces the number of people falling in the risk range for developing a disorder (Rose, 1992). A well-cited example of this approach is heart disease prevention, where factors such as diet, exercise and smoking have been targeted and their distributions successfully shifted in a direction that has led to a decrease in the number of people at risk for cardiovascular disease (Burns & Field, 2002). Proving that shifts in population distributions for risk and protective factors cause changes in disease incidence is difficult, but it is possible to track population trends in risk/protective factors and to compare these trends to changes in incidence rates (Pencheon et al., 2001).

Modifying risk and protective factors can have more noticeable benefits for people at greater risk of disease (Rose, 1992). For instance, a program aimed at reducing cigarette smoking will have more benefits for smokers who decide to quit compared to non-smokers. Smokers are likely to experience short-term health benefits, such as improved exercise tolerance, as well as long-term benefits, such as increased life expectancy (World Health Organisation, 2004a and 2004b). It is more difficult to convince people at low risk that a prevention and promotion program is worthwhile because benefits to them are not immediately apparent (Rose, 1992). In these cases it is important to stress possible health promotion benefits, for instance decreasing cigarette smoking across a population will decrease risks attached to passive smoking as well as decreasing health care expenditure for smoking related diseases.

The aim is to reduce risk factors and enhance protective factors before they create problems, for instance, decreasing smoking rates in young people before permanent lung damage has occurred (Rose, 1992). It is important to attempt to modify risk and protective factors before problems arise, particularly when there is a high probability that the factor will lead to disease, as in the case of exposure to asbestos and the development of lung cancer, or if the potential disease is particularly burdensome (Pencheon et al., 2001). Mental disorders fit the second criterion because they are the leading cause of disability burden in Australia (Mathers et al., 1999). Individuals who have had opportunities to modify risk and protective factors in beneficial ways before being faced with problems can be said to be resilient because they have the capacity to survive adversity without succumbing to illness (Masten et al., 1999).

2.3 Mental health prevention

There are many socio-cultural and biological factors that influence risk and protection for mental disorders, and the complex interactions between these factors can make it difficult to know what factors to target for mental health prevention and promotion (Donovan & Spence, 2000; National Institute of Mental Health, 1998; Rutter, 2002). Some risk and protective factors lie outside of the individual (e.g. social equity practices) and require public health initiatives aimed at making changes at a community level (e.g., ensuring fair employment practices), while other factors are intrinsic to the individual (e.g., genes, personality traits, coping styles) and require public health initiatives aimed at supporting individuals to change (e.g., to learn and use helpful coping strategies) (Pencheon et al., 2001; Brunner & Marmot, 2006).

An example of the complex relationships that exist between risk and protective factors for mental health is the moderating effect of the 5-HTT gene on the relationship between life stress and depression (Bennett et al., 2002; Caspi et al., 2003; Hariri et al., 2002). Recent research suggests that stressful life events are more likely to lead to depression if an individual is homozygous for the short allele of the 5-HTT gene, which controls serotonin re-uptake in the central nervous system. Those with two long alleles appear to

be protected despite exposure to significant life stress. This represents an example of what Ridley (2003) calls 'nature via nurture ': disease risk is influenced by the interplay between a factor outside of the individual, namely stressful life events, and an intrinsic factor, in this case genetic predisposition.

Many mental health risk and protective factors have differential effects depending on age and developmental stage (Mrazek & Haggerty, 1994; Sawyer & Patton, 2000). For instance, trauma and social deprivation appear to have dramatic and irreversible negative effects if experienced early in life (Rutter, Kreppner, & O'Connor, 2001). At adolescence, experimentation with alcohol and drugs, as well as peer acceptance issues, become important (Schulenburg, Maggs & Hierrelmann, 1997). This means that prevention programs need to be designed with particular groups in mind so that factors most relevant to a certain group can be the focus for modification (Fletcher & Fletcher, 2005; Ghodse, 2006). There is also a need to be sensitive to the capabilities, resources and opportunities available at different developmental stages (Pencheon et al., 2001). Choosing to intervene at apparently critical points in the lifespan and selecting risk and protective factors in developmentally sensitive ways appear to be crucial for successful mental health prevention and promotion (Mrazek & Haggerty, 1994; Shonkoff & Phillips, 2000).

Successful mental health prevention and promotion programs should aim to develop skills and capabilities that will enable the target population to exert control over their own health choices (World Health Organisation, 2004a and 2004b). Factors within the social environment have been found to determine a large amount of the risk for mental ill health (Marmot, 2003). This risk appears to be related to the extent to which society allows people to exert control over their lives (Siegrist & Marmot, 2004). Social structures that support self-determination protect against mental health problems (Yen & Syme, 1999).

Some mental health risk and protective factors are difficult to modify, for instance a person's genetic makeup, although it is possible to make changes to compensate for these risk factors (Rutter, 2002). For instance, while gene polymorphisms cannot currently be modified, individuals with the high-risk polymorphism of the 5-HTT gene can avoid high

stress situations and learn ways to cope better when highly stressful situations cannot be avoided (Hariri et al., 2002). Successful mental health prevention appears to be about enabling people to make beneficial changes to those factors that are modifiable and to learn how to best cope with those factors that are not so easily changed (Luthar, Cicchetti, & Becker, 2000).

An intervention aiming to promote wellness as well as to prevent mental disorders should focus on factors known to improve mental wellbeing. Interventions should aim to promote subjective wellbeing, optimal development and use of mental abilities (cognitive, affective and relational) in an effort to support individuals and societies to achieve worthwhile goals (Australian Health Ministers, 1991). Such interventions might aim to promote social connection and social equity or they might focus on the individual and aim to build personal coping skills and enable a feeling of control over one's destiny (Eckersley, 2005a; Marmot, 2003).

2.4 Correlates of mental disorders in the young

Mental health prevention and promotion programs for young people should focus on mental health risk and protective factors that exert an effect early in life. These include socio-economic factors, family factors, the quality of educational experiences and opportunities to build personal coping skills (National Institute of Medicine, 2000; Heckman, 2006; Rutter, 2002).

2.4.1 Risk and protective factors in childhood

Infancy has been identified as a critical period for mental health prevention and promotion (Mrazek & Haggerty, 1994). Research concerning severe deprivation in early childhood, such as the studies of infants rescued from orphanages in Romania, provides stark illustrations of the damage that can result should infants miss out on love and attention (Rutter, et al., 2001). Outcomes include severe behaviour and mood disorders and irreversible cognitive and social deficits that severely restrict life opportunities (Rutter, 2002).

Research suggests that trauma experienced in early childhood such as sexual abuse or neglect, affects neural development; circuits involved in stress and emotion regulation become hypersensitive, leading to lifelong heightened vulnerability to stress and increased risk for depression and anxiety (Nemeroff, 1992). Early childhood trauma has also been linked to permanent changes in brain anatomy, particularly reduced volume in the left subgenual prefrontal cortex and the hippocampus (Botteron, Raichle, Drevets, Heath & Todd, 2002; Vythilingam et al., 2002). These parts of the brain are important for emotion regulation and there is a likelihood that these changes predispose to mental health problems (Shonkoff & Phillips, 2000).

Many other possible risk factors for mental disorders in childhood have been described. Depression in children has been related to disorganised and unsupportive home environments, parents with psychiatric illness, and neglect or sexual or physical abuse (Voelker, 2006). Children are more likely to develop anxiety disorders and depression if they have been faced with a number of stressful or negative life events, including parental separation, divorce, death of a family member, family conflict, and repeated school moves (Benjamin, Costello & Warren, 1990; Goodyer & Altham, 1991). Protective factors that appear to be particularly important are secure attachment to caregivers, easy temperament, supportive home environment and good social skills (Shonkoff & Phillips, 2000).

Successful mental health prevention programs for young children view parents as critical players (Hirshfeld-Becker & Biederman, 2002; Schweinhart & Weikart, 1997). These programs might identify and support mothers suffering post-natal depression or they might provide home visiting services for at-risk mothers, free child health checks, monetary rebates or access to high quality early childhood education (Heckman, 2006; Kagitcibasi, Sunar & Bekman, 2001; Jane-Llopis et al., 2005). Parenting behaviour has been found to mediate the relationship between the development of affective disorders and a number of risk and protective factors, including exposure to negative life events (Donovan & Spence, 2000). Of particular concern are anxious or over-controlling parents

who tend to be over-protective or overly critical of their children (Krohne & Hock, 1991; Lask et al., 2003). Therefore a mental health prevention program aimed at protecting young children might aim to teach parenting skills. Also of concern are social practices that interfere with the capacity of parents to care for their children. A relatively recent example is the Australian policy of removing Indigenous children from their families (Human Rights and Equal Opportunity Commission, 1997). Although this legislation no longer exists, it continues to have devastating effects on individuals, families and communities.

As well as involving parents, many mental health programs for children target the children themselves. A number of programs teach basic social interaction skills and self-care behaviours because slowed development in these domains appears to predict future onset of mental disorders (Cottler, Reich, Rourke, Cunningham-Williams & Compton, 2000). The High/Scope Perry Preschool program is an example of a well-researched early childhood program that has led to impressive decreases in mental disorders and related problems and gains in educational and employment outcomes for participants up to age 27 (Schweinhart, 2002). This program targets key people, e.g., caregivers, children, early childhood educators, as well as key community and social structures, e.g., care and recreation facilities (Schweinhart, & Weikart, 1997).

2.4.2 Risk and protective factors in adolescence

Adolescence represents another important time to implement developmentally appropriate mental health programs because it is a transition point from childhood to adulthood and is characterised by increasing social, emotional and cognitive demands (Petersen, Leffert, Graham, Alwin, & Ding, 1997). People at this time of life should have the opportunity to learn how to cope effectively with these increasing demands (Ghodse, 2006). Also, learning about effective coping during adolescence sets the scene for effective coping in adulthood (Schulenburg, Maggs & Hierrelmann, 1997).

Social and emotional development at this time reflects a focus on increased independence, identity formation, and issues concerning belonging and peer relationships

(Cicchetti et al., 2000; Lask, Taylor, & Nunn, 2003). These developmental tasks are usually very stressful because they are marked by concerns about physical appearance, social interaction, and conflicts with parents, siblings and peers (Schulenburg, Maggs & Hierrelmann, 1997). During adolescence, the demands of school increase, peer expectations become more important and pressure can result when school and social demands conflict (Luthar, 1991; Smart & Sanson, 2005). There is a move away from externally imposed boundaries and towards self-determined attempts to make difficult decisions (Schulenburg et al., 1997). As such, adolescence is an important time to support the development and use of effective personal coping skills such as strategies to solve problems, manage time, and communicate effectively with parents, siblings and peers (Milne & Chesson 2000).

The changes and challenges that characterize adolescence most likely contribute to an increase in mental health problems at this time, including anxiety, depression, eating disorders, substance misuse, psychosis and deliberate self-harm (Eckersley et al., 2006; Ferdinand & Verhulst, 1995; Lask et al., 2003; Smart & Sanson, 2005). Mood changes may be due, in part, to changes that occur in the neurological system, particularly re-modelling of the pre-frontal regions of the brain, which are responsible for executive skills such as emotion regulation and decision-making (Davidson, Pizzagalli, Nitschke & Putnam, 2002; Schaefer et al., 2002). These changes may explain the increased tendency of adolescents to become involved in risky behaviour such as experimenting with drugs and alcohol (Crome et al., 2004; Eckersley et al., 2006). Such behaviour can have detrimental effects on mental health, with research strongly supporting a link between adolescent alcohol and drug use and mental health problems (Caspi et al., 2005; Teesson & Proudfoot, 2003). Research shows that increases in rates of disorder are linked to the process of puberty rather than to age alone (Voelker, 2006).

A number of environmental risk factors have been linked to the development of mental disorders in adolescents, including discord and violence in the family, absence of love and affection, coercive parenting style, poor monitoring and supervision at home and school, poor peer relations, alienation from school and early school leaving, experience

of abuse or violence, parental mental disorder, substance misuse, and criminality (Commonwealth Department of Health and Aged Care, 2000a). Stanley (2003) draws attention to increasing levels of inequity in social and health status across the Australian population (12.6% of Australian children live in households with incomes below 50% of the national median income). There is now ample evidence to show that social inequality is an important factor in and of itself for determining many health outcomes, including mental illness (Marmot, 2003; Siegrist & Marmot, 2004).

Risk factors for the development of anxiety and depression in adolescence have been well studied. Longitudinal research conducted over 21 years and involving 354 participants recruited at age 5, found that depression in adolescence and adulthood was correlated with childhood factors such as reduced social skills (problems with peers and parents), lack of peer acceptance, lack of social support, family history of depression or substance use disorders, and family environments perceived as violent and lacking cohesiveness (Reinherz, Giaconia, Hauf, Wasserman &. Paradis, 2000; Reinherz, Paradis, Giaconia, Stashwick & Fitzmaurice, 2003). They also noted factors that appeared to protect against depression, including family cohesion, positive self-concept and self-appreciation, positive outlook on life, positive relationships, and spending time in the company of others (Reinherz et al., 1993).

Beardslee and Gladstone (2001) found that depression in adolescents was significantly more common when a parent or other close biological relative had a mood disorder, a severe stressor was present, self-esteem or self-efficacy was low, there was a sense of helplessness and hopelessness, or if the teenager was living in poverty. They also found that being female was significantly correlated with the development of depression. Rates of depression have been found to be similar in prepubertal boys and girls, but in adolescence twice as many girls than boys have been found to have the disorder (Voelker, 2006).

In the Oregon Adolescent Depression Project (Lewinsohn, Rohde, Seeley, Klein & Gotlib, 2003) a depressotypic cognitive style was identified as a particular risk factor,

characterised by dwelling on problems and expecting the worst for the future. A number of researchers have found a correlation between the development of internalising disorders and negative attributional style (Gillham, Reivich, Jaycox & Seligman. 1995; Gillham & Reivich 1999; Seligman, 1995). Attributional style, or how a person thinks about or interprets events, appears to determine the strategies they employ to cope with those events (Seligman, 1995). People who see problems as permanent, personal and pervasive tend to use unhelpful coping strategies such as avoidance (Seligman, 1995; Vernon, 2002). Avoidance leads to problems persisting, encourages brooding and has been linked to low mood, worry, depression and anxiety (Ayers & Sandler, 1999; Seligman, 1995).

The Oregon Adolescent Depression Project (Lewinsohn et al., 2003) found a correlation between depression and less effective coping mechanisms, less social support and reduced coping skills. Coping by avoiding problems, searching out distractions rather than confronting problems, and relinquishing control (trying neither to change circumstances or to adjust to them) has been shown to predispose to depression, anxiety and behaviour problems (Ayers, Sandler, West, & Roosa, 1996; Seligman, 1995; Somerfield & McCrae, 2000). On the other hand, coping by facing problems and tackling them, by cultivating support networks and accepting help when warranted, and by approaching life with an optimistic outlook have been found to protect against mental disorder (Suniya, Cicchetti & Becker, 2000).

Band and Weisz (1988) interviewed 6, 9, and 12 year olds and found that coping style differed across situations, for instance faced with school failure, most children tried to do something active to change stressful circumstances, whereas when faced with a health problem, most children chose to be passive. Coping style was also influenced by age, with younger children being much more likely to choose active coping strategies than 12 year olds. This suggests that perhaps the added stresses that come about at adolescence might cause previously healthy coping strategies to be replaced by less helpful strategies. This presents an argument for developing mental health programs for adolescents that focus on encouraging the use of helpful coping strategies (Band & Weisz, 1988).

Adolescence may represent an opportune time to strengthen personal coping behaviours such as problem solving, time management and emotion regulation because people at this time are having to cope with an increasing number of complex challenges and problems (Luthar et al., 2000). Adolescents themselves are aware of the increased levels of stress they experience at this time of life and the difficulty they have dealing with this stress (Sharp & Thompson, 1992). This awareness may make adolescents more receptive to programs that teach about adaptive coping strategies than younger children (Dyer & McGuiness, 1996).

Sawyer and Patton (2000) suggest that, along with efforts to enable better coping, prevention programs for adolescents should focus on family and school because each of these contexts has a profound influence on mental health at this time. A number of studies provide evidence for the role of social support in the home and at school. In studies looking at exposure to violence or sexual abuse and the development of anxiety or depression, real and perceived support from families were found to be important mediators (Spaccarelli & Fuchs, 1997; White, Bruce, Farrell & Kliwer, 1998). A sense of connection with school and being a member of a cohesive and supportive school community has been found to protect against mental health problems (Smart & Sanson, 2005; Weist et al., 2003).

The Mindmatters initiative, a federally funded Australian project aimed at supporting schools to address mental health prevention and promotion, recognises that school experiences have an important influence on the mental health of teenagers (Wyn, Cahill, Rowling, Holdsworth & Carson, 1999). This initiative outlines a number of things that schools can do to support the mental health of high school students, including procedures for fair discipline, strategies to prevent bullying, ways to promote effective communication as well as ideas for lessons aimed at teaching students about effective ways to cope (Commonwealth Department of Health and Aged Care, 2000d). The program identifies suicide, bullying, peer pressure and resilience as the most important issues to address with teenagers.

Although family and school experiences are important determinants of mental health in adolescents, programs focusing particularly on the adolescents themselves and aimed at building personal coping skills appear to be particularly important. This is because adolescents are faced with a number of social, emotional and cognitive challenges related to the transition from childhood to adulthood, and they are willing and able to take on more responsibility for dealing with these sorts of challenges compared to younger children (Cicchetti et al., 2000; Patton, Olsson & Toumbourou, 2002; Vernon, 2002). Mental health prevention and promotion directed at adolescents should involve making resources and opportunities available to enable this group to take on a greater responsibility for their own mental health and wellbeing and thus increase their sense of control over their own health choices (World Health Organisation, 2004a; Marmot, 2003).

2.5 School-based prevention programs for internalising disorders

A number of mental health prevention and promotion programs have been developed for use with adolescents, reflecting the need for such programs in this age group. A literature search was undertaken to find out if any of these interventions had been shown to be effective and, if so, whether effectiveness could be related to any particular program characteristics. Medline, PsycINFO, ERIC, Education Index, Social Sciences Index and the Cochrane Database were accessed to locate articles published from 1990 to 2007 using the keywords 'anxiety and prevention', 'depression and prevention', 'coping and prevention', 'health and prevention', 'mental health and school', 'health education', 'children and health prevention/education' and 'adolescence and prevention/education'. The reference lists from the retrieved articles were used to locate further articles. All articles were scanned and only those describing programs evaluated by means of experimental studies (random assignment to groups or interventions) or pseudo-experimental studies (random assignment not used) were retained. Table 1. summarises the results of this search. At least one key reference article is listed for each program.

Table 1

School health programs designed to prevent internalising disorders

Program	Disorder	Type	Audience	Content	Delivery	Evidence of success
Penn Prevention Program (US) Aussie Optimism Program (Aust) Jaycox et al., 1994 Roberts et al., 2003	Anxiety Depression	Indicated	Adolescents	CBT-based coping skills	Group CBT (12 sessions) delivered by researchers or school psychologists and nurses	US trial- reduced depression symptoms at post-test, reduced diagnostic rates at 6 months and 2 years. Aust trial- reduced anxiety but not depressive symptoms at post-test and 2 years.
Cool Kids Mifsud & Rapee, 2005 (Aust)	Anxiety	Selective and Indicated	7-16 year olds	CBT-based coping skills and psycho-education	Group CBT (8-10 sessions) delivered by school counsellor plus 2 booster sessions.	Decrease in symptoms of anxiety at post and 4mth F/U
FRIENDS (Aust) Lowry-Webster et al., 2003 Barrett et al., 2006	Anxiety	Selective and Universal	10-13 year olds and their parents	CBT-based coping skills	10 weekly group sessions and parent education (3 sessions) delivered by psychologists or by trained and supervised teachers in schools in the case of the universal program. Booster session for children at 1month and 3months with the universal program.	Selective delivery achieved reduced symptoms post-test and for up to 6 years. Universal delivery achieved reduced symptoms at post-test and reduced diagnostic rates at 24 and 36 months for high-risk subjects.
Coping Koala (US/Aust) Kendall et al. 1997 Dadds et al. 1997	Anxiety	Selective and Indicated	6-14 year olds	CBT-based coping skills	Group CBT (16 sessions in US and 10 sessions in Aust) delivered by clinical psychologist	Reduced anxiety disorders compared to control at 6 months and 2 years.
Good Behavior Game (US) Embry, 2002	Aggressive and disruptive behaviours	Universal	primary school children in 1st and 2nd grades	Behaviour modification therapy	School class divided into 3 groups. 3x10 minute sessions per week building up to sessions on every day of the entire week.	For male students at 14 years follow-up: lower rate of lifetime illicit drug abuse/dependence, less cigarette smoking, lower rate of lifetime alcohol abuse/dependence, sizeable increase in high school graduation rate, and a sizeable decrease in lifetime Major Depressive Disorder and Anti-Social Personality Disorder, however, these effects did not reach statistical significance. Smaller effects for female students but these did not reach statistical significance.

Table 1 (cont)

School health programs designed to prevent internalising disorders.

Adolescents Coping with Emotions (ACE) (Aust) Kowalenko et al., 2000	Depression	Indicated prevention and early treatment	Adolescents	Cognitive-behavioural and interpersonal skills.	Groups of 8-10 students, (8 sessions) delivered by a school counselor and a community mental health worker	Decreased levels of depressive symptoms and increased use of helpful coping skills at post-test and at 6 months in a female cohort. Significantly lower rates of 'likely caseness' for depression at post-test compared to controls.
Resourceful Adolescent Program (RAP) (Aust) Shochet & Osgarby, 1999 Merry et al., 2004 (NZ)	Depression	Universal	Adolescents	CBT-based coping skills	11 lessons delivered by teachers as part of the regular curriculum in schools	Significantly greater improvements in depressive symptoms for those in the intervention group compared to placebo condition at post-test and at 18months in NZ study. Significantly lower levels of depressive symptoms than those in the control condition at post-test and 12-month follow-up in Aust study.
Coping with Stress Course (US) Clarke et al., 1995	Depression	Selective and Indicated	Adolescents with symptoms or with a depressed parent	CBT-based coping skills	Group CBT (15 sessions) delivered by clinicians in schools	Reduced depression symptoms at post-test and reduced diagnostic rates at 1year
US Depression Preventive Intervention (US) Beardslee et al., 2003	Depression	Selective	Depressed parents with teenagers		Individual parent training (6-10 sessions) by clinicians	No reduction in depression symptoms at post-test or at 8 month or 2 years.
Help Starts Here (UK)	Anxiety, Depression, Conduct Disorder	Indicated	11year olds with symptoms	coping skills, social skills	group psychodrama (12 sessions) delivered by school teachers	Reduced symptoms at post-test and 1year.
LISA-T (Germany) Possel et al., 2004	Depression	Indicated	eighth graders (13-14 yr olds)	CBT-based coping skills	10 weekly class sessions delivered by trained teachers and overseen by clinicians.	No increase in depresssive symptoms in intervention group; reduced depressive symptoms in those with subsyndromal symptoms in intervention group.

Table 1 (cont)

School health programs designed to prevent internalising disorders.

I CAN DO Dubow et al., 1993	Anxiety	Universal	fourth graders (9-10 yr olds)	CBT-based coping skills	13 45-minute lessons delivered by researchers in the classroom	Higher levels of self-efficacy and greater problem-solving ability compared to controls at post-test. Continual improvement in self-efficacy at 6months.
Problem Solving for Life (Aust) Spence et al., 2003	Depression	Universal	Adolescents (12-14 years old)	CBT-based cognitive restructuring and problem-solving skills	Group (8 weekly lessons)	Significantly greater decrease in depressive symptoms and an increase in problem-solving scores compared to control group.

The literature search revealed a number of mental health prevention programs targeting adolescents, the majority of which focus on teaching ways to cope more effectively. Most of the programs use variations of a cognitive behavioural approach in line with research showing good results for such an approach (Lowry-Webster, Barrett & Lock, 2003; Possel, Horn, Groen & Hautzinger, 2004). Most of the programs incorporate a significant skills component. For instance, the *I CAN DO* program is designed to teach problem-solving, social-support seeking and skills to increase positive affect in times of stress (Dubow, Schmidt, McBride, Edwards & Merk 1993).

Many programs have been implemented in schools. There are important advantages for delivering such programs in schools, most notably ensuring access to the majority of youth (Lowry-Webster et al., 2003; Olsson, Bond, Burns, Vella-Brodrick & Sawyer, 2003). As a key setting in communities, schools have almost universal access to young people and school staff are therefore in a unique position to identify young people experiencing emotional distress and to enable them to access help (Dickinson, Coggan & Bennett, 2003).

It is feasible to deliver mental health prevention in Australian schools because schools are responsible for educating students about mental illness and ways to stay well (Curriculum Corporation, 1994). Also, it is in the interests of schools to support student mental health because emotional, social and behavioural difficulties in students have been shown to correlate with a diminished capacity to learn (Nadge, 2005; Roans & Hoagwood, 2000).

On the other hand, programs in schools will only be successful if they can be run effectively in this context, hence the importance of "intersectoral collaborative partnerships and/or strategic alliances" between health and education professionals to engage stakeholder support and to encourage sustainability (Commonwealth Department of Health and Aged Care, 2000a, p 16). Collaboration between health and education groups can enable programs to be designed that will fit within the culture of schools. For instance, targeted programs have been used widely and successfully in the health domain but in schools there may be problems with stigma (Dadds et al., 1999). There may also be problems with having a program directed at a few students when teachers are trained to address a whole class.

Schools already play an important role in providing mental health services to children and adolescents. Australian National Survey data showed that the majority of teenagers approached school staff for help rather than a general practitioner or other health care provider (Sawyer et al., 2000). Similar trends have been noted in the USA where schools were found to provide 70% to 80% of the mental health services to children and adolescents, with only 11% to 13% of the youth receiving help through the health sector (Burns et al., 1995).

There is support from the education sector for mental health interventions in schools because it is accepted that mental health status affects learning and behaviour (Adelman & Taylor, 2000; Curriculum Corporation, 1994; Nadge, 2005). Schools accept that it is part of their job to support the wellbeing of students and to enable students to learn how to look after their own mental health and the mental health of others (Curriculum Corporation, 1994; Weist et al., 2003). Health and education experts recognise that they share priorities for mental health and are aware that the best approach to prevention involves cooperation between schools and health groups (Commonwealth Department of Health and Aged Care, 2000a).

A number of the existing school programs rely on health care workers, including research psychologists, local mental health workers or school counselors, for implementation in the school setting. Despite having access to a universal audience at schools, most programs are selective or indicated, that is, they target students who are experiencing a number of risk factors or who exhibit a number of signs or symptoms of mental illness. There appears to be a lack of universal programs, that is, evidence-based interventions that attempt to provide information or skills to all students (Rones & Hoagwood, 2000).

A number of the school-based programs that have been shown to be effective have been developed in Australia. The *Cool Kids Program:School Version* is one such program designed for indicated use with at risk adolescents (Lyneham, Abbott, Wignall & Rapee, 2003). A recent trial of this program involved children from low socioeconomic neighbourhoods and showed positive outcomes, including significant decreases in symptoms for anxiety post-intervention and at 4 months (Mifsud & Rapee, 2005). The decision to have a school counselor and mental health expert deliver the program made implementation more costly, but was thought to be crucial for enabling the positive outcomes (Mifsud & Rapee, 2005).

The *ACE* (Adolescents Coping with Emotions) program, developed in NSW, is a prevention and early intervention program for adolescents at risk for depression, and aims to build resilience, enhance coping skills and teach positive thinking styles (Kowalenko et al., 2002). It teaches cognitive-behavioural and interpersonal skills (Kowalenko et al., 2005). A qualitative evaluation of this program showed that two-thirds of participants felt ACE taught useful things and 71% viewed ACE as somewhat or very helpful (Kowalenko et al., 2002). Female participants in ACE reported significantly reduced depressive symptoms and significantly improved coping skills compared with a wait-list control group in a trial involving 143 participants aged 13-16 years.

The *Aussie Optimism Program*, based on the *Penn Prevention Program* from the United States, is a cognitive behavioural program for children aged 10-13 years at risk for developing depression and is being implemented in Western Australia (Gillham, Jaycox,

Reivich, Seligman & Silver 1994; Roberts, Kane, Thomson, Bishop & Hart 2003). The Australian version has minor changes to spelling and place names but is otherwise the same as the US version. A randomized controlled trial of the program in the United States found that intervention group students reported fewer depressive symptoms up to 2-year after completing the program compared to control students (Gillham & Reivich, 1999; Gillham, Reivich, Jaycox, & Seligman, 1995). A randomised controlled trial conducted in Australia with rural school children found no improvements in depression symptoms in the intervention group, although intervention group children reported less anxiety than the control group at post intervention and at 6-month follow-up and more optimistic explanations at post intervention (Roberts et al., 2003). Although used as an indicated program to date, the *Aussie Optimism Program* is presently being adapted for universal delivery (Child Health Promotion Research Centre, Edith Cowen University, 2007).

The *Coping Koala* program is a prevention program for children aged 9-13 years who exhibit signs and/or symptoms of anxiety (Kendall, 1994). This program is an adapted version of Kendall's (1990) *Coping Cat* program. A randomised controlled trial, with the control being children on a wait-list, showed a significant reduction in the rate of anxiety disorders at 1 and 3 years after the intervention (Kendall, 1994). The same program was trialed in a similar way again in the USA and in Queensland with similar significant reductions in rates of anxiety disorders (Barrett, Dadds & Rapee 1996; Kendall et al., 1997).

Australian research concerning the *Coping Koala* program is known as the Queensland Early Intervention and Prevention of Anxiety Project (Donovan & Spence, 2000). Another randomised study conducted as part of this project screened 1786 children aged 7-14 years, identifying 128 children at risk for an anxiety disorders, and randomly assigned them to the intervention or to a monitoring group (Dadds, Spence, Holland, Barrett & Lourens, 1997). This particular trial used a version of the program containing 10 sessions for children and 3 sessions for parents. No differences between control and intervention groups were noted at post-test but at 6 months there was a significant reduction in the onset of anxiety disorders in the intervention group (16% compared to

54% in the monitoring group). However, this benefit was not maintained at the 2-year follow-up. Children who met criteria for an anxiety disorder at the outset appeared to benefit most from the program, with significantly more of these children continuing to meet criteria for a disorder in the monitoring group compared to the intervention group at the 2-year follow-up (Dadds et al., 1999).

The *FRIENDS* program, developed in Queensland, represents a current adaptation of the *Coping Koala* program and was designed and tested initially as a treatment program for children with anxiety and then as an indicated intervention for children aged 10-13 years at risk for anxiety disorders (Shortt, Barrett & Fox 2001). The program resembles the *Coping Koala* program in its cognitive behavioural approach and its education sessions for parents. A number of randomised controlled trials have shown the *FRIENDS* program to be effective when delivered by researchers as an indicated prevention program, with intervention groups reporting reduced symptoms and reduced rates of anxiety disorders (Barrett & Turner, 2001).

More recently the *FRIENDS* program has been trialed as a universal intervention (Lowry-Webster, Barrett & Dadds, 2001). A randomised trial involving 594 students was said to show evidence of a prevention effect because at 6 and 36 months after completing the program there were fewer students with an anxiety disorder in the group exposed to the program compared to a control group who completed school lessons as normal (Barrett, Farrell, Ollendick & Dadds, 2006; Lowry-Webster et al., 2003). For this trial, teachers were trained over one day to deliver the program to students and a clinical psychologist supervised delivery. Similar positive results were found in two further universal trials of this program but in these instances the program was delivered by clinical psychologists (Barrett & Turner, 2001; Dadds, Spence, Holland, Barrett & Laurens, 1997).

Another example of a universal school-based program is the *Resourceful Adolescent Program (RAP)*, a prevention program targeting depression. This program was developed in Queensland, Australia and incorporates strategies from both Cognitive Behavioural Therapy and Interpersonal Therapy (Shochet et al., 2001). The program package consists

of *RAP-A* for adolescents and *RAP-P* for parents, and another program component for teachers dealing with school connectedness is currently being evaluated (Queensland University of Technology, School of Psychology and Counselling, 2006). A number of randomised controlled trials have been conducted on *RAP* since a pilot study in 1996, and all trials show superior results for intervention groups compared to control groups for the prevention of future depressive symptoms (Shochet et al., 2001).

The *Problem Solving for Life* (PSFL) program is another example of a cognitive behavioural intervention designed for universal delivery by teachers in schools (Spence, Sheffield & Donovan, 2003). Despite initial short-term benefits, 2-, 3- and 4-year follow-up data showed no change in terms of symptoms, skills and other indicators of psychopathology (Spence, Sheffield & Donovan, 2005).

The federally supported *Mindmatters* initiative presents a big picture view of mental health prevention and promotion in schools. It adopts a whole school approach in line with the Health Promoting Schools approach outlined by the World Health Organisation (Weare, 2000). As such, it provides a framework to direct the development of school policies and procedures that are concerned with mental health, such as bullying policies, student welfare policies and counseling procedures, and suggests ways to change structures to make students feel more supported and connected with school (Wyn, Cahill, Rowling, Holdsworth & Carson, 1999). It also encourages schools to develop plans to support the mental health of staff. It does not provide a structured curriculum or sequenced lesson activities like the programs reviewed above.

A number of reviews have been undertaken regarding mental health programs for youth. A systematic review was conducted in the United States as part of an effort to gather empirical evidence to identify successful programs and to describe those elements that make programs successful (Greenberg, Domitrovich & Bumbarger 1999). The review was limited to those programs that had been evaluated in randomised or quasi-experimental trials with school-aged children and adolescents. Programs were said to be effective if they could be implemented well and if they prevented emotional and

behavioural problems. Over 130 programs were identified (including some programs designed for prevention and for implementation in schools) but only 34 were found to be somewhat effective.

The review concluded by presenting characteristics that were common to programs identified as effective. Most importantly, effective school mental health programs were based on sound theory, for instance they employed cognitive behavioural therapy principles, and were developmentally appropriate, for instance they used age-appropriate examples to illustrate how to apply certain coping skills. Theory was used to explain how a program was expected to achieve its goals, for instance changes in coping behaviours were hypothesised to lead to mental health gains. Interventions were aimed at reducing risks or building competencies shown to be causally linked to mental health outcomes in children and adolescents, for instance providing strategies to discouraging social isolation and to encourage social networking. Effective programs addressed modifiable risk factors that were either intrapersonal, such as coping resources, or environmental, such effective anti-bullying policies in schools.

A second large review, still in progress, by the Collaborative for Academic, Social and Emotional Learning suggests that effective programs are those that address key competencies, including knowledge of self (identifying emotions, recognising strengths), caring for others (perspective taking), responsible decision making (managing emotions, goal setting, problem solving) and social effectiveness (communication, building relationships, help seeking) (Payton et al., 2000). This review looks particularly at program design and suggests that effective programs need to have quality lesson plans, student assessment measures, classroom implementation monitoring tools, and strategies to promote schoolwide coordination, school-family partnerships and school-community partnerships.

Roans and Hoagwood (2000) reviewed 43 school-based mental health programs for evidence of efficacy and efficiency and found program effectiveness, sustainability and maintenance depended on sound implementation practices. They found that a program

was able to be delivered with fidelity when high quality training and support was offered to the implementers, when manuals and workbooks were written to provide guidance in the longer term, when there was support for the program from the school administration and when the program integrated with other aspects of school life (Roans & Hoagwood, 2000). Graczyk, Domitrovich, & Zins (2003) also recognise the importance of implementation practices and suggest that is important that programs be designed so that they are delivered in a similar fashion at different sites by different implementers and are not easily modified during implementation.

A review by the Australian government body, Auseinet, identified a number of mental health prevention programs for adolescents and noted characteristics or strengths of the more successful programs (Auseinet, 2003). Indicated and treatment programs benefited from including family interventions, having both centre-based and outreach services, working in close relationship with referral agencies, having a multidisciplinary team and having in-home assessment and follow-up. Selective and universal programs benefited by being easily accessed by young people themselves, providing ongoing professional development for staff responsible for implementation, and allowing children and adolescents to learn about their own resourcefulness and to gain confidence in their own ability to cope.

A recent Cochrane review was designed to determine whether psychological and/or educational interventions (both universal and targeted) were effective in reducing risk of depressive disorder by reducing depressive symptoms immediately after intervention or by preventing the onset of depressive disorder in children and adolescents over the next one to three years (Merry, McDowell, Hetrick, Bir & Muller, 2007). It was found that psychological interventions were effective compared with non-intervention immediately after programs were delivered with a significant reduction in scores on depression rating scales for targeted but not universal interventions. The authors conclude that, while there is insufficient evidence to warrant the introduction of depression prevention programs currently, results to date indicate that further study would be worthwhile. They suggest that there is a need to compare interventions with a placebo or active comparison so that

study participants do not know whether they are in the intervention group or not, to investigate the impact of booster sessions to see if effectiveness immediately after intervention can be prolonged and to consider practical implementation of prevention programmes when choosing target populations. They make the point that most studies have focussed on psychological interventions and the potential effectiveness of educational interventions has not been fully investigated.

Another recent review also looked specifically at preventive interventions targeting depression in young people (Spence & Shortt, 2007). The aim was to examine the evidence relating to outcomes from universal, school-based interventions for the prevention of depression among children and adolescents. The review focussed on interventions conducted within a school context, designed for universal delivery and specifically targeting depression, rather than emotional wellbeing in general. Of the studies reviewed, the majority did not demonstrate positive effects upon depression and the authors concluded that there was insufficient evidence regarding efficacy and effectiveness to justify widespread dissemination of universal, school-based interventions for the prevention of depression in children and adolescents. Despite this, the authors expressed support for continuing the search to develop effective ways of preventing the development of depression in young people. They suggested brief interventions may not provide sufficient ‘dosage’ to produce lasting benefits and advised that ongoing booster sessions be provided. Furthermore, they proposed that preventive approaches should provide a greater focus upon reducing risk factors and enhancing protective factors within the child's environment, in addition to components that focus on the individual. They pointed out the importance of having those who deliver the intervention sufficiently trained and supervised to ensure high levels of program fidelity. The authors admit that dissemination of such programs would be costly.

Overall, the research literature concerning mental health prevention and promotion programs for youth presents reasonable evidence that selective and indicated programs based on a cognitive behavioural approach and targeting internalising disorders can be effective. These programs can result in decreased symptoms and some have been shown

to reduce numbers of participants meeting criteria for disorder or being at high risk for developing disorder. There is less evidence for the efficacy of universal prevention programs although trials of three universal programs, one targeting anxiety and two targeting depression, have shown positive outcomes. These programs have resulted in favourable changes in knowledge, behaviour (including increased use of helpful coping strategies), symptoms and diagnostic rates (Shochet & Osgarby, 1999; Spence et al., 2003; Lowry-Webster et al., 2003).

It remains to be seen whether mental health prevention programs, be they selective, indicated or universal, can be implemented widely across the adolescent population, a necessity if prevention is to be achieved (Pencheon, Guest, Melzer. & Muir-Gray, 2001). It also remains to be seen whether such programs can influence patterns of incidence and prevalence of depression and anxiety disorders over the longer term because most research concerning these programs reports short to medium term studies ranging from 3 months to 2 years.

2.6 Problems with a selective or indicated approach in schools

Despite support and research from the education sector showing that school-based mental health prevention programs can be effective when administered well, there is little evidence that programs are being adopted and used widely in schools (Andrews & Erskine, 2001; Hosman, 2001). It has been suggested that schools may not use health programs because of a mismatch between program design and school practice (Dusenbury & Hansen, 2004). In the case of mental health programs, there may be a mismatch between a health-oriented program approach and an education-oriented pedagogical approach

There are problems with the health-oriented selective or indicated approaches that many school-based prevention programs take (Shochet et al., 2001; Weist et al., 2003). Such approaches require school staff to select students to participate in programs based on level of risk even though mental health is not an area in which many educators have

training. Previous research suggests that teachers often have difficulty detecting anxiety problems in students (Dadds et al., 1997; Elias, 2003). Research reviews show that many programs use checklists or questionnaires developed for use in clinical settings to identify students for participation (Auseinet, 2003; Greenberg et al., 1999; Roans & Hoagwood, 2000). There is a risk that non-clinical people, such as school staff, could misinterpret information from these measures and this could lead to the wrong students being selected to participate in the programs.

Selective or indicated school programs run the risk of causing problems related to stigma, including teasing by peers (Shochet et al., 2001). Implementing only selective or targeted mental health programs at schools would lead to many students missing out on learning about mental health. These students would remain uninformed about mental health and this could add to problems with stigma because these students might find it difficult to empathise with peers with mental health problems.

A number of existing mental health prevention programs require health professionals, such as psychologists, local mental health workers or school counselors, to implement them (Kowalenko et al., 2000; Lowry-Webster et al., 2003; Mifsud & Rapee, 2005; Robert, Kane, Thomson, Bishop & Hart, 2003). This could be a problem in schools because teachers are responsible for delivering the bulk of the learning material to students, and having health professionals take on this role would require extra planning and resources. This would mean that mental health programs could only be delivered occasionally, in a similar way to many drug and alcohol and sex education programs, due to cost and difficulties finding time in a busy schedule. Research shows that such occasional learning is not ideal, and that the most effective learning occurs when content is revisited and extended over time (Beamon, 2001; Lovat & Smith, 1995).

Relying on health professionals for implementation is also problematic because there are not enough mental health experts in Australia to meet treatment demand let alone to deliver prevention interventions (Andrews, 2003). This may be one of the main reasons why programs that are reliant on health professionals for implementation, or even for

close supervision during implementation, are unlikely to survive long-term (Davis, Martin, Kosky & O' Hanlon 1999; Schorr, 1988).

Another problem with many selective or indicated programs is that lessons have to be conducted outside of normal lesson times, often at lunch break or after school. This is because small groups of students are targeted rather than whole classes. The requirement for students to attend extra classes outside of normal school hours to complete a program can lead to high dropout rates, as was found in a trial of the Penn Prevention Program (Jaycox et al., 1994).

2.7 Benefits of a universal approach in schools

A universal approach to mental health prevention in schools can overcome many problems that can arise with selective or indicated approaches. A universal program can be implemented routinely during lesson times because it is completed by all students rather than selected groups (Lowry-Webster et al., 2003). A universal program can be designed to address school syllabus outcomes and to meet the educational aim to teach all students about mental health and wellbeing (Curriculum Corporation 1994; MCEETYA, 1999; Raphael, 2000). A universal program has the potential to integrate seamlessly into school practice and to reach many more students than selective or indicated programs (Dadds, 2002).

Universal school-based mental health programs have been shown to decrease rates of disorders and improve symptoms in young people at risk for disorder (Lowry-Webster et al., 2003; Shochet et al., 2001). These programs may also facilitate the identification of young people with problems by encouraging them to seek appropriate help or by enabling teachers or peers to recognise signs of mental distress in others (Wyn et al., 1999). This is an important benefit because many young people experiencing a mental health problem do not reach clinical attention until some years after the first onset of disorder, despite research showing that early intervention and treatment improves prognosis significantly (Dickinson et al., 2003).

Educating all students about mental health may help them to develop empathy for those with a mental health problem and may lessen the degree of stigma that those with a problem might experience in the school setting (Weist et al., 2003). Knowledge about mental health problems may enable students to help others with problems. This is important because research shows that the majority of young people with mental health problems seek help from their peers in preference to adults (Sawyer et al., 2000). Enabling these peers to act in appropriate ways when friends come to them for assistance can enable them to experience a sense of efficacy and wellbeing (Snyder & Lopez, 2002). Also, students with developed coping skills may serve as models for peers who have less developed skills, such as younger students (Lowry-Webster et al., 2001).

Students who are exposed to mental health education can acquire skills and knowledge to help themselves, or their friends or relatives, deal with future challenges (Possel, 2005). As such, these students can be considered to be resilient (Luthar et al., 2000; Masten, Hubbard, Tellegen, Garmezy & Ramirez, 1999). A resilient individual does not avoid emotional distress but rather shows successful coping in the face of such distress (Luthar, 1991). Rutter (1987) suggests that resilience is not about "evasion of risk, but in successful engagement with it ... protection stems from the adaptive changes that follow successful coping" (p. 318). Education policy documents support strategies to promote resilience in students (MCEETYA, 1999).

Strategies to promote resilience are very similar to strategies used in mental health prevention and promotion programs because both approaches aim to modify similar risk and protective factors. Both types of approaches aim to develop the capacity to be in touch with feelings, to attract and use support, to formulate and pursue goals, to offer support to others, and to approach challenging situations with optimism rather than helplessness (Bell, 2001; Suniya, Cicchetti & Becker, 2000). Importantly, the resilience literature highlights the concepts of stress and coping and identifies personal coping skills as a key component of resilience (Luthar, 1991; Olsson et al., 2003; Rutter, 1987). This parallels findings in the mental health literature concerning the role personal coping skills

can play in protecting against mental health problems (Somerfield & McCrae, 2000; Prins & Ollendick, 2003). The cognitive behavioural approach taken by many mental health prevention programs illustrates the focus on the development of coping skills.

A focus on coping skills is also apparent in the literature concerned with social determinants of health (Marmot & Wilkinson, 2006). This literature provides evidence for the health risks posed by long-term exposure to stress, as Brunner and Marmot (2006) point out, the “level of demands does not in itself pose a risk to health, provided that the individual has adequate coping resources and the opportunity to control his or her environment” (p. 27).

Other benefits of a universal approach to mental health prevention in schools relate to potential health promotion outcomes. Mental health promotion aims to "enhance well-being and quality of life for individuals, communities and societies" and "conceptualises mental health in positive rather than negative terms" (Jane-Llopis et al., 2005, p. 9). Universal delivery implies that there is something to be gained by exposing all students to a mental health program. Stress, worry and despair are universal emotions and all individuals, irrespective of risk status for mental disorders, can experience improvements in mood and functioning by learning about and implementing effective ways to cope with these feelings (Kraag, Zeegers, Kok, Hosman & Abu-Saad, 2006 ; Somerfield & McCrae, 2000). Learning about skills such as problem solving, activity planning and relaxation techniques can help all students in areas of life where it is important to be able to stay calm, to carry out rational and informed decision making and to plan and manage time effectively (Botvin & Griffin, 2004; Harrington & Clark, 1998; Quayle, Roberts, Dziurawiec & Kane, 1998).

Another way that all students could potentially benefit from exposure to mental health education is via the effects that improved mental health can have on other areas of health and wellbeing. For instance, increases in positive mood have been linked to improvements in memory, learning and behaviour (Silburn, 2002). Low levels of anxiety and high levels of self-efficacy, control, planning and persistence have been shown to

predict enjoyment of school, class participation and general self-esteem (Martin & Marsh, 2006). This research suggests that programs that can lower levels of mental illness and/or boost levels of mental wellness, as reflected in healthy levels of self-efficacy and enjoyment, may well lead to improved memory and learning outcomes. Improvement in mental wellness, measured as an increase in positive mood, has also been linked to physical health, such as increased immune function and faster recovery from heart attack (Bunker et al., 2003; Coe & Lubach, 2003; Edwards, 2000).

Research concerning the psychobiological response to stress provides explanations for how mental health might influence physical health (Marmot & Wilkinson, 2006). As can be seen in Figure 2 (Brunner & Marmot, 2006, p27), the major hormonal, metabolic and immune elements of the stress response can have negative effects on most of the physiological systems of the body.

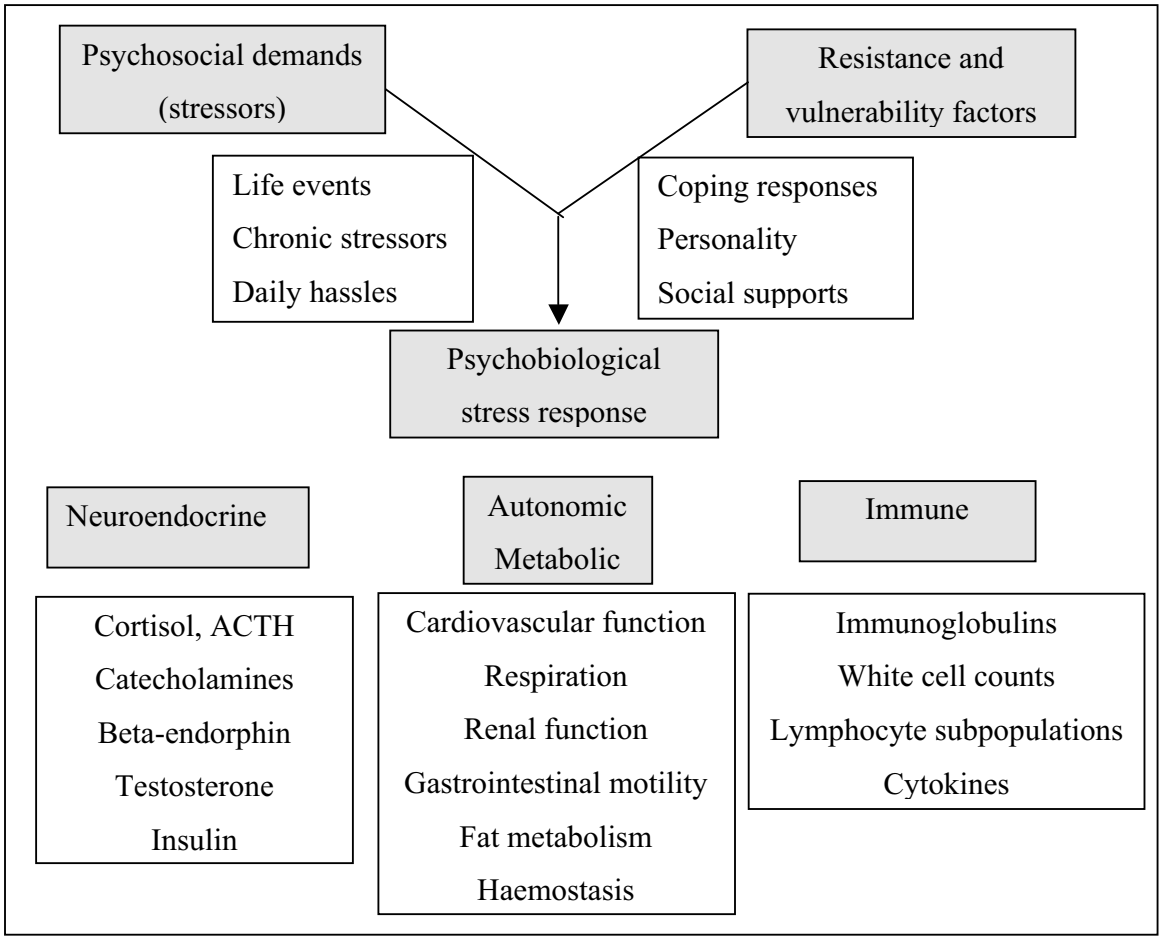

Figure 2. The Psychobiological stress response (Brunner & Marmot, 2006, p27)

This research illustrates the important role that coping responses play in mediating the stress response and thus the impact of stress on body systems. People who use more effective coping skills report lower levels of stress and higher levels of positive emotions (Diener & Seligman, 2004; Gillham, 2000). These people enjoy better mental and physical health.

The Australian government recognises that mental health prevention should not only aim to prevent mental illness but should also aim to promote "subjective wellbeing, optimal development and the use of mental abilities (cognitive, affective and relational)" so that important individual and social goals can be reached (Australian Health Ministers, 1991, p. 24). Promoting mental health can have benefits not only for individuals but also for

societies, in the form of positive education and employment outcomes, increased social cohesiveness, and economic and productivity gains (Eckersley et al., 2006; Heckman, 2006; Jane-Llopis et al., 2005; Siegrist & Marmot, 2004).

Jane-Llopis and colleagues (2005) use the term 'positive mental health' to refer to a state of mental wellness that can be achieved through promotion initiatives. They define positive mental health as,

> [H]uman qualities and life skills such as cognitive functioning, positive self-esteem, social and problem-solving skills, the ability to manage major changes and stresses in life and to influence the social environment, the ability to work productively and fruitfully and to make contributions to the community, and a state of emotional, spiritual and mental well-being (p. 9).

From a public health perspective, when problems become so common that they cause significant burden to individuals and society, there is a need for society as a whole to be informed about risk and protective factors and to be involved in initiatives to decrease rates of disorder and associated burden (Raphael, 2000). In Australia mental disorders are high prevalence and high burden disorders (Andrews & Wilkinson, 2002). Risk factors for developing these disorders are common (Eckersley, 2006; Mackay, 2003; Mrazek & Haggerty, 1994; National Institute of Mental Health, 1998). For health problems with this profile, universal interventions are appropriate (World Health Organisation, 2004a). Gillham (2000) argues that selective programs may show larger effects for individual participants, but universal programs have the potential to reach a much larger number of participants and, although effects are small for each individual, the effect society-wide is large.

CHAPTER 3 DESIGNING A UNIVERSAL SCHOOL PROGRAM

3.1 Introduction

This chapter describes the process of designing a universal mental health prevention program for use in schools with adolescent students. The author of this thesis worked on her own to decide the process she would use to design the program (Intervention Mapping). She was also solely responsible for designing the structure of the program (how it would be sectioned, how it would be sequenced, how students and teachers would access different parts of the program, what the internet interface would look like and how it would function), writing the narrative script, developing character profiles, developing student activities to complement the narrative, developing short quizzes, and developing the content and means by which students could self-monitor their progress through the program and monitor their stress levels. The author did not draw the cartoons. A visual artist was employed to make drawings based on detailed character profiles and scripts that were written by the author. The author did not write the code that was necessary to have the program computerized and placed on the internet. A computer programmer was employed to do this based on detailed written and verbal instructions from the author.

Theory and practice show that good program design can maximise the chances that a new intervention will be acceptable to the target audience (teachers and students in this instance) and will be taken up and used widely (Dusenbury & Hansen, 2004). The Intervention Mapping approach is utilised as a framework for guiding the development of the program (van Bokhoven et al., 2003). Intervention Mapping has been used successfully to design a number of health prevention programs, including programs for healthy eating, physical activity and HIV education (Balfour et al., 2006; Heinen, Bartholomew, Wensing, van de Kerkhof & van Achterberg, 2006; Reinaerts, de Nooijer, Candel, & de Vries, 2007). This research project applies the Intervention Mapping approach to the design of a mental health prevention program.

3.2 Intervention Mapping

The Cochrane Effective Practice and Organisation of Care (EPOC) group propose that many new health interventions fail due to inadequate methods for design and evaluation (Hulscher, Wensing, van der Weijden & Grol, 2006). A systematic review of school mental health programs found that programs were more likely to be effective if theory had been used to inform design (Greenberg et al., 1999). The design of health programs should reflect research findings, clients' preferences and values, clinicians' experience and expertise, and available resources (National Health and Medical Research Council, 1999).

Possel (2005) suggests that it is important to decide from the outset if a program will be universal, selective or indicated because this will determine important aspects of content and delivery. For instance, a universal mental health program should aim to promote mental wellbeing as well as prevent illness (Jane-Llopis et al., 2005). Mental health promotion would require a focus on enhancing personal competence and/or addressing broader social and community determinants of mental health, as outlined in the World Health Organisation (WHO) Ottawa Charter for health promotion (WHO, 1986).

Sawyer and Patton (2000) suggest mental health prevention initiatives should be designed to meet the following requirements: (a) risk factors selected for change must have a strong causal relationship with the mental disorders to be prevented; (b) risk factors must be modifiable; (c) the intervention should have the capacity to reach all members of the target population; and (d) the intervention should be able to be maintained long enough to significantly modify risk factors.

The Intervention Mapping model provides a systematic framework to guide designers of health prevention programs (van Bokhoven et al., 2003). This model was developed in response to a lack of tools available for this task (Bartholomew et al., 2006). The aim was to come up with a rigorous method to counteract design processes founded on intuitive and subjective decision-making. As van Bokhoven and colleagues (2003) observe:

> The use of rigorous research methods in quality improvement has now been generally accepted for evaluation of interventions, and increasingly also for the problem analysis of the healthcare topic that is to be changed. However a scientific approach should also be accepted for the design process of the intervention (p. 215).

Intervention Mapping provides guidelines for the selection and application of theoretical foundations and for the translation of theory into actual materials and activities (Kok, Schaalma, Ruiter, van Empelen & Brug, 2004). By ensuring that program design is informed by theory, this approach increases the chances that a program will have a significant and favourable effect on the risk factors the program aims to modify (Bartholomew et al., 2006). This approach also emphasises the importance of ensuring that design decisions match well with the characteristics of the people who will use the program and the environment in which it will be used.

This increases the chances that a program will have the capacity to reach the target audience and to be delivered to that audience effectively.

Intervention Mapping is comprised of 5 steps. In step 1, program objectives are defined. This entails analysing the problem, defining and describing the target population, stating behavioural and environmental outcomes and specifying performance objectives. Step 2 requires design methods and strategies to be delineated and requires a review of theory-based methods and the translation of these methods into practical strategies. In step 3, a plan for the program is written and a program draft is produced. Step 4 is concerned with planning for program implementation and includes specifying implementation performance objectives for initial pilot trials, running pilot trials, and making adjustments to the program in light of results from pilot testing. Step 5 is concerned with the monitoring and evaluation of the program over the longer term. These steps are outlined in Figure 3.

INTERVENTION MAPPING

STEP 1: Problem/target for improvement

Problem analysis

- describe the problems in quantifiable measures (eg. quality of life, health outcomes, quality of care)
- describe barriers and facilitators, both personal and environmental
- describe target population in terms of sub-groups, stages of change

STEP 2: Design theory and methods

- specify intervention objectives
  - state expected changes in behaviour and environment
  - specify performance objectives
  - specify barriers and facilitators
- select methods and strategies
  - translate methods into practice strategies

Revisit previous steps and make adjustments

STEP 3: Program development

- operationalise strategies into plans, considering implementers, implementation sites and target audience
- develop design documents
- produce program materials

STEP 4: Pretest

- test materials (readability and usefulness)
- check acceptability to target population (coherence, time, outcome effects)

STEP 5: Adoption and Implementation

- write implementation plan
- implement

Evaluation

- write evaluation plan (include effect measures and process measures)
- evaluate

Figure 3. Intervention Mapping Design Process (adapted from van Bokhoven et al., 2003, p. 216).

3.3 STEP 1: Problem/target for improvement

This research aims to address the problem of high and rising rates of mental disorders, particularly anxiety and depression, in the Australian population. This problem has been described in the first and second chapters of this thesis using quantifiable measures including the findings from the Australian National Survey of Mental Health and Wellbeing and the Burden of Disease and Injury in Australia study (Australian Bureau of Statistics, 1998; Mathers et al., 1999; Sawyer et al., 2000). In summary, compared to other health disorders, anxiety and depression are common (Australian Bureau of Statistics, 1998), they are responsible for a significant amount of disease burden (Mathers et al., 1999) and treatment services in Australia cannot meet demand for even half of the people suffering from these disorders, let alone those at risk for developing disorders in the future (Commonwealth Department of Health and Aged Care, 2000a).

A health prevention response is an appropriate part of the solution to this problem because research shows that it is possible and feasible to prevent these disorders, and prevention would substantially decrease the burden that these disorders cause for individuals and society (Commonwealth Department of Health and Aged Care, 1999). Prevention would help to alleviate the present demand on limited mental health services.

Mental health prevention should target youth. Anxiety disorders and depression are commonly noticed in late childhood and in the teenage years, and prevention needs to occur before these disorders become established and cause educational and psychosocial damage (Grant et al., 2006; Wilhelm et al., 2005). Targeting youth could also counter the apparent rise in the prevalence of mental disorders in children and teenagers (World Health Organisation, 2004a).

A mental health prevention program for youth could reasonably aim to improve personal coping skills. Coping responses are important determinants of mental health and have been shown to have a strong causal relationship with mental disorders such as anxiety and depression (Brunner & Marmot, 2006; Prins & Ollendick, 2003; Somerfield &

McCrae, 2000). Coping skills are modifiable; children and adolescents have the ability to learn about and apply coping strategies that have been shown to protect and promote mental health, such as those skills traditionally taught in cognitive behavioural programs (Barrett et al., 2006; Edelman, 2003; Kowalenko et al., 2000; Vernon, 2002).

Adolescence is a time when it would be logical to provide advice about coping because increasing demands concerning relationships, identity formation and school work require effective responses (Masten et al., 1999; Olsson et al., 2003; Patton et al., 2002). Also, adolescents are aware of the increasing demands they face and are receptive to learning about ways to effectively deal with these demands (Ferdinand & Verhulst, 1995; Hulscher et al., 2006; Petersen, Leffert, Graham, Alwin & Ding, 1997).

Mental health prevention programs for youth have the capacity to reach most of the target population if they are delivered at a site where the majority of youth can be reached, for instance at schools. Delivery at schools could enable a program to be maintained long enough to significantly modify risk factors because it would be possible to design a series of courses for different age groups. Each program could deal with similar content, for instance the improvement of coping skills, but could do so in developmentally appropriate ways at different times during schooling. This would allow students to build and strengthen knowledge and skills over time.

3.3.1 Barriers and facilitators

There are a number of barriers and facilitators regarding a move towards mental health prevention aimed at youth. One important barrier is that most of the prevention programs available are designed to be administered by people with training in mental health and Australia does not have a large enough mental health work force to implement these programs widely (Andrews & Henderson, 2000). Prevention programs need to be delivered widely to be effective (Pencheon, et al., 2001).

A factor that could facilitate prevention aimed at youth is a school sector that is supportive of mental health prevention. The Australian education sector accepts

responsibility for protecting and promoting student mental health and wellbeing. The European Network of Health Promoting Schools provides evidence showing that school-based health prevention programs are more effective if they are delivered by school staff rather than by health professionals who "come into the schools, do their bit and then go away" (Barnekow et al., 2006, p. 27). Involving school staff can encourage them to feel ownership of the program, motivate them to implement the program well and can enable the school community to view mental health as an important priority area within the school (Barnekow, et al., 2006). If a program could be designed so that teachers can easily deliver it and so that it fits well within school practice, for instance, it meets school curriculum requirements, then it is likely that schools will support it.

A barrier to successful mental health prevention in youth is a lack of evidence showing that programs can be maintained over the longer term in schools. Cognitive behavioural interventions have been shown to be effective when implemented during relatively short research periods. During these periods implementation is carried out or overseen by research and clinical staff. If school-based programs are to survive beyond research studies they need to be able to be delivered by school staff with little or no help from research or clinical staff.

One way to ensure that a program is suitable for delivery by teachers is to involve education experts in the design process (Barnekow et al., 2006). Programs designed by collaborating teams of health and education experts have a higher chance of being effective (Graczyk et al., 2003). The European Network of Health Promoting Schools strongly recommends that educators and health experts work together so that priorities, values, language and concepts can be clarified and there can be "mutual understanding" (Barnekow et al., 2006, p. 19). St Leger and Nutbeam (2000) point out the importance of taking time to "map the links" that exist between education and health so that shared goals can be identified (p. 45).

3.3.2 Target population

This step in the Intervention Mapping model involves a careful assessment of the target audience and of the context in which the intervention will be delivered (Bartholomew et al., 2006). Consideration is given to how the program might be made to appeal to and be acceptable to the target audience. A new product will be taken up more widely in the first instance and have a greater chance of surviving over the longer term if at least some of the target audience endorses it from the very beginning (Haider & Kreps, 2004; Prochaska & Velicer, 1997).

School prevention programs need to be designed in such a way as to be appealing and acceptable to school staff, students and parents if they are to have any chance of being implemented and maintained over the longer term (Adelman & Taylor, 1999; Kutash, Duchnowski & Lynn, 2007). Despite this recommendation, program acceptability does not appear to warrant particular attention in the literature concerning mental health prevention programs for youth. As Lowry-Webster and colleagues (2003) observe:

> [P]rogram acceptability has been largely ignored by applied researchers in general, and by researchers working with children and adolescents in particular ... Traditional outcome research has paid considerable attention to other key methodological issues (e.g. experimental design, reliability of measurements, and statistical power (p. 27).

It is particularly important to ensure that school programs are acceptable to teachers if they are going to be responsible for delivering them (European Network of Health Promoting Schools, 1997; Graczyk et al., 2003). Teachers will engage with and support programs that have been shown to be effective and thus evaluation trials need to be conducted and their results circulated to education groups (Durlak, 1998). School staff will require "evaluation information in order to reduce uncertainty about an innovation's expected consequences" and will want to "know the innovation's advantages and disadvantages" with respect to their circumstances before they adopt the innovation (Haider & Kreps, 2004, p. 4).

Teachers are more likely to use programs that address educational priorities and employ sound teaching practices, hence the higher rates of success of programs that are designed by collaborating teams of health and education experts (Graczyk et al., 2003). School programs should address syllabus priorities and should provide teachers with the materials required to teach well, including quality lesson plans, student assessment measures and classroom monitoring tools (Payton, et al., 2000).

On a practical level, programs need to be able to be administered within the confines of school timetables. Most schools work to a timetable that allows for discrete, 40-50 minute lessons. Schools are very busy places and learning programs need to be flexible enough to take account of timetable changes, including missed lessons due to assemblies or excursions, and changes in the staff members responsible for delivering health lessons.

Designers of school-based prevention programs to be delivered by teachers need to consider teachers' pre-existing knowledge about mental health. The integrity of a program may suffer when the subject matter of a program is not altogether familiar to the implementer, in this case teachers, or if the implementer is not convinced of the benefits (Barnekow, et al., 2006; Bartholomew et al., 2006). Teachers may deliver only those parts of a health education program that they feel most comfortable with or that appear most useful to them. Research suggests that many educators do not receive adequate training in social and emotional development (Elias, 2003). Research also shows that teachers often have difficulty detecting anxiety problems in students (Dadds et al., 1997). Teachers may not have a good understanding of the mental health system and may not always know where to seek appropriate help or what to expect from different mental health providers (Weist et al., 2003). Despite this, many current programs for use in schools have been designed to take a health-oriented approach; they focus on health related content and employ the terminology of disease and treatment (Auseinet, 2003; Hosman, 2001).

Teachers will find it easier to implement a prevention program if students find the program appealing. There is a greater chance that students will find a program appealing

if content and delivery reflect recent advances in knowledge about the health issues that impact on young people, about the factors that influence the health behaviour of young people, and about ways to engage young people in learning about health and wellbeing (Board of Studies NSW, 2002; Hoagwood, Burns, Kiser, Ringeisen & Schoenwald, 2001). Prevention programs aim to educate and therefore they should be designed to take into account how and under what conditions learning occurs best for the target population (Lambert & McCombs, 1998).

Students are more likely to engage with a program if it offers reliable and helpful information (Adelman & Taylor, 2000). Students are more likely to see tasks as purposeful and meaningful when they deal with issues that are real-to-life and current, and when students are encouraged to draw upon personal experience to complete activities (Beamon, 2001). Current mental health programs for youth have been criticised because content does not address young people's pragmatic, everyday worries (Hulscher, et al., 2006).

The health issues affecting children and teenagers growing up in Australia today reflect social and economic circumstances (Moon, Meyer, & Grau, 1999). Stanley (2003) points to particular social and economic trends, such as high divorce rates, increasing numbers of young families experiencing poverty, increased availability of addictive drugs and alcohol and decreased availability of community support systems, as factors contributing to a rise in complex diseases in Australian youth, including mental health problems. Social research suggests a link between the growth of individualism in Australian society and a trend towards disconnection and loneliness in the youth population (Eckersley, 2006; McKay, 2003). The content of a school mental health program should reflect the important role that social forces play in the lives of young people by dealing directly with common social challenges like the availability of alcohol and drugs, family breakdown and social isolation and loneliness. Students should be provided with opportunities to learn strategies to cope with these challenges.

Youth commonly confront problems concerning peers, family and school (Fuller, 1998). Junior high school students report the following stressful experiences: having to attend uninteresting lessons, arguing with friends, school exams, being in trouble at school, difficulty with school work, arguments within the family, poor relationship with a teacher, personal illness or injury and death or illness of a close family member (Sharp & Thompson, 1992). The Cochrane review concerning prevention in primary care found that mental health interventions tended to neglect problems involving physical and material factors like money and unemployment, even though youth identified these problems as important (Hulscher, et al., 2006).

Involvement of parents or guardians in school-based health programs for children and adolescents is important because "good outcomes are more likely when parents are actively involved" (Barnekow et al., 2006, p. 22). Health messages can be reinforced and skills modeled in the home environment (Elias, Tobias & Friedlander, 2000). Parents might be provided with an overview of the program and with advice about how to reinforce learning at home. For programs targeting social and emotional learning, effects tend to be more enduring and pervasive when home and school collaborate closely (Elias, 2003).

3.4 STEP 2: Design theory and methods

3.4.1 Intervention objectives

The mental health prevention program that is the focus of this research: (a) is for adolescents; (b) is for universal delivery; (c) adopts a cognitive behavioural approach; (d) is designed to be acceptable for use by school teachers in schools; (e) is designed to be effectively implemented by school teachers in schools, (f) develops knowledge in students about stress and effective coping strategies, (g) changes the coping behaviours that students use (increases use of effective coping strategies and decreases use of less effective coping strategies), (h) improves mental state in students (increases life satisfaction and decreases psychological distress), and (i) improves students' perceptions of their competence to cope with stress.

The program aims to modify coping behaviours because there is strong evidence supporting a causal link between strategies used to cope with stressful events and mental health and wellbeing, including links with disorders such as anxiety and depression (Beck, Rush, Shaw & Emery, 1979; Cicchetti et al., 2000; Dadds, 2000; Prins & Ollendick, 2003).

3.4.2 Design methods and strategies

A health promotion approach

The mental health prevention program that is the focus of this research adopted a health promotion approach because such an approach fits well with school practice. A meta-analysis of school programs targeting stress management provides empirical support for this approach (Kraag et al., 2006). The WHO Ottawa Charter for Health Promotion defines health promotion as efforts aimed at enabling people to “exercise more control over their own health and over their environment” (WHO, 1986, p. 3). The focus is on enabling people to become competent in looking after their own health in line with the European Community's Health Promoting Schools approach (Barnekow et al., 2006).

One way to promote mental health is to enable people to develop effective coping skills. The WHO Ottawa Charter for Health Promotion (WHO, 1986) identifies the development of personal skills as one of five major approaches to health promotion, along with developing healthy public policy, creating healthy environments, strengthening communities and re-orienting health services. In their model of the psychobiological stress response, Brunner & Marmot (2006) identify "coping responses" as one of three main factors determining resistance and vulnerability to stress, the other two being "personality" and "social supports" (p. 27).

Delivering a program to enable students to learn coping skills, such as the program that is the focus of this research, is one strategy schools might use to promote mental health (Barnekow et al., 2006). Unfortunately most mental health prevention programs to date have been designed in line with health delivery approaches, for instance many target

small groups of at risk students (Auseinet, 2003). Programs that focus on mental health promotion would be more suited for use in schools. This is because a promotion approach can be designed to minimise content about mental disorders and avoid delivery methods that parallel treatment practices. A promotion approach could be designed to take account of school-based education practices, for instance it could be delivered universally.

A health promotion approach can also ensure teachers are not taking on responsibilities more suited to mental health experts. Teachers are expected to teach, and teaching about staying healthy is what health promotion initiatives aim to do. While research into protective factors for mental disorders has demonstrated that teachers can act as protective buffers in the lives of children by modeling helpful coping behaviours, teachers should not take responsibility for delivering interventions designed for high risk or mentally ill students. (Freeman, 1993; Radke-Yarrow & Brown, 1993; Wallerstein & Blakeslee, 1989; Werner & Smith, 1992). Despite this, when teenagers seek help, they typically make use of school-based services (Sawyer & Patton, 2000; Sawyer et al., 2000). In the case that a student in their care is ill, teachers should be supported to seek help for this student from appropriate mental health professionals (Reupert et al., 2006).

Most other strategies that schools can use to promote mental health are directed at strengthening social supports. Schools might include opportunities for students to make meaningful contributions within the school community and within the wider community and might develop policies and practices that encourage a cohesive school community (Resnick, Harris & Blum, 1993; Weare, 2000). A sense of connection with schools has been shown to play a major role in protecting mental health during adolescence (Smart & Sanson, 2005).

Another strategy to promote mental health that is particularly relevant in the school setting is what Nadge (2004) terms 'academic care'; that is, applying teaching practices that encourage students to engage with learning. Students who are engaged with learning not only make good academic progress but also report higher levels of positive emotions and wellbeing (Csikszentmihalyi, 1993; Martin & Marsh, 2006). Teaching practices that

support and empower students to accept responsibility for their own learning and to develop a sense of efficacy or competence also appear to facilitate social development and wellbeing (Reis, Sheldon, Gable, Roscoe & Ryan, 2000; Ryan & Deci, 2000; Skinner & Edge, 2002).

A cognitive behavioural approach

It is important to ensure that a school program to prevent mental disorders is based on empirically validated techniques (van Bokhoven et al., 2003). Research conducted over many years shows that a cognitive behavioural approach can be used successfully to treat and prevent internalising disorders in children, adolescents and adults, with no adverse effects (Barrett, 1998; Birmaher et al., 1996; Harrington, Whittaker & Shoebridge, 1998; Hoagwood, et al., 2001).

In a meta-analysis, Durlak and Wells (1997) found Cognitive Behavioural Therapy (CBT) to be the most effective therapy for clinical depression in children and adolescents. They also found cognitive behavioural approaches to be the most effective ways to prevent depression in high-risk groups (effect sizes were twice as high for behavioural or cognitive behavioural programs than for programs employing other approaches). Similarly, there is ample research showing CBT to be effective for the prevention of anxiety disorders in children and adolescents (Barrett, 1998; Birmaher, Ryan, Williamson, Brent & Kaufman, 1996; Bernstein, Borchardt & Perwein, 1996; Lowry-Webster et al., 2003; Shochet et al., 2001).

A cognitive behavioural approach aims to teach people how to recognise physiological and psychological indicators of emotional distress and how to employ effective coping techniques to deal with distress (Spence, 1994). Such an approach "actively focuses on change through attention to goals and behaviors that would help the person work towards those goals" (Clemens, 2003, p. 462). Cognitive behavioural prevention programs for youth incorporate the main components of the CBT approach as outlined originally by Beck (Beck, Rush, Shaw & Emery, 1979). These include: (a) psychoeducation about the cognitive theory of change (relationship between thoughts, feelings and behaviours); (b)

thought challenging and restructuring; (c) problem solving; (d) stress management skills (pleasant activity scheduling and relaxation training); and, (e) interpersonal skills training (Durlak & Wells, 1997; Feldner, Zvolensky & Schmidt, 2004; Ginsburg, 2004; Hoagwood et al., 2001).

A cognitive behavioural approach is based on the premise that mental disorders are not simply an outcome of adverse events but are rather a consequence of how people perceive and process such events and how they proceed to deal with the events (Beck, 1976; Harrington, 1998). Research supports this premise, for instance depression and anxiety in adults and youth have been linked to cognitive distortions (selectively attending to negative features of an event, attributing negative outcomes to stable internal traits, catastrophising about future events) and avoidant coping behaviours (Ayers & Sandler, 1999; Kendall, Stark & Adam, 1990; Seligman, 2002).

A cognitive behavioural approach is particularly suited to school prevention initiatives because it is premised on educating people rather than medicating or treating. The theory and skills are relatively easy to learn and can be applied to almost any stressful situation a school student might encounter in daily life (Edelman, 2003; Vernon, 2002). The approach uses techniques and language that are already familiar to many teachers and students, such as goal setting and problem solving (Clemens, 2003). School health programs are most successful when they include a skills component and a cognitive behavioural approach focuses heavily on teaching skills (Rones & Hoagwood, 2000). Teaching cognitive behavioural skills in the school setting may encourage students to use the skills in different contexts, for instance to cope with the pressures of school work as well as the pressures caused by conflicts with peers, and this might enhance the long-term effects of a prevention program (Lowry-Webster et al., 2003).

Historically a cognitive behavioural approach has been used for treatment, indicated prevention or selective prevention programs. The challenge for developers of school-based prevention programs is to adapt this approach so that it is suitable for universal prevention in schools (Lowry-Webster et al., 2001). Lowry Webster and colleagues

(2003) point out, "further studies examining the acceptability of the FRIENDS program as a universal school-based prevention program are required in order to tailor the FRIENDS program to suit the school curriculum" (p. 39). Dadds (2002) suggests that interventions built into existing school routines will achieve the highest participation rates.

Most current school-based cognitive behavioural prevention programs employ the same methods that are used in indicated and treatment programs, for instance small groups of at-risk students are targeted, diagnostic scales are administered as part of the evaluation process, and content addresses issues relevant to students at risk or suffering disorder, such as prodromal symptoms of psychosis (Auseinet, 2003; Greenberg et al., 1999). These methods are unlikely to fit well within schools. Lowry-Webster and colleagues (2003) suggest that designers take account of the following differences between traditional cognitive behavioural approaches and a school-based prevention approach: "setting (large school classroom vs. small clinic room); number of participants in the group (25-30 in the classroom vs. 8-12 in the clinic); group leader (teacher vs. psychologist); peer pressure, parental participation" (p. 39). The differences concerning setting and number of participants support a move towards a universal approach.

A problem with adapting a treatment-based method for universal delivery is that changes might make the method less effective. Nevertheless, research, in the form of evaluation studies of the Resourceful Adolescent Program (RAP) for depression prevention and the FRIENDS program for anxiety prevention, show that it is possible to successfully adapt a cognitive behavioural approach for universal delivery in schools (Lowry-Webster et al., 2003; Shochet et al., 2001).

There is less evidence to show that all students benefit from exposure to a cognitive behavioural program. Research to date suggests that students at risk for developing disorders appear to benefit most (Lowry-Webster et al., 2003). This research at least answers concerns regarding benefits for at risk participants. There have been suggestions, however that this group may not benefit from a universal program due to insufficient

exposure to cognitive behavioural techniques (universal programs may be shorter or less intensive than selective, indicated or treatment programs) (Greenberg et al., 1999).

Effective teaching practice

Programs will have a greater chance of being acceptable to school staff if they address educational priorities as set out in school policy and curriculum documents. The Adelaide Declaration sets out national priority goals for education in Australia (MCEETYA, 1999), including the goal to ensure that students "have the knowledge, skills and attitudes necessary to establish and maintain a healthy lifestyle" (p. 3). This goal aligns well with a mental health promotion agenda. Skills are defined as "analysis and problem solving", the ability to "plan and organise" and the ability to "make rational and informed decisions about their own lives and to accept responsibility for their own actions" (p. 2). These skills match well with the learning objectives of a cognitive behavioural approach. Attitudes are defined as "self-confidence, optimism, [and] high self-esteem" (p. 3). A cognitive behavioural health promoting program can potentially enable these attitudes in students.

Two national documents, a statement document and a curriculum document, provide a foundation for planning to meet students' needs in the area of Personal Development and Health education (Curriculum Corporation, 1994a and 1994b). These documents present the broad health promotion aim of educating students to "take the individual and collective action necessary for emotional, mental, physical, social and spiritual wellbeing, both personal and social" (Curriculum Corporation 1994a, p. 2). Although the focus is on mental health promotion, there is also mention of mental illness, treatment and prevention. For instance, the statement document suggests that students be given the opportunity to "explore the needs of people with mental illness [and] social attitudes to mental illness" and that students "learn about a range of acute and chronic illnesses, injuries and conditions ... and how individuals, groups and communities prevent and manage them (Curriculum Corporation, 1994a, p. 13). There is a focus on developing skills to "make informed decisions, plan strategies and implement and evaluate actions

that promote growth and development” (Curriculum Corporation 1994a, p. 7). Once again, these skills parallel a cognitive behavioural approach.

Education departments in each Australian state and territory provide syllabus documents to guide teachers in their lesson planning. Most personal development and health syllabus documents designed for teaching students in the first few years of high school deal with stress and coping. Specifically, the Victorian syllabus states that students should be supported to "identify and adopt strategies for managing personal dilemmas, conflict, challenge and compromise" (Victorian Curriculum and Assessment Authority, 2002, p. 11). The South Australian syllabus states that students should have opportunities to consider and develop "options for managing pressure and stress" (South Australian Department of Education Training and Employment, 2000). The Tasmanian syllabus identifies specific stress reduction techniques that students might be introduced to, including exercise, music, positive self-talk, relaxation tapes, tai chi and counselling (Tasmanian Department of Education, 1998). The NSW document states that students should be able to identify and select strategies to “enhance their ability to cope and feel supported” (Board of Studies NSW, 2003, p. 22). The Western Australian document states that "it is important that adolescents be well informed about the impact of stress on health and about strategies to manage stress" (Western Australian Department of Education and Training, 1998, p. 128).

The Australian Capital Territory (ACT) and Northern Territory syllabus documents do not focus specifically on stress and coping but do provide scope for programs that address these issues. The ACT syllabus, for instance, suggests that students should be able to “identify aspects of their lives that promote a sense of well-being and consider how these aspects can be maintained and enhanced” (Australian Capital Territory Department of Education and Training, 1994, p. 38). The Northern Territory syllabus states that students should have the opportunity to “explore and identify the range of mental health issues relevant to youth” (Northern Territory Department of Education, Employment and Training 2002, p. 240).

All syllabus documents for the junior years of high school address peer group pressure. The Northern Territory document suggests that students be given opportunities to “devise action plans to respond to peer group influence” (Northern Territory Department of Education, Employment and Training, 2002, p. 240). The Western Australian document suggests that students should be able to use “assertiveness skills when pressured by their peers” (Western Australian Department of Education and Training, 1998, p. 121). Syllabus documents for the junior years of high school also address the protective role that supportive relationships with peers and family play for mental health and wellbeing. For instance, the Western Australian document suggests that students be given opportunities to develop an understanding of the support provided by "structures such as family, friendship groups, religious groups, support agencies and sporting teams” (Western Australian Department of Education and Training, 1998, p. 119).

Overall, curriculum and syllabus documents used in Australian schools support a cognitive behavioural health promotion approach. Language and content reflects a focus on stress and coping rather than disease and treatment. The focus is on teaching skills to cope with challenge and change. These skills are similar to the skills targeted by a cognitive behavioural program, including problems solving and relaxation strategies.

As well as addressing syllabus outcomes, a school program should utilize quality educational practices. If attention is not paid to the methods used to instruct students it is unlikely teachers will use the program or students will learn. Lowry-Webster and colleagues (2003) suggest that the design of a universal school-based cognitive behavioural program should take into account "children's motivation, attitudes and aptitude" (p. 39). Quality educational practices invariably address these three factors.

It is important to have learning activities matched to the aptitudes and capabilities of students (Asakawa & Csikszentmihalyi, 1998). Students will not learn well if tasks are too cognitively demanding (Sweller & Chandler, 1994). On the other hand, learning will also suffer if a learning experience does not offer sufficient challenge to enable new learning to occur (Kalyuga, 2006). Research has highlighted the important role that

challenge plays in effective learning and questions the assumption that anxiety is always a negative mediator (Hoekman, 1999). Tasks need to be matched to students' capabilities in terms of content, learning processes and the readiness of a learner to apply new concepts (Kalyuga & Sweller, 2005). For instance, some learners will require direct instructional guidance, whereas others will require only minimal instructional guidance (Kalyuga & Sweller, 2005).

Research concerning gifted and talented students suggests that there will be students using the program who will have capabilities to interpret complex material, such as research reports, and to use advanced learning processes, such as locating pertinent material using the internet and analysing and evaluating complex sources of information (Rogers, 2002). As Csikszentmihalyi (1993) points out, "complex skills are built up by complex activities" (p. 170). Curriculum documents stress the need to ensure that learning programs are flexible enough to cater to the different capabilities and needs of students in terms of the amount and complexity of material that each student is exposed to and the pace at which each student works through the material (Board of Studies NSW, 2003; Victorian Curriculum and Assessment Authority, 2002).

Matching tasks to students' capabilities parallels the need to match health promotion programs to peoples' differing levels of readiness to accept and use new health knowledge and skills (Pencheon et al., 2001). A health prevention program should be designed to allow people at different stages of readiness to interact with learning material that is most appropriate and suitable for their particular needs and purposes (Prochaska & Velicer, 1997).

Students report a sense of competence and achievement when they successfully navigate a learning task that has been matched to their capabilities and that has required some effort on their part (Csikszentmihalyi, 1992). A sense of competence and achievement are strong motivators for learning (Bandura, 1993; Ryan & Deci, 2000). A school-based mental health program should utilize teaching strategies that motivate students to engage with learning. Students report higher levels of motivation to learn when they experience

control over their learning (Dweck, 1999; Martin & Marsh, 2006). Students report higher levels of control when they are able to make decisions about personal learning goals and to monitor their own progress (Schunk & Zimmerman, 1994; Zimmerman, 1994). Such practices reflect a self-regulated learning approach (Pintrich & De Groot, 1990). Students who are self-regulated tend to be motivated to learn for the sake of learning rather than for external rewards and are better placed to make good progress (Dweck, 1999).

Allowing students to take responsibility for their learning and to feel some control over the learning process has strong parallels with the aims of health promotion, whereby young people are supported to develop the knowledge and skills to care for their own health: "young people's empowerment enables them to influence their lives and living conditions" (Barnekow, et al., 2006, p. 28). The European Network of Health Promoting Schools recognises that the process of empowering students to take control of their own health is dependent on "quality educational policies and practices that provide opportunities for participation in critical decision-making" (Barnekow, et al., 2006, p. 28).

Learning through narrative is a strategy that has been shown to engage children and adolescents (Conle, 2003). Narrative, or storytelling has been used successfully for many years as part of cognitive behavioural treatment and prevention programs for children and adolescents (Monk & Winsdale, 1997; Schafer, 1999). Incorporating events that are likely to be familiar to students has been found to be effective for increasing student participation in school health programs (Sofian, Newton & DeClaire 2003).

Learning is influenced by social interaction and situational context (Beamon, 2001). Importantly, successful learning requires that students feel cared for and connected to others within the learning environment (Kessler, 2000). An environment conducive to learning is safe and supportive, where personal ideas and individual differences are valued and negative emotions, such as fear of punishment and embarrassment, are minimised (Lambert & McCombs, 1998). A supportive environment enables open-mindedness, tolerance, empathy, optimism, intellectual curiosity, and positive emotions

(Kessler, 2000). It is important to note that such an environment supports emotional wellbeing as well as academic success (Nadge, 2005).

Computer delivery

It is not feasible to implement cognitive behavioural programs widely in Australia using current delivery approaches because there are not enough trained mental health workers to reach people in need (Schorr, 1991). Computerised delivery of CBT is a recent development that has the potential to make programs more accessible to a larger audience (Godin, 2005). Computer programs could reach the large number of youth who are not presently accessing appropriate mental health services (Adelman & Taylor, 1999; Institute of Medicine, 1994).

Research has shown that computers can be used to successfully deliver cognitive behavioural interventions for the purposes of indicated prevention and treatment (Ghosh, Marks & Carr, 1988; Godin, 2005; Marks et al., 2003; Newman, Kenardy, Herman & Taylor, 1997). Delivering cognitive behavioural therapy using a computer with minimal support from a therapist has been shown to be an effective way to decrease symptoms for depression and anxiety and to build coping skills (Kaltenhaler et al., 2002).

A computerised approach could also be used for universal prevention in schools. Computers are an important part of the school curriculum. Information and Communication Technology (ICT) is one of the eight Key Learning Areas endorsed by all Ministers of Education in the National Goals for Schooling (MCEETYA, 1999). AUD$77 million has been spent as part of the Quality Teacher Program to increase teacher ICT skills (NOIE, 2002). The Commonwealth government provides surplus computers and IT equipment to schools as part of its Computer Technologies for Schools project (NOIE, 2002). Education Network Australia (EdNA) Online represents a comprehensive national resource providing online curriculum and teacher training information (McKenny, 1999). The EdNA Schools Advisory Group Progress Report for

2001 (MCEETYA, 2001) summarises the development of technology learning and teaching in government schools across Australia:

> The first major phase of ICT programs and projects is now nearing completion in most government education systems. As a result of these initiatives, most schools across Australia have begun the process of integration of ICT into the school curriculum and into the daily work of teachers. Many schools are demonstrating exciting and innovative approaches to teaching and learning using ICT (p. 4).

The New South Wales Computers in Schools program was initiated in 1994 and, by June 2000, AUD$263.5 million had been invested in an effort to provide technology to every public school in the state (NSW Government, 2000). The Australian Capital Territory Department of Education and Community Services (2000) provided AUD$4.5 million per annum from 1997-2000 to cover grants to schools for ICT, including the development of a wide area network.

The Learning and Technology in Schools (LATIS) project in the Northern Territory has improved student access to ICT, provided training for teachers, introduced a Territory wide online network and provided digital curricula (About LATIS, 2003). The Lighthouse Schools Project was launched in 2002 to support teachers throughout the Northern Territory to integrate new technology into their classroom practice (Northern Territory Government, 2002).

The Victorian Computers in Schools program was first implemented in 1996 (Education Victoria, 1998). There are presently more than 187,000 computers in government schools, an average computer-to-student ratio of 1:4, and a well-funded support program for routine maintenance, specialist services and staff training (Victoria Department of Education and Training, 2003). Every state school is connected to the Government's Internet access network VicOne (Education Victoria, 1998).

The Queensland Connect-Ed project has provided public schools throughout Queensland with computers, and priority has been given to teacher training in ICT skills (Education

Queensland, 1999; Queensland Education Department, 2000). Similarly, the DECStech 2001 project in South Australia provided public schools throughout that state with computers (South Australian Department of Education, Training and Employment, 1999). All South Australian schools, including remote schools, have access to low cost Internet services (Buckley, 2000).

In Western Australia the Technology 2000 Strategic Plan sets out strategies to increase the number of computers in public schools, to ensure widespread staff development in the use of technology and to increase internet usage in teaching and learning (Education Department of Western Australia, 2000a). In Tasmania, effective integration of ICT into teaching and learning is the main focus for all new education initiatives (Department of Education Tasmania, 2002). The Discover and Open-IT web sites aim to increase accessibility to online curriculum content (Department of Education Tasmania, 2003).

Catholic and independent schools across Australia typically link in with the policies of the State and Territory education departments in developments associated with the use of Information and Communication Technology in schools, although there are some areas, such as the application of flexible learning strategies for learning disabled students, which have received priority funding (Albert, 1999; Kearns & Grant, 2002). The Independent Schools' Council of Australia (ISCA) reports that the majority of independent schools have embarked on ambitious programs for the development of ICT infrastructure and learning programs (Kearns & Grant, 2002).

Research shows that computers are effective for delivering educational material, including mental health instruction (Fletcher-Flinn & Gravatt, 1995; Marks et al., 2003). Computer delivery has the advantages of being cost-effective and easily transportable. This is important because many schools have limited budgets and are located in regional and remote areas. A review by Schorr (1988) concluded that a lack of funds to ensure proper implementation was a reason why many school-based prevention programs failed.

Computer delivery could minimise impact on teacher workload. Lessons could be presented in a format that enables students to use them immediately. Ready-made resources could be provided such as activity sheets, posters for classroom display and possible extension activities. Interactive features could enable easy monitoring of student progress. The computer could allow work samples to be printed and collected by teachers. Assessment results could be tallied and presented in a spreadsheet. Security features could enable teachers to access results for students in their class while blocking access to other staff or students. Computers could deliver training and support to school staff. Computer delivery would ensure program fidelity because all students would access the same material via the same delivery channel. Roans and Hoagwood (2000) reviewed 43 school-based mental health programs and identified program fidelity as a crucial factor in determining program success.

Computer delivery is likely to appeal to a youth culture that it technologically savvy. Computer learning has been identified by middle school students as being more appealing than traditional methods because of the interactivity that it offers (Ares & Gorrell, 2002). Computer learning has been shown to result in enhanced enjoyment of, interest in, and attention to classroom activities, and Schofield's (1995) research further suggested that,

> ... students seemed to be drawn to work on computers in a way they were not generally drawn to their other work ... a number of teachers used access to computers as a reward, which would not make sense unless students' attitudes towards computer use were very positive (p. 192).

Factors that appear to account for students' high motivation to work on computers is novelty value, adding variety to school routine, providing relief from certain aspects of school (such as listening to teachers lecture), and a belief on the part of students that computer skills will be useful in later life (Schofield, 1995). Importantly, challenge and control have been found to play a significant role in shaping students' interest and persistence when working on computers (Ares & Gorrell, 2002). This link between computer use and a sense of challenge appears to be due to the ability of students to work at their own pace: "This let them push ahead as far and as fast as they could, rather than

at a pace dictated by the teacher's concern for other students in the class, which often left some feeling bored and others lost" (Schofield, 1995, p. 197).

A number of studies reported task-related talk among students when computers were being used (Bialo & Sivin 1990; Podmore 1991; Ringstaff, Snadholtz & Dwyer, 1991). This suggests that computers encourage cooperative and productive learning amongst peers as well as allowing students time to interact with material on their own and at their own pace. Computer delivery has been found to support teachers to take on a role as coach or tutor, which in turn allows students to receive more individualised help and also to become more self-directed (Schofield, Eurich-Fulcer & Britt 1994).

Self (1991) warns of the critical role that design plays in computerised learning and encourages designers to honour what is already known about quality educational practices. He suggests that, at the very least, a program should clearly express to students the outcomes to be learnt, and activities should be designed to match the capabilities of the audience. Learning will not be successful if the cognitive demand placed on a learner is higher than they can handle (Meyer & Moreno, 2003). On a more practical level, programs should be free of bugs, easy to use and the layout of information on the screen should be relatively clear (Self, 1991).

Mayer (2001) warned program designers to take heed of the shift in education in the last few decades away from diligent drill and practice and towards a focus on students' understanding and application of knowledge. It was suggested that the goal should be to "present information but also to provide guidance for how to process the presented information" (Mayer, 2001, p. 15). This would allow students to learn new knowledge but also to apply what they had learned.

Computer programs can take account of the level of expertise a learner has concerning the content to be learned, the processes for learning and the readiness of a learner to apply new learning to daily life (Kalyuga & Sweller, 2005). Computers can assess learners' pre-existing knowledge and can support students and teachers to use this

information to tailor learning experiences to particular needs and abilities. For instance, computers can enable tailoring of content by presenting information in a non-linear way and allowing students to select relevant activities, return to material or even skip sections (Chen 2002). Computers can also tailor learning processes, for instance, a novice can be guided to access general search strategies, instructional explanations (e.g. worked examples) and direct instructional guidance, whereas an expert can be guided to access sophisticated search strategies and activities that offer minimal instructional guidance (Kalyuga & Sweller, 2005).

Computers can enable continual assessment throughout a program and can offer instructional guidance when it is needed (van Merriënboer, Kirschner & Kester, 2002). Such regular, rapid and real-time feedback allows the learner, with the help of the computer, to take immediate steps to address gaps in learning (Kalyuga & Sweller 2005). Feedback might signal time to try a new activity or approach. This feedback also supports self-evaluation and can reinforce a sense of control as learners can progress to more appropriate learning experiences in their own time rather than waiting for the whole class to complete certain activities (Kalyuga & Sweller, 2005).

In the case of designing internet programs for use in schools, there should be enough components to make a website enjoyable to use but not too many components to confuse the user. Students can become confused when there are too many links on one page or when a series of links do not anticipate a user's search pattern (Danaher, McKay & Seeley, 2005). While having a number of links can allow a user the freedom to explore as they wish, too many options can become disorienting and the user may have difficulty retracing their steps to get back on track (Bernard, 2004). It has been suggested that links be limited to a few on each page when people are not experienced web users or when content is new (Lynch & Horton, 2002).

Graphics can play an important role in computer-based instruction when they are used in ways that serve an important instructional purpose, Mayer (2001) notes:

> [S]tudents perform better on verbal retention when they learn with text and illustrations or narration and animation than when they learn with text alone or

> narration alone ... [S]tudents perform better on problem-solving transfer when they learn with words and pictures rather than when they learn with words alone ... [A]dding a carefully designed graphic advance organiser to a text passage can greatly enhance student understanding (pp. 74-78).

Self (1991) warns that graphics should not be just a “gloss to cover a lack of substance” (p. 152). Fleming and Levie (1993) suggest applying the same instructional design principals to computer programs that are known to be effective for book-based learning, such as "adding pictures to words, placing text close to corresponding graphics, and eliminating extraneous material" (p. 71). Cartoons are used in psychological testing material for children because they have been found to focus the attention of children and to stimulate their interest (Cottler, Reich, Rourke, Cunningham-Williams & Compton, 2000). Cartoons have been used successfully in the form of animated stories in a computerised program to teach adolescents cognitive behavioural skills (Brosnan, Sharry, Fitzpatrick & Boyle, 2006). Brosnan and colleagues (2006) found that a computerised Cognitive Behavioural Therapy program that used an animated story building system in combination with a series of short movie vignettes helped adolescents experiencing depression, anxiety and other mental health issues to develop coping skills, express their experiences creatively and increase their ability to communicate their emotions effectively.

Schofield (1995) warns against software that allows students to complete tasks without ensuring that they have learned the material in them:

> [T]hey proceeded through the questions as quickly as possible, knowing that if there were four answer options, they could always get the answer right in four or fewer tries just by selecting all possible answers in turn. This strategy often appeared to lead to completion of the lesson more quickly but less productively (pp. 200-201).

The 4C/ID model presents guidance for designers of multimedia education programs (van Merriënboer, Clark & de Croock, 2002). The approach aims to teach skills by modeling

and application using simulated examples from the lives of learners (van Merriënboer, Kirschner & Kester, 2003). This model suggests that a program should begin by presenting tasks that are easy to master and then moving on to more difficult tasks. Situations are more stressful and generally harder to resolve when: (a) there are multiple problems to be addressed; (b) the problems influence functioning within a number of domains (home, school, community); (c) important people are involved (family, friends, teachers, sports coaches); and, (d) when the problems surface at times of transition, for instance moving from primary school into high school (Williams & McGillicuddy-De Lisi, 2000).

A program to teach adolescents about stress and coping might begin by presenting a single easily identified problem, located within one domain (academic or social or self), and involve one protagonist. Students can be introduced to particular coping skills when considering these easier situations through modeled examples (van Merriënboer et al., 2002). They might watch as an expert leads a protagonist through steps that enable more effective coping. For example, a character may be upset because they have not been invited to a party. The student is presented with this problem. First they identify particular ways that the character is responding to this situation and decide if they think that the character is coping in helpful or unhelpful ways. They can then be presented with the same scenario but with the character now taking advice from an expert who helps them to respond in more effective or helpful ways, for instance challenging unhelpful thoughts, implementing a problem solving strategy and using activity scheduling.

By the end of the program students would be expected to be able to apply coping skills learnt at the beginning of the program, to more challenging situations and without the help of an expert. These situations might be made up of more than one obvious problem, problems might influence more than one domain and people other than the student may be affected by decisions that the student makes. These problems would require the student to apply strategic thinking skills, such as reasoning and problem solving. Examples of more difficult problems might be skipping class due to friendship problems, starting at a new school or socialising with peers who are using alcohol or other drugs.

3.5 STEP 3: Program development

3.5.1 Introduction

This section of the chapter presents the first draft of the mental health prevention program. It corresponds to Step 3 of the Intervention Mapping model (Bartholomew, et al., 2006). In step 3, strategies are operationalised into a program that is well matched to the characteristics of the implementers, implementation sites and target audience.

3.5.2 Program overview

The mental health prevention program that is the focus of this research was delivered on-line to students aged 12 to 15 years under the supervision of schoolteachers. It aimed to enable students to learn about and apply useful coping strategies. Specifically, after completing the program, it was anticipated that students would be able to (a) recognise the common signs of stress, (b) recognise common strategies that people use to cope with stress, (c) identify strategies that they commonly use to cope with stress, (d) classify coping strategies as 'helpful' or 'unhelpful', (e) identify links between thoughts, feelings and actions, (f) recognise the basic steps for slow breathing, thought challenging, structured problem solving, goal setting and activity planning, (g) recognise when help should be sought, (h) identify appropriate sources of help for adolescents who are feeling stressed or depressed, (i) identify lifestyle factors that help people cope with stress, and (j) schedule daily activities that promote mental health.

An attempt was made to align the aims of the program with learning outcomes and indicators from all Australian State and Territory school health syllabus documents. Table 2 shows how the aims of the program compare with the outcomes and indicators from the NSW Personal Development, Health and Physical Education syllabus (Board of Studies NSW, 2003) because the program was initially evaluated in schools in New South Wales.

Table 2

Program aims compared to NSW syllabus outcomes and indicators

NSW 7-10 Syllabus		**Program Aims**
Outcomes	**Indicators**	
4.2- A student identifies and selects strategies that enhance their ability to cope and feel supported	*Students learn about*: -sources of change and challenge, eg school, family, friendships *Students learn to:* -describe the current challenges that may face young people and predict future challenges	*Student learn to:* -identify common stressors affecting adolescents
	Students learn about: -identifying fears and feelings	*Students learn to:* -recognise common signs of stress, including fears and feelings
	Students learn about: -dealing with conflicting demands -predicting and preparing for future challenges *Students learn to:* -identify strategies for coping with loss and ways of giving support to others	*Students learn about:* -helpful and unhelpful coping strategies *Students learn to* -recognise when others are suffering from stress, anxiety or depression and to offer appropriate help
	Students learn to: -develop a realistic sense of their ability to respond to and cope with challenges	*Students learn to:* -recognise when they should seek adult help for themselves or another for mental health problems

Table 2 (cont)

Program aims compared to NSW syllabus outcomes and indicators

NSW 7-10 Syllabus		**Program Aims**
Outcomes	**Indicators**	
4.6- A student describes the nature of health and analyses how health issues may impact on young people	*Students learn to:* -examine their behaviour and language and recognize the potential impact of these on their own and others' mental health -examine the relationship between the cognitive, physical, social, emotional and spiritual components of health	*Students learn about:* -effective communication skills -the relationship between thoughts, feelings and actions -the relationship between mental wellbeing and physical activity - the relationship between mental wellbeing and social activity
	Students learn about: -the benefits of a healthy lifestyle -factors that support mental health	*Students learn about:* -lifestyle factors that modify stress levels and support mental health-physical activity, rest and relaxation, socialising, making time to have fun -strategies that support mental health-slow breathing, thought challenging, structured problem solving, achieving goals and activity planning
4.7- A student identifies the consequences of risk behaviours and identifies strategies to minimize harm	*Students learn about:* -developing personal skills, eg, conflict resolution, assertive behaviour, problem-solving, refusal skills *Students learn to:* -describe strategies to minimize harm when they feel depressed	*Students learn to:* -use strategies that support mental health (same as above) -describe and use strategies to minimise harm when they feel depressed-challenging unhelpful thoughts, planning and participating in enjoyable activities and seeking help

Table 2 (cont)

Program aims compared to NSW syllabus outcomes and indicators

NSW 7-10 Syllabus		Program Aims
Outcomes	**Indicators**	
4.8- A student describes how to access and assess health information, products and services	*Students learn about:* -sources of health information, eg, family, peers, school, internet, media, General Practitioner	*Students learn about:* -sources of mental health information, eg, family, peers, school, internet, phone lines, health providers
4.9- A student describes the benefits of a balanced lifestyle and participation in physical activity	*Students learn about:* -components of a balanced lifestyle, ie, rest, sleep, school/work, physical activity, leisure/recreation -personal benefits of participation in physical activity, ie, physical, social, emotional, mental, spiritual *Students learn to:* -analyse their lifestyle over a typical week to plan and implement increased opportunities for physical activity	*Students learn about:* -components of a balanced lifestyle, including rest, sleep, exercise, leisure -personal mental health benefits of participation in physical activity *Students learn to:* -use Activity Planning to increase opportunities for activities that protect and promote mental health, including physical activity

The program was presented as a cartoon narrative that followed the adventures of two characters called Mia and Ben. This was intended to increase the likelihood that the program would appeal to both male and female students. The narrative unfolded across eight lessons that ran for approximately 40 minutes each. Each lesson included: (a) login; (b) revision (pre-testing in lesson 1); (c) learning activities; and, (d) games. There were no formal homework activities. Cognitive behaviour treatment and prevention programs for adolescents typically provide activities to be completed by individuals in their own time (Barrett, Lowry-Webster & Turner, 2000; Edelman, 2003; Vernon, 2002). This

homework provides an opportunity for a client or patient to work on applying the skills that they have learnt during a session to their particular life circumstances. Despite this, it was decided not to include homework in this program because setting tasks for completion in students' own time might increase the likelihood that some tasks would not be completed, and this would impact negatively on the integrity of the program. Students were, however, provided with opportunities during the lessons to plan how they would apply skills in their lives.

Ideas for further activities were provided for teachers to use to complement the computer lessons. These tasks did not introduce any new teaching material but rather allowed students to expand or extend their knowledge about particular themes that had already been covered in the computer lessons. These activities were resources that teachers could use if they decided to spend more time on the topic of stress and coping. Many of these additional tasks adopted group-learning strategies, such as whole class or small group discussion. Group learning has been shown to have benefits for teenagers undertaking cognitive behavioural programs, including improvements in learning and in specific mental health outcomes (Barrett, 1998; Lask et al., 2003). Some of these tasks were designed to be cognitively more demanding than the computer tasks in an effort to cater for students requiring enrichment or extension work. They presented advanced content, such as research reports concerning the neurological effects of meditation or websites discussing the workings of the adolescent brain, and required students to use advanced learning methods, such as locating material using the internet and analysing and evaluating scientific papers.

3.5.3 How to use the program

Teachers registered to use the program. They were required to go to the CLIMATE/Schools website at www.climateschools.tv and click the teacher login button. They were issued with a teacher login code (a random string of 8 numbers and letters) and a class set of student login codes (random strings of 8 numbers and letters). Every teacher and student login code was unique. This protected teacher and student confidentiality. Teachers gave a student login code to each student in their class. Students

then located the internet site www.climateschools.tv and clicked the student login button. They were asked to enter their login code. They were also asked to type in their first name and the initial of their surname at the beginning of lesson 1. Their name was linked to their login code. Each student login code and corresponding name was linked to the login code of their supervising teacher. When logged in, teachers were provided with access to a list of login codes and names for the students in their class. This enabled teachers to reissue a student login code in the event that a student misplaced their code and to monitor student progress (information about how many lessons each student had completed as well as assessment results appeared next to each student login code and name).

3.5.4 Detailed description of the lessons

The first lesson began with a 'pre-test' (see Appendix A). The purpose of the pre-test was to allow teachers to identify students who already possessed significant knowledge about stress and coping. These students could then be given permission to skip some basic learning activities and replace them with more advanced activities. The same test was administered at the end of the program. Comparing results before and after the course allowed teachers to measure how much students learnt from the course.

The first section of the pre-test contained 12 statements that were written to reflect the program content. Students chose 'true', 'false' or 'don't know' for each statement. The second section of the pre-test was a case study. Students read an excerpt from the book *Effie's Guide To Being Upyourself* (Coustas, 2003), used with permission from Hodder Headline Australia (see Appendix A). The excerpt described an episode of bullying occurring in the school playground. Students answered six questions regarding the way that the main character responded to this stressful situation. Then they were asked to record any other information that they knew about stress and coping.

After the pre-test, there was an introduction to the program. Buddy, a character who acted as a guide throughout, introduced the program by saying: "Everyone feels stressed or depressed sometimes. This program is all about taking action to beat bad feelings and to

feel good about life". Buddy then informed the students about what they would learn during the program. A message appeared on screen telling students that, after completing the program, they would be able to: (a) define the term ‘stress’; (b) recognize the common signs of stress; (c) classify different ways of coping as ‘helpful’ or ‘unhelpful’; (d) understand how our thoughts influence our feelings and actions; (e) explain how to use helpful coping strategies; and, (f) recognize when it is important to seek help.

The students were then introduced to the other characters in the program. They were Mia, Ben and Buddy's friends, as can be seen in Figure 4.

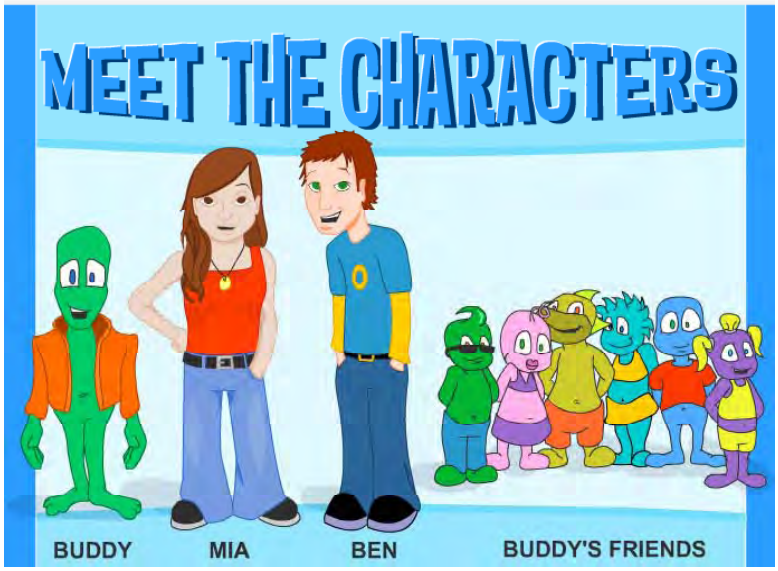

Figure 4. The program characters

Students were directed to click on each character to make a text box appear that contained a brief profile of the character. The profiles for Mia and Ben explained that they were teenagers about the same age as the target audience. Mia and Ben were dealing with typical adolescent stresses, for example being late for school, forgetting to do homework, studying for an exam or arguing with a sibling or friend. The profiles for each of Buddy's friends explained that they possessed expert knowledge about one particular

helpful coping strategy and that they would provide help for the students and for Mia and Ben throughout the program.

The cartoon narrative then began. It was written to show examples of times when Ben and Mia were not able to cope with their problems and challenges. These scenarios provided opportunities for Buddy and his friends to offer help and advice and to model the use of helpful coping strategies, including slow breathing, thought challenging, structured problem solving, goal setting and activity planning. Following, is an outline of each lesson (see Appendix B).

Lesson 1

In the first lesson students visit Mia and Ben at home. They click on the character's belongings to reveal details about them. Students find out about some problems that are causing the characters to feel stressed and how the characters are responding to this stress. Figure 5 shows that the student has clicked on a packet of chips and a soft drink can on Ben's desk.

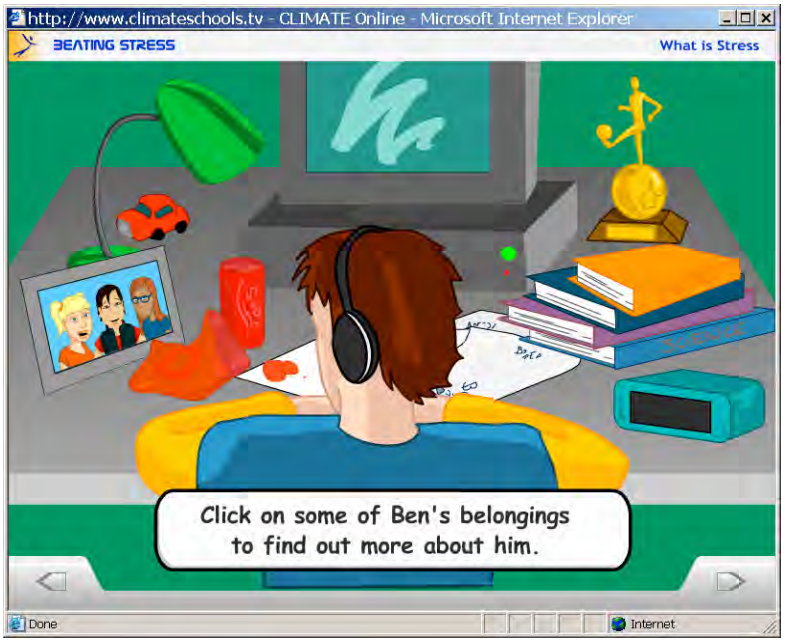

Figure 5. Ben's bedroom

Clicking on the packet of chips and soft drink can causes the screen in figure 6 to appear. This screen reveals that Ben is responding to stress by eating junk food. This is a common stress response in children and adolescents.

Figure 6. Ben responds to stress by eating junk food

Ben exhibits signs and symptoms of stress that are more commonly seen in people experiencing low mood while Mia shows signs and symptoms commonly seen in people with a sub-threshold anxiety disorder. Figure 7 shows Mia feeling anxious.

Figure 7. Mia's response to stress

While the characters exhibit some signs and symptoms of low mood and anxiety, they do not meet criteria for diagnosis of a disorder. This is in keeping with a universal approach.

After finding out about the things that make Mia and Ben feel stressed and how the characters respond to stress, students watch as Buddy comes to guide the characters to a secret location in outer-space to learn more about stress and coping. Figure 8 shows Mia, Ben and Buddy arriving at the secret location called the Mind Machine.

Figure 8. The Mind Machine

Mia, Ben and Buddy enter the Mind Machine and Mia and Ben learn about how to define stress, common causes of stress in adolescents, how to recognise stress in themselves and others, the positive effects of low levels of stress and the negative effects of high levels of stress. An adapted version of the Yerkes-Dodson curve is used to illustrate that stress is not always bad. Figure 9 shows a slide used in the program to illustrate these concepts. Students click on different sections of the graph to find out more about the effects of different levels of stress.

Figure 9. Adapted version of the Yerkes Dodson Curve

Students are introduced to important factors that protect against the negative effects of stress. Figure 10 illustrates the model that was used to inform the information presented in this part of the program.

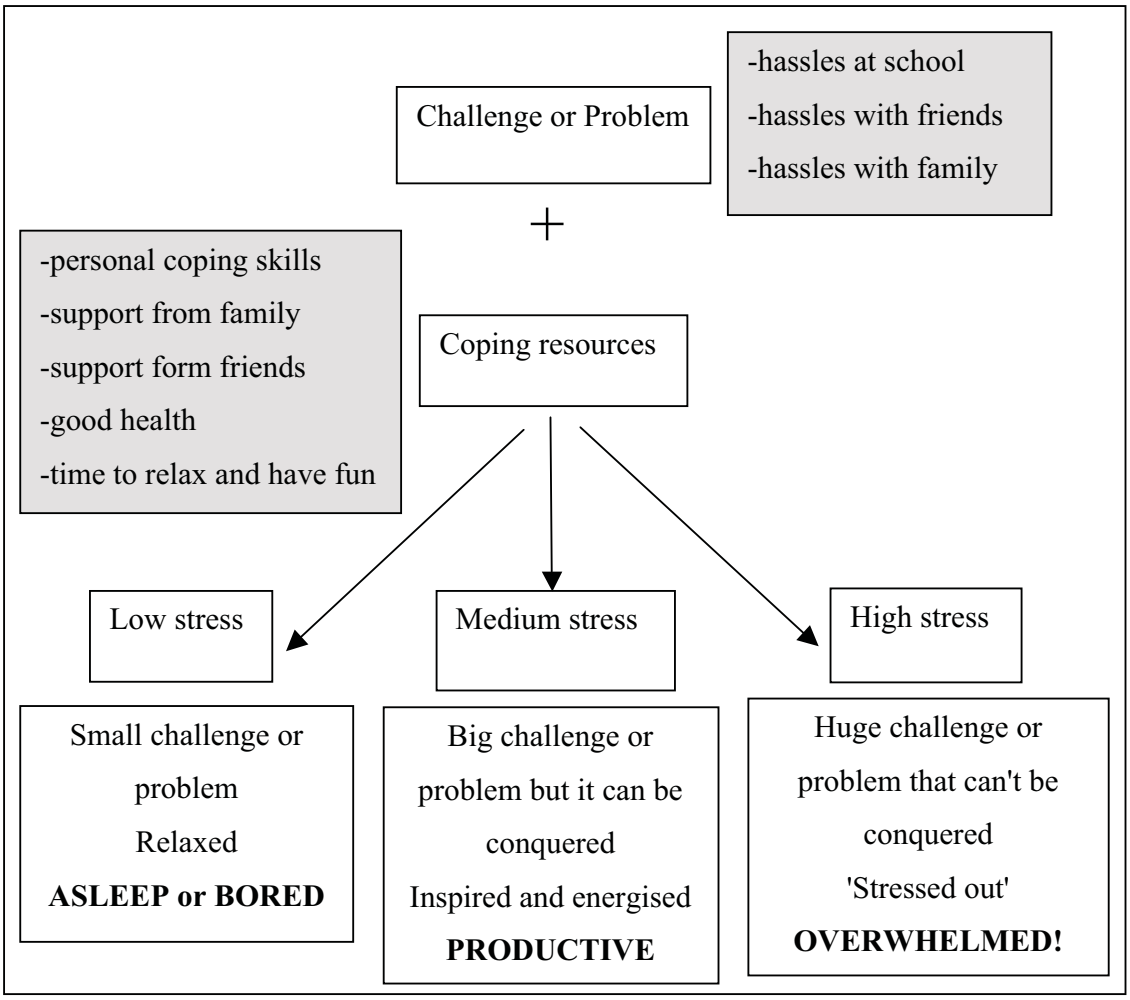

Figure 10. The model of stress and coping

Students learn about the different ways that stress can manifest. They revisit some of the slides showing Ben and Mia stressed and are asked to indicate the signs of stress that are represented in these slides. Students learn that different people respond to stress in different ways. They might experience different emotions and their bodies might react differently. For instance, Mia tends to respond to problems or challenges by getting anxious while Ben, on the other hand, tends to respond by feeling hopeless and down. They learn that people can find the same situation more or less stressful depending on their prior experience, their thoughts about the situation, their self-beliefs and the skills they possess to cope with stressful situations. Importantly, they learn that, even though people may respond differently to stressful situations, we all experience stress at some

time. Students learn that stress is a normal part of life and that it is common to feel anxious or down when faced with highly stressful problems. The ability to recognize and monitor feelings is explored in this part of the program because an awareness of particular feelings might be the first stress warning sign that a person becomes aware of. Students are encouraged to recognise the need to identify the thoughts attached to feelings so that they can begin to think about ways to overcome negative feelings by changing the way that they think about things.

Students are introduced to the idea that, just as Mia and Ben can learn about ways to minimise the negative impacts of stress, they too can learn how to deal better with stress. They find out that the things that help minimise the negative effects of stress are personal coping skills, support from family, support from friends, keeping physically healthy and making time to relax and have fun. They are informed that the program will concentrate on teaching them about personal coping skills. They are told that such skills can help combat negative feelings like worry and low mood and can enable positive feelings like happiness and satisfaction with life.

Students then read through a list of signs of stress and choose those signs that they commonly experience when they get stressed, as illustrated in figure 11. At the end of this activity, the computer presents students with a list of the signs that they have chosen on a page titled ‘My Stress Warning Signs’. Students can save or print this page.

Figure 11. Stress warning signs

Students are then introduced to the concept of having lots of stress hit all at once. The 'fight or flight' response is described and illustrated. Students view examples of Mia and Ben experiencing the fight or flight response; Mia is giving a talk to her science class and Ben is taking a difficult exam. Students are asked to identify responses that Mia and Ben experience when lots of stress hits all at once, including fast breathing, sweating, shaking, blushing and a fast heartbeat. Students then read through a list of common responses that people have when lots of stress hits all at once and choose those signs that they tend to experience most. At the end of this activity, the computer presents students with a list of the signs that they have chosen on a page titled 'My Warning Signs When Lots of Stress Hits all at Once'. Students can save or print this page.

Students are introduced to some helpful ways of coping when lots of stress hits all at once, including the slow breathing technique and planning ahead of time. Students watch

as Mia uses slow breathing to cope better when she gives a talk to her science class and when she feels anxious about going out with friends.

Lesson 2

In lesson 2 students learn that some ways of dealing or coping with stressful situations are more helpful than others. Students are introduced to common ways of coping, namely avoidance, distraction, problem solving and seeking help. They view some slides showing Ben and Mia dealing with stressful situations and are then asked to indicate the types of coping that the characters use. Figure 12 shows Mia coping with the anxiety she feels about starting a new class by attempting to avoid the class.

Figure 12. Mia attempts to cope by avoiding class

Students then read through a list of ways of coping and choose those strategies that they commonly use when they are faced with a stressful situation. At the end of this activity the computer presents students with a list of the ways that they commonly use to cope on a page titled 'Ways I Cope'. Students can save or print this page.

Students are introduced to the idea that the first step to changing the way that they cope is to change the way that they think about or interpret events. Students learn about the link between thoughts, feelings and actions (how thinking patterns can influence feelings and behaviours). This relationship is explored further in terms of the choices people make

concerning ways to deal with stressful situations. Students are reminded that they can take an active role in caring for their own mental wellbeing because they can exert control over the ways they choose to interpret a situation and how they then respond or attempt to cope.

Lesson 3

The third lesson of the program is titled 'Balanced Thinking'. The concept of thought challenging is introduced as a helpful coping strategy. The process is described by breaking it down into steps: (1) identify unhelpful thoughts; (2) note down any evidence to either support or refute the thoughts; (3) decide whether the thoughts are justified or realistic; and, (4) replace unhelpful thoughts with realistic, helpful thoughts. Students watch as Mia and Ben model the use of thought challenging, with the help of one of Buddy's friends. Figure 13 shows Ben being assisted to identify and challenge his negative thoughts about school.

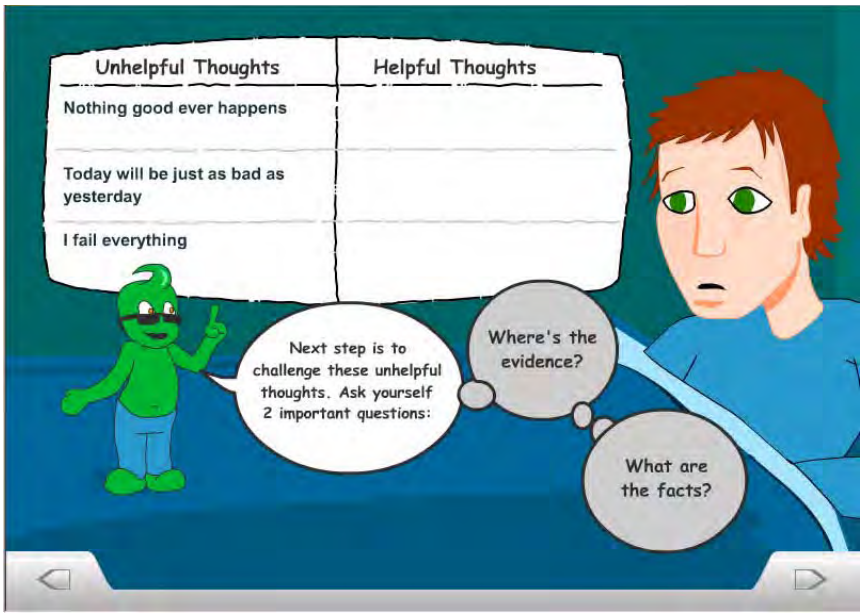

Figure 13. Ben is assisted to identify and challenge his negative thoughts about school

Figures 14, 15 and 16 show key slides in a sequence that illustrates Mia being assisted to challenge her negative thought about a school lesson. This sequence is particularly good

at showing students how changing the way one thinks can enable one to change feelings and actions.

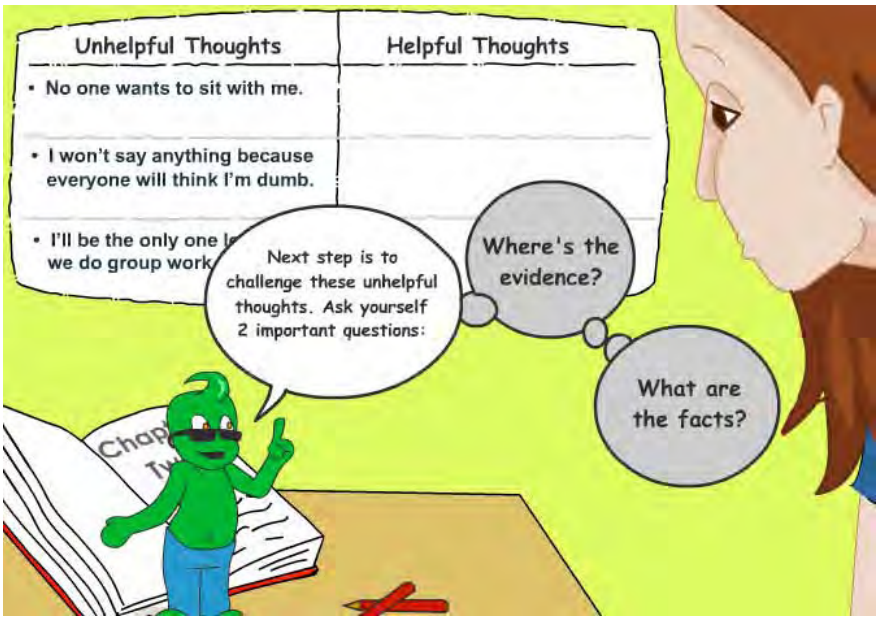

Figure 14. Mia is assisted to identify the thoughts that are making her feel bad and to challenge these negative thoughts.

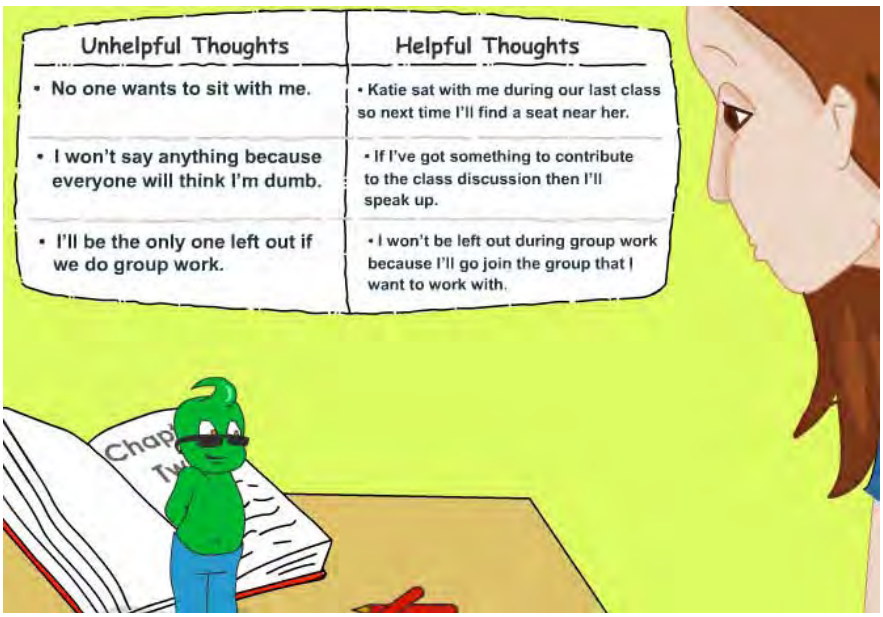

Figure 15. Mia is assisted to replace her unhelpful thoughts with helpful thoughts

Figure 16. Mia's helpful thoughts enable her to take helpful action

The concept of thinking styles is explored and students are introduced to common thinking errors, including catastrophising, black-and-white thinking, all-or-nothing thinking, pessimistic thinking and self-blaming (or making negative self-evaluations). Students identify thinking errors that Ben and Mia make. Figure 17 shows Ben using all-or-nothing thinking while figure 18 shows Mia catastrophising.

Figure 17. Ben responds to stress by thinking in negative ways. Here he is using all-or-nothing thinking

Figure 18: Mia responds to stress by thinking in negative ways. Here she is catastrophising about a future event

Students are then supported to acknowledge their own automatic thoughts, common thinking styles and common thinking errors.

Lesson 4

In lesson 4 the concept of goals is introduced. A distinction is made between big goals and small goals. Students are shown how to split big goals into more manageable smaller goals. This strategy is called 'stepping it out' and takes the place of the 'graded exposure' technique in CBT treatment programs. Graded exposure is commonly applied in a clinical setting to cope more effectively in situations that provoke panic attacks. It would not be appropriate to have students work through detailed graded exposure experiments as part of a universal program (that is, to identify their own hierarchy of panic provoking situations and to confront situations in turn in a graded fashion). Rather than work through a graded hierarchy of anxiety provoking situations, students are taught to cope with a big challenge, such as giving a presentation in class, by taking small steps, one at a time, towards the big challenge.

This segment introduces students to the importance of active planning (defining goals and planning to make them happen). Figure 19 shows one of Buddy's friends modeling the stepping it out technique.

Figure 19. Breaking down an anxiety-provoking task into smaller, more manageable steps

Lesson 5

Lesson 5 is called 'Planning and Taking Action'. In this lesson students learn about structured problem solving. They learn how to carry out each step of the structured problem solving technique: (a) evaluate difficult situations and identify particular problems; (b) state problems clearly; (c) formulate solutions; (d) choose the best solution; and, (e) implement the best solution by taking small, manageable steps. Figure 20 shows one of Buddy's friends modeling structured problem solving.

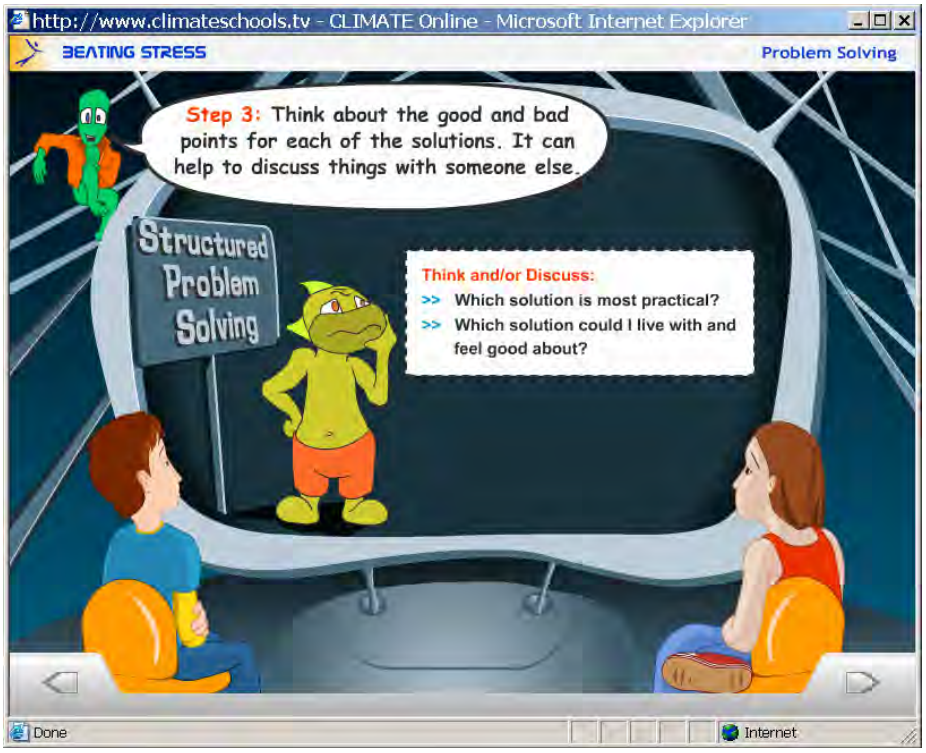

Figure 20. Step 3 of the structure problem solving technique

Students are given the opportunity to use structured problem solving to solve some common problems. This section of the program explores the importance of clear communication because many problems are the result of misunderstandings and can be avoided if people make an effort to ensure that they have correctly understood the messages that others are giving. This segment also deals with situations when a plan or solution does not work. The plan might have been unrealistic, implementation might not have been followed through properly, there may have been a communication breakdown between important players, or the solution may not have been the best solution and another solution may have to be attempted.

Lesson 6

The next segment is called 'Making ‘Me’ Decisions'. It addresses the idea that it is important to know what we like, what sparks our interest and what makes us feel good so that we can make informed decisions about our goals. When our goals reflect what is

truly important to us and we make decisions that allow us to stay true to ourselves then we feel good about life and we tend to act in ways that benefit not only ourselves but the people around us. When one feels good about life one tends to be more supportive of others.

Lesson 7

Lesson 7 is titled 'Helping Others', and continues the theme of helping and supporting others. Students are reminded of the signs that appear when people are stressed. It is suggested that they should look out for these signs in others as a way of identifying when people might need their help. It is suggested that students might share their new knowledge about stress and coping with other people so that these people can also benefit from learning how to cope better with stress.

Lesson 8

The final segment is titled 'Keeping Well, Staying Happy'. This segment is about lifestyle factors that are related to mental health and wellbeing. Students learn about the beneficial effect that physical exercise can have on their mental health. They learn that spend time with friends and family is important for their mental health. They are introduced to relaxation techniques, including progressive muscle relaxation. They learn about the importance of having enjoyable things to look forward to. They learn how to plan their time so that they have something to look forward to each day. Students are reminded that different people enjoy different activities and that it is important to work out what activities make them most happy. Students watch as Ben and Mia fill in an Activity Planner. They see how Ben and Mia include chores on their planner as well as time for socialising, fun activities and exercise. Students are then provided with their own Activity Planner to fill in. This segment illustrates the advantages of having a balanced life. Figure 21 shows one of Buddy's friends modeling how to fill out a daily planner to ensure a balanced lifestyle.

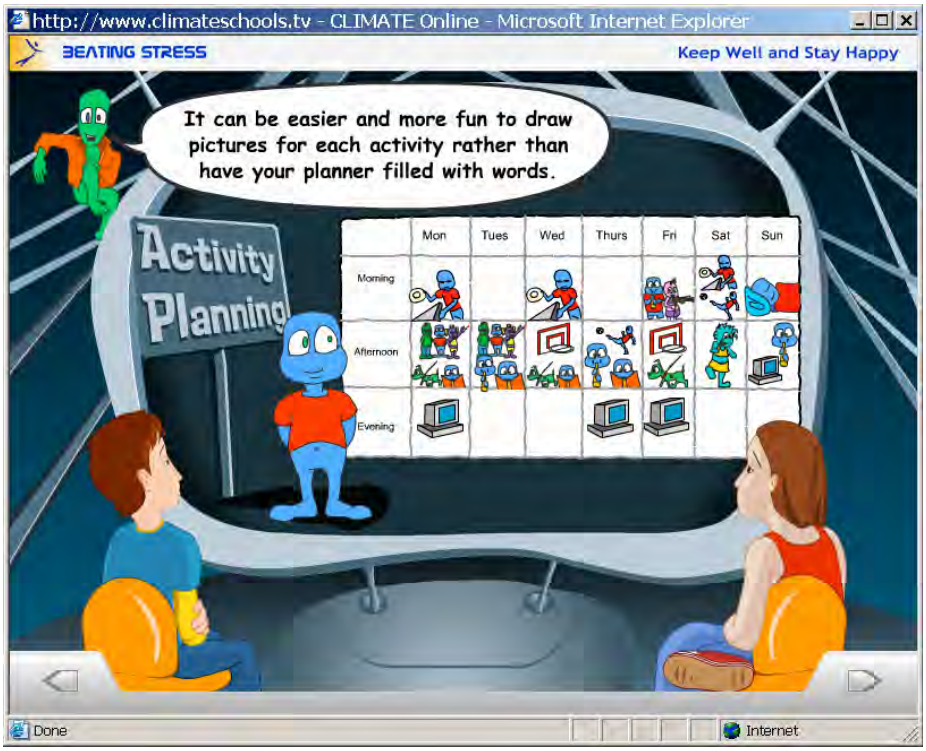

Figure 21. Activity planning

Lesson 8 continues with a segment titled 'Getting Help'. Students are told at the beginning of the program that learning about stress and coping can bring up difficult issues for people and that it can be important to discuss these issues with someone that they trust. Students are told that it is important to seek help from an adult if they are worried about themselves or a friend. This message is reiterated at different times throughout the program and at least once during every lesson. This last segment deals with how students might access appropriate help in more detail. Students are encouraged to seek help from a trustworthy adult (parent, teacher, school counsellor). They are told how to access telephone help via the Kids Helpline (permission was gained to include this information). Students are told about some internet sites that offer good information about mental health, namely the Bullying No Way site and the Reach Out site (permission was gained to include internet addresses for these sites). Students are also informed about benefits of expressing their concerns through writing or drawing in a diary or journal, or talking to a friend or even a pet.

The program ends by introducing the concepts of clinical anxiety and depression. Students are presented with a list of signs and symptoms for these disorders. They are told that a person with a disorder would suffer from a number of these signs and symptoms for at least 3 weeks and their lives would be significantly affected. They are told to seek help if they are concerned that they, or a friend, might be suffering from anxiety or depression.

CHAPTER 4 FEASIBILITY STUDY

4.1 Introduction

This chapter corresponds to Step 4 of the Intervention Mapping model, that is pre-testing or pilot testing the health prevention program (Bartholomew, et al., 2006). In this step, program materials are trialed with the target population for readability, usefulness and acceptability. In this instance, the program was tested with 88 adolescent school students in year 8 at 3 independent high schools in Sydney, 8 school staff members with responsibility for planning and implementing the health curriculum or counseling students, 2 health educators with responsibility for ensuring schools follow curriculum guidelines, 19 school principals from independent schools in Sydney, 4 clinical and research psychologists and 1 clinical psychiatrist. These participants represent important stakeholders in mental health prevention in schools and research shows that public health interventions have a better chance of succeeding when they are developed in consultation with stakeholders (Haider & Kreps, 2004). School students and staff were consulted during terms 3 and 4 of the 2004 school year and mental health experts were consulted at the beginning of 2005. The chapter concludes by presenting the changes made to structure, content, illustrations, sound effects and text layout of the mental health prevention program in light of the findings from this pilot testing.

4.2 Qualitative research methods

The Intervention Mapping approach recommends the use of qualitative research methods for collecting data early in development when opinions from members of the target audience are required, whereas quantitative methods (culminating in a randomised controlled trial) are important when the program is ready to be evaluated in terms of its effectiveness in meeting certain health prevention goals (Bartholomew et al., 1998). The US National Institutes of Health (Najavits, 1998) support a similar research process for the development and trialing of new psychotherapeutic treatments, with control conditions becoming successively more rigorous as development progresses. The current study relies on single-subject methods and a within-subject approach to ascertain

personal responses from participants concerning their views about the design of the intervention. This is consistent with the first stage of the US National Institutes of Health model, which specifically aims to "develop the treatment and pilot test it with a basic design" (Najavits, 1998, p.177).

Qualitative research methods are suited to investigate the views of the target audience because these methods are designed to collect personal perspectives and to take account of multiple views (Bryman, 2001; Creswell & Miller, 2000; Silverman, 2001). Qualitative methods allow the “insider’s perspective” to be considered (Todis, Bullis, Waintrup, Schultz & D’Ambrosio, 2001, p. 119). Unstructured interviews, for instance, allow participants to bring up topics that are of interest to them and their peer group (Silverman, 2001). A forum can be created where multiple realities and interpretations are respected and discussed and collective dialogue can proceed freely (Dilley, 2000). Such an approach has been contrasted to quantitative approaches that are designed to collect data that are pre-determined by the researcher (Todis et al., 2001).

Qualitative data can also reveal commonalities across participants (Todis et al., 2001). When a group of participants is selected from a representative group, data can be pooled and analysed to identify key issues and themes (Bryman, 2001). This study involved three main groups of participants, namely students, educators and mental health experts. Data from each group were analysed to identify key issues and themes across all group participants. The key issues and themes for the different groups were then compared and similarities and differences between groups noted. Having a number of participants in each stakeholder group and having a number of stakeholder groups act to validate findings through triangulation (LeCompte, 2000).

A qualitative approach is suited to informing decisions about a new health prevention program because it can provide a big picture view of the context in which the program will be used (Bryman, 2001). As Agee (2002) points out, such an approach can act to “deepen and broaden” understanding and enable a "fuller picture" of the area under study (p. 582). This is important in the early stages of program development because decisions

that fail to take into account the needs of the target audience or important aspects of the context in which the program will be used (including social, cultural and environmental aspects) can lead to program failure (Bartholomew et al., 2006; Haider & Kreps, 2004).

This study involved adolescents. It was important to create a forum in which young people felt that their views were honoured and respected (Lindsay & Lewis, 2000; Sarantakos, 1998). The researcher needed to be aware of the importance of maintaining an equitable relationship with young participants (Knight, 2000). Ethical concerns are paramount in studies concerning youth and official guidelines, in this case University of NSW policy and protocols, were followed to protect participants and to avoid "ethical entanglements" (Kleinsasser 2000, p. 157).

4.3 Aim

This study aimed to find out if program materials were readable and useful and if school students, school staff, educators and mental health experts found plans for the program acceptable. Specifically, the researcher wanted to find out if the cartoon format appealed to adolescents, if they perceived the content to be relevant and if they had suggestions for making the program more appealing for youth their age. Data from school staff would enable the researcher to find out if the program could be implemented into the routine practice of schools, if it could serve a valuable purpose in schools and if there were any ways to make the program more effective and efficient for use in schools. Mental health experts vetted the content and delivery methods to ensure that the program followed a cognitive behavioural approach and was suitable for use with adolescents.

A second aim of the study was to trial *The Satisfaction with Life Scale* developed by Diener and colleagues (Diener, Emmons, Larsen & Griffin, 1985) and The *Perceived Competence Scale* developed by Deci and Ryan (2002) with an adolescent audience as measures of the dependent variables in this study. There were plans to use these scales in

a larger effectiveness trial of the program and the researcher wanted to make sure that these scales were appropriate for use with adolescents.

4.4 Participants and procedure

Participants were 88 students in year 8 of high school (12-14 years old), 8 school staff members with responsibility for planning and implementing the health curriculum, 2 health educators with responsibility for ensuring schools followed curriculum guidelines, and 5 mental health experts. School principals from 19 independent schools in Sydney also supplied important feedback following a presentation given by the researcher and her supervisor at a meeting of principals from independent school in Sydney in November, 2004. The researcher and her supervisor were asked to this meeting to deliver a presentation about anxiety in adolescents.

All schools involved in this pilot study were from the independent school sector. Wealthier students typically attend independent schools compared to state, or public, schools. This represents a limitation to the study because the schools were not representative of all schools in the area and nor were participants representative of the broad spectrum of adolescent school students. The decision to involve only independent schools was made after representatives from the NSW Department of Education explained that access to public schools would not be able to be arranged within the six months timeframe for this pilot study. While it would have been desirable to have public schools involved, the delay in getting approval made it impractical.

Four independent schools in the local area were approached to be involved. They were selected so that the researcher would not have to travel far if she needed to revisit schools for follow-up data collection. They were contacted in the first instance by phone. The researcher then visited key staff members at each school (the head teacher for health education, the person overseeing student welfare or the person coordinating activities for year 8 students). She showed each staff member an internet preview of the program and provided brief notes outlining each lesson. These people were also shown a brief paper

and pencil survey that students would be asked to complete and a list of questions that would be asked of classes of students in a semi-structured interview. It was explained that the researcher would visit the school to supervise students while they read brief summaries of the lessons, viewed the computer lessons and filled in a survey. The researcher would then lead a brief discussion with students to gather their views about the program. The visit would take approximately 50 minutes.

Three schools agreed to participate. They were all large, independent, K-12 schools in Sydney, two single-sex girls' schools and one single-sex boys' school. Each school was asked to select a year 8 class to participate. Two classes were involved from one school because Personal Development, Health and Physical Education (PDH/PE) lessons were scheduled to take place at the same time for the 2 classes and it would be beneficial for curriculum purposes if both classes could participate. This meant that four year 8 classes with 88 students in total were involved.

Schools were provided with an official information letter outlining the research and a consent form for the Principal to sign. The information letter stated that the aim was to develop a feasible and acceptable school-based computer education program to teach coping skills to promote mental health in adolescents. It discussed the content of the program, particularly that it would teach skills based on a cognitive behavioural approach, including structured problem solving, thought challenging, slow breathing, relaxation techniques, and activity scheduling. The content was matched with outcomes from the NSW 7-10 Personal Development, Health and Physical Education syllabus (Board of Studies NSW, 2003). The significance of the research was explained in terms of the public health aim of decreasing the burden associated with mental disorders, the largest single cause of disability in Australia, and in terms of the possible benefits for student learning and social behaviour. The findings of the National Survey of Mental Health and Wellbeing were briefly outlined, particularly the finding that only a quarter of all youth in need of mental health support accessed appropriate care.

Schools were advised that any risk of embarrassment, fear, anxiety, or other emotional distress for students would be minimal because the program was designed to empower students to take care of their mental wellbeing rather than to address issues concerned with mental illness, suicide, or drug and alcohol use. Schools were informed that the student survey would contain a life satisfaction scale containing 5 questions and a perceived competence scale made up of 4 questions. It was explained that the researcher wanted to see if these scales would be appropriate to use with an adolescent audience in the next trial of the program. School personnel were shown the scales before consent was sought. Schools were assured that confidentiality in relation to students, teachers and the school would be protected at all times and that no individual person or school would be able to be identified on any data source.

Once the Principal had given consent for the study to proceed, teachers distributed an information letter and consent form to potential student participants and this was taken home for parents or guardians to read and sign. The information letter stated that the child had been selected to participate in a study aiming to find out what students thought about programs designed to teach about stress and coping. They were told that their child would view a short preview of an internet program that was in the process of being developed and would also be asked to read a brief outline of other ideas for the program. Students would then be asked to provide feedback about the preview and the ideas for the program by filling out a brief survey and then contributing to a short class discussion. Nine of 97 students (9%) failed to return the consent form and did not participate. This left 88 student participants.

Each of the study schools set aside one Personal Development/Health or Student Welfare lesson for the purpose of the study. Lessons were 40 minutes long in two schools and 50 minutes long in the third school. One school with 40-minute lessons chose a lesson immediately before lunch in case extra time might be needed for the semi-structured interview. Schools were asked to book the computer lab for the lesson so that students could access the internet simultaneously. Students at one school had their own laptops, and wireless networks were available throughout the school. The researcher attended 2

schools during these lesson times to carry out the research. The class teacher was present throughout the lesson. The teacher introduced the researcher to the class, helped to distribute and collect student surveys, and supervised the semi-structured interview.

The third school experienced difficulties with scheduling a time for the study to take place. In the end the researcher did not attend this school. Rather, the key contact person at this school supervised the class as they viewed the program and filled in the survey. An interview with students was not conducted at this school. This meant that 3 of the 4 classes, with 65 students in total, were involved in an interview.

At the two schools the researcher attended, students collected a copy of the student survey as they entered the classroom. At the beginning of the lesson the researcher gave a brief explanation of the project and read through the first page of the student survey. This page gave an outline of the research aim and rationale, informed students about the identity of the researcher and the group that she worked with and set out the tasks to be completed during the lesson. Students were given instructions about how to complete the different sections of the survey. Students were told that the researcher believed that it was very important to find out what they thought about the program so that she could use their advice to make the program appealing to people their age and worthwhile for them to complete. Students were told that the researcher felt that it was important to develop a worthwhile program because lots of people their age felt the effects of stress. Students were told that the National Survey of Mental Health and Wellbeing found that up to 1 in 5 young Australians reported feeling stressed or depressed most days. Students were assured that all the information they supplied would be confidential and kept in a safe place. They were not required to record their name or the name of their school or teacher on any document.

The web address for the program preview was written clearly on the board in each classroom. Students were asked to go to the website and watch the preview. Students were allowed to talk quietly amongst themselves while they were watching the preview. They were then asked to read through some information concerning some more ideas for

the program and to complete the survey in silence. Ten minutes before the end of the lesson, surveys were collected and the researcher facilitated a discussion with students about the research project. This took the form of a semi-structured interview. In 1 class this discussion went for 10 minutes and was brought to a close by the bell signaling time for the next class. In the other 2 classes the discussion continued for 20 minutes before the researcher called it to a close.

The researcher made notes during this discussion time. Interviews were not recorded. It was hoped that taking notes rather than taping interviews would allow the interview to be less formal and would enable participants to express their personal views more freely. Also, because the interviews were relatively short, note-taking presented a reasonable way to collect pertinent data. It was also thought that making recordings might dissuade schools from participating due to privacy concerns. Names of participants and names of schools were not written on interview transcripts.

Each school was also asked if at least one staff member could be interviewed about the program. Four staff members were interviewed from one school, a Deputy Principal in charge of students, a Personal Development/Health (PDH) and Pastoral Care teacher, a music teacher whose job also involved teaching PDH and Pastoral Care lessons and a Learning Support Coordinator. Two staff members were interviewed from the single-sex boys' school. They were the Director of Pastoral Programs and a teacher of English/History whose job also involved teaching PDH classes. No staff interviews were arranged at the third school due to difficulties finding an appropriate time. The interview questions were the same for all staff members but the format of the interview varied to accommodate the practical reality of schools. Specifically, the Learning Support Coordinator, the Director of Pastoral Programs and the Director of Pastoral Care were interviewed over the phone while all other staff members took part in face-to-face interviews.

Two other school staff members were interviewed. One was the Director of Pastoral Care at a large, independent, coeducational, K-12 school in Sydney. This person worked at the

fourth school that had been approached to participate in the study. While it was not possible to involve the students at this site, the Director of Pastoral Care was happy to assist. The other school staff member was a Student Liaison Coordinator from a large, 7-12 public school in the inner western suburbs of Sydney. She had heard about the research from a colleague at one of the research schools, had contacted the researcher to find out more about the project and was happy to share her views about the program. Both of these staff members were interviewed face-to-face.

School staff members and educators viewed the program on line before being interviewed. They were emailed a copy of the interview questions prior to the interview. All took part in a 30-40 minute interview. Interview questions asked about acceptability of the program and feasibility of running the program in the school setting, about mode of delivery, content, activity formats and resources, and about any other ideas or concerns staff might have. There were also questions regarding a larger evaluation study planned for the future. These questions focused on the suitability of measuring particular constructs (including mental disorders) and the possible length of a survey to be used with year 8 students. The researcher took notes during the interviews rather than recording the discussions for the same reasons outlined for student interviews. The names of the participants and the names of workplaces were not recorded on interview transcripts.

The researcher contacted people responsible for Personal Development/Health, Student Welfare and School Counseling at the NSW Department of Education and Training, the NSW Catholic Education Office and the Independent Schools Association. Two of these people were happy to be interviewed, the Coordinator of School Counseling Services at the NSW Department of Education and Training and a Curriculum Advisor (PDH/Physical Education; drug/alcohol education; road safety) K-12 from the Catholic Education Office. Both of these participants were interviewed face-to-face.

Table 3 provides a brief profile for each of the 10 educators participating in this study. The profile provides a job description and a short description of their place of employment. The table also indicates if the participant was interviewed by phone.

Table 3.

Roles and responsibilities of educators

Participant	Profile
AN	Deputy principal (female)
	Independent school for girls, K-12
MA	PDH/Pastoral Care teacher (female)
	Independent school for girls, K-12
HL	Director of Pastoral Programs (female)
(phone interview)	Independent school for boys, K-12
AM	English/History Teacher with health teaching duties (male)
	Independent school for boys, K-12
JM	Learning Support Coordinator (female)
(phone interview)	Independent school for girls, K-12
JT	Coordinator School Counseling Services (female)
	NSW Department of Education and Training
KJ	Director of Pastoral Care (female)
(phone interview)	Independent coeducational school, K-12
CR	Curriculum Advisor (PDHPE; drug/alcohol education; road safety)
	K-12 (female)
	Catholic Education Office,
JF	Student Liaison Coordinator (female)
	Public School, 7-12
MM	Music Teacher with pastoral care/health teaching duties (female)
	Independent coeducational school, K-12

A presentation was given at a meeting of principals of independent schools in the Sydney region in November 2004 at a central Sydney school. Nineteen school principals attended this meeting. They were from a range of co-educational, single-sex, religious and secular schools from urban and regional areas across Sydney, including the regional centres of Bathurst and Armidale and the low SES suburbs of Liverpool and Campbelltown. The researcher and her supervisor gave a powerpoint presentation titled CLIMATE/Schools.

This presentation defined anxiety, outlined risk factors for anxiety, gave information about the prevalence and burden of mental disorders, and made suggestions for ways that schools could appropriately respond to help students with mental health problems. The internet program was then accessed as an example of a possible school response. Segments were shown to illustrate aspects of a cognitive behavioural approach. At the end of the meeting, the researcher was granted time to take questions and receive comments from the audience. The researcher used 20 minutes to ask questions concerning ideas for the program. The questions were comparable to those asked during interviews with school staff members.

Mental health experts were approached at the researcher's work place, a clinical and research unit for the study and treatment of anxiety and depression in central Sydney. Four clinical and research psychologists and one clinical psychiatrist attended two research meetings at the workplace where an update of the research project was presented and discussed.

4.5 Measures

4.5.1 Student survey

The student survey was designed primarily to reveal student views about the program. It was also used to trial two short scales with an adolescent cohort, one measuring life satisfaction and the other measuring perceived competence to cope. The aim was to see if these scales were appropriate to be used with an adolescent population in a larger evaluation study.

First, the survey asked students to provide their age and gender. Then students filled in the life satisfaction and perceived competence scales. After this there were 11 closed statements about content and delivery of the program followed by three open questions asking students to record written responses concerning what they liked and disliked about the preview they saw and what specific things they would change (see Appendix C).

The Life Satisfaction Scale

Life satisfaction is an important component of wellbeing and, while wellbeing is a construct that is difficult to operationalise and measure, life satisfaction can be effectively measured across different ages and cultures (Cummins, 1998; Diener & Suh, 1999). Life satisfaction has been used as an indicator of wellbeing in population-based public health studies and as such represents a good variable to include in an effectiveness trial of a universal mental health program (Diener, Diener & Diener, 1995).

The Satisfaction with Life Scale developed by Diener (Diener, Emmons, Larsen & Griffin, 1985) was chosen as the measure of life satisfaction in this study because it is brief (it takes about one minute to complete), easy to fill out, and is in the public domain (see Appendix C). The scale is made up of 5 statements asking the participant to make a judgment about how things have gone for them to date, for instance "in most ways my life is ideal" and "so far I have gotten the important things I want in life" (Diener et al., 1985). Participants choose from a 7-point Likert scale ranging from 'Strongly Agree', through 'Neither Agree nor Disagree', to 'Strongly Disagree'. Responses are scored from 1 to 7 for each statement and then added together to produce a total score. Total scores range from 5-9 'Extremely dissatisfied', 10-14 'Dissatisfied', 15-19 'Slightly dissatisfied', 20 'Neutral', 21-25 'Slightly satisfied', 26-30 'Satisfied' and 31-35 'Extremely satisfied'.

The Satisfaction with Life Scale does not assess satisfaction with specific domains of life like work, family or income but rather provides a global measure of life satisfaction (Diener & Suh, 1999). Even so, the original validation studies and subsequent studies have found that the scale correlates well with other measures of subjective wellbeing, including scales that are domain specific (Diener et al., 1985; Diener et al., 1995; Lynn & Steel, 2006). Initial and subsequent studies have examined the internal consistency of the scale and alpha coefficients have repeatedly exceeded .80 (Pavot & Diener, 1993). Similarly, test-retest reliabilities have been generally acceptable (Pavot & Diener, 1993).

Perceived Competence Scale

The *Perceived Competence Scale* is a short, 4-item questionnaire asking respondents to assess their competence in relation to a behaviour or domain (Deci & Ryan, 2002). Items

on the scale are typically modified by researchers to be specific to the relevant behaviour or domain being studied. For instance, the scale has been used with patients to measure competence to manage diabetes and with medical students to measure competence to carry out a medical assessment (Williams, Freedman & Deci, 1998; Williams & Deci, 1996). In this case the researcher wrote the items to assess respondents' competence to cope with stress. For example, the first item reads "I feel competent to manage when I get stressed" (see Appendix C). Items are measured using a 7-point Likert scale ranging from 'not at all true', through 'somewhat true', to 'very true'. The alpha measure of internal consistency is reported to be above 0.80 (Williams et al., 1998; Williams & Deci, 1996). This feasibility study allowed the version of the scale to be modified for an adolescent cohort.

4.5.2 Student interview

Students were asked 3 questions. The first question asked what they liked best about the program, the second question asked what they liked least about the program, and the third question asked what they would change about the program.

4.5.3 Interviews with educators

The semi-structured interview with school staff and educators consisted of 7 questions designed to assess their views concerning program acceptability and effectiveness. After answering the 7 questions, staff members were told about a larger evaluation study that the researcher was planning to run and asked to comment on any problems that they could envisage concerning this study.

4.5.4 Meetings with mental health experts

At the first meeting the researcher presented a draft outline of the program and showed sections of the program. After this meeting, mental health experts viewed the program on line and offered feedback in the form of emails and informal discussions. At the next meeting the researcher presented data from students, school staff members and educators. Mental health experts made suggestions for changes to the program in light of this feedback.

4.6 Results

4.6.1 Student survey

The first 11 questions in the survey asked students to agree or disagree with a number of statements concerning the content or delivery methods for the program. Table 4 shows the percentage of students who agreed with each of the statements.

Table 4.

Percentage of student who agreed with statements about program content or delivery

Statement about program content or delivery	% Agree
Most students my age will be able to read and understand the writing in this program	90
I would prefer to learn about this work from a computer rather than directly from a teacher	89
I think it is important to learn about stress and ways to cope	88
Most students my age will find it easy to use the computer to complete this program	87
I could understand the language that the characters were using	86
We use computers at my school for class lessons at least once a week	85
I liked the demo we saw today	71
I like the look of the characters	69
Most students my age will like using the computer to learn about this topic	54
I can relate to at least one of the characters	48
I like Buddy's voice	33

The majority of students, 89%, agreed that it would be preferable to have the program delivered using computers rather than by teachers. This is important because a major difference between this program and other mental health prevention programs designed for use in schools is that it uses computer delivery. Also, 87% agreed that adolescents would find it easy to use computers to complete the program and 85% said that computers were used routinely, at least once a week, in their school. These findings add support to the decision to use computer delivery.

In contrast, only 54% of students agreed that their same age peers would like to use the computer to complete the program. There may not have been as much support for this statement compared to the other statements about computer delivery because it required students to make a judgment about how their peers might respond emotionally to the program, whereas other statements about computer delivery concerned observable peer behaviour. Reporting about observable behaviours may be easier because objective evidence can be used.

A majority of students, 88% in all, agreed that it was important for adolescents to learn about stress and coping. This suggests that adolescents are likely to be receptive to the content and the aims of the program and this may increase their motivation to complete the program.

A majority of students agreed with statements concerning the appropriateness of the language used in the program. For instance, 90% agreed that adolescents would be able to read and understand the text and 86% agreed that adolescents would be able to understand the verbal language used by the characters. This suggests that the text is matched well with the general literacy level of adolescents.

Overall, the majority of students did not show support for a number of statements concerning the characters in the program. Although a majority of students, 69%, agreed that they liked the look of the characters, only 48% agreed that they could relate to one of the characters. Students may have reported that they were unable to relate to a character because they were unsure of what the statement was asking. They may have been responding to the look of the characters rather than to their experiences or to their personalities. The problem may have been that, even though the 2 human characters were drawn to resemble adolescents (they were dressed in jeans and t-shirts rather than in a particular style that might either date quickly or signal a particular youth subgroup), having them drawn as cartoon characters might have decreased the chance that students would consider themselves to be similar to the characters. It may have been more effective to ask students if they had experienced stressful events similar to those

experienced by the characters rather than if they related to any of the characters. Also, while the researcher was referring to the main characters, Mia and Ben, in this statement, students could easily have thought that she was referring to all characters in the program, including the alien characters. It is unlikely that students would agree that they could relate to one of the alien characters.

Only 33% of students agreed that they liked Buddy's voice. This is an important consideration because Buddy is the tutor or coach throughout the program and if students do not like his voice then he might not be able to effectively carry out his role to guide and teach them.

This feasibility study allowed the version of the *Perceived Competence Scale* designed for this study to be trialed with an adolescent cohort. The alpha measure of internal consistency obtained was 0.90. Students were able to complete this scale successfully and with minimal difficulty.

Students had problems completing *The Life Satisfaction Scale*. Problems related to statements that asked students to look back on their life and make judgments. For instance, for the statement 'So far I have gotten the important things I want in life', many students said that they would have to answer 'strongly disagree' because they were not yet old enough to be able to fulfill many of their aspirations. Likewise, for the statement 'If I could live my life over, I would change almost nothing', students complained that they had not lived long enough to make a general judgment about their life. One student pointed out that he could not possibly answer questions about how satisfied he was with his life because he had not lived even half of his life.

4.6.2 Student interview

Short, semi-structured interviews were conducted with students to provide an extra source of data. These data were compared to the survey data to ensure reliability (Silverman, 2001) and this process also led to the identification of a number of new issues.

A qualitative review process was used to analyse responses from the open-ended questions in the student surveys. Based on the research principals of Miles and Huberman (1984), the interview data were summarized into a simplified form by identifying key themes, as defined by the participants and the researcher. This process provide an organized view of the data (Miles & Huberman, 1984; Silverman, 2001). As Miles and Huberman state, the aim was to identify "a theme or pattern" in the data, or to isolate "something that happens a number of times and consistently happens in a specific way" (p. 215). The researcher consulted with two research colleagues, a mental health researcher working in the field of public health and a mental health researcher with a research psychology background, to check her interpretations of the raw data to ensure validity (Richards, 2005). Miles and Huberman suggest collaborating with one's colleagues to identify themes in an effort to avoid the trap of jumping to "hasty, partial, unfounded conclusions" (p. 21). Once themes had been identified, comparisons were made across groups of respondents. This enabled triangulation of the data (Silverman, 2001).

While the aim was to identify commonalities across the data, the researcher also noted examples of exceptions. As Miles and Huberman state, "For any given finding, there are usually exceptions... You need to find the outliers, then verify whether what is present in them is absent or different in other, more mainstream examples" (p. 237). Exceptions can enable a researcher to test the generality of findings and also to protect against "self-selecting biases" (Miles & Huberman, 1984, p. 237).

Table 5 presents themes and illustrative examples from the data collected in response to the question asking students what they liked best about the program. The themes are listed in order, from the theme that received the greatest number of student comments to the theme that received the least number of student comments.

Table 5.

Student responses to the question, 'What did you like best about the program?'

Themes	Illustrative Statements
Acceptability of presentation	– "use of colour and the sound effects" – "the animation and the colours" – "good animation" – "I really like the different icons. The icons seem to lead people into totally different scenes. They seem to take you into a new world. I also liked the cool sound effects."
Acceptability of characters	– "easy to relate to the characters" – "the kool green man" – "the dudes are like The Simpsons or South Park ... it's good"
Acceptability of content	– "it is simple" – "most of the situations were real to every day life" – "it was relevant to my life" – "the actual point of it- coping with stress and depression, because I think almost all kids and teenagers would or will have to experience this during high school and life"
Acceptability of delivery	– "being able to work at my own pace" – "it's on the computer … we can navigate ourselves where we want to go and which topics we are interested in" – "the site is easily accessed"

Overall, there was support for how the program was presented. This matched with findings from the student survey. Students particularly expressed support for the use of bright colours and sound effects. There was general agreement that the animation was effective. Students expressed support for the appearance and functions of the navigation buttons.

There was general support for how the characters were portrayed. Again, this matched findings from the student survey. Students liked the appearance of Buddy and his alien friends. A number of students in all 3 groups reported liking the characters because they resembled characters from 2 popular television shows.

A number of students reported that the best thing about the program was that the content was relevant to their lives. They reported that the problems the characters had to cope with were similar to problems that they had faced. This was the case in all 3 of the interview groups. At this point in the interview, the researcher suggested that, in light of these comments, the students would have reported in the survey that they were able to relate to one of the main characters. Students from all 3 classes said that they had disagreed with this particular survey statement and asked the researcher to clarify what the statement was about. When the researcher explained that this statement was intended to find out if students had experienced similar problems to the characters in the program, the majority of students in all 3 classes agreed that they had experienced similar problems. This supports the researcher's supposition that the majority of students chose to disagree with the survey statement concerning their ability to relate to a character because it was not clear what they were being asked. The semi-structured interview data provided evidence that students were, in fact, able to relate to the characters in the program.

The interviews revealed that most students supported the use of computers to deliver the program. This finding is consistent with the survey data. Interestingly, a number of students reported that the best part of the program was that they could move at their own pace. This matches well with design theory that suggests computer-delivered education programs are beneficial because of the freedom they afford users to move at different rates (Ares & Gorrell, 2002). Students also reported liking the opportunity to choose their own paths through the program. This supports the design theory that suggests that computer delivery is beneficial because it enables the user to experience control over their learning (Ares & Gorrell, 2002; Schofield, 1995).

Table 6 presents the themes arising from student responses to the open-ended question, 'What did you like least about the program?'. The themes are listed in order, from the theme that received the greatest number of student comments to the theme that received the least number of student comments.

Table 6.

Student responses to the question, 'What did you like least about the program?'

Theme	Illustrative Statements
Amount of text to read	– "too much information" – "too much information to read" – "way too much to read" – "lots of reading" – "a lot of reading and people will skip it out"
Suitability of dialogue	– "it should be like slang, like how we normally talk" – "the way you explained it … like the really formal parts, the introduction" – "the language should be more colloquial"
Voice of the main character	– "how slow the green man talked and his voice" – "voice of Buddy" – "Buddy's voice … it's annoying" – "Buddy's voice because it is emotionless and portrays no feelings"
Quality of sound effects	– "some of the sound...noises were really irritating and really annoying" – "there should be some type of music playing in the background- I think that would be much better than the sound effects"
Suitability of the space theme	– "It's about space" – "the space theme … it's too babyish"
Aspects of the delivery	– "you couldn't skip certain things" – "too many examples that you had to watch" – "more interactive" – "not enough fun games"

By far the most common response to this question across the 3 interview groups was that there was too much text to read. Students suggested that the amount of text might deter students from completing all components of the program. This is interesting in light of the survey data that suggested that the program was well matched to the literacy level of the students. Taking account of both survey and interview data, it appears that, even

though students had no problem reading and comprehending the text in the program, they would prefer to read less text.

Students also reported that they would prefer the dialogue to be changed to resemble dialogue that they commonly use. They suggested that the characters should use colloquial language. While the survey data showed that the students could understand the spoken language used in the program, these data suggest that it is also important to make sure that the language appeals to the target audience. Both comprehension and appeal need to be considered in relation to the dialogue used in the program.

The interviews revealed that students did not like the quality, tone or pace of Buddy's voice. This finding is consistent with the survey data, where only 33 % of students reported liking Buddy's voice.

Students did not like the sound effects used in the program, such as synthesizer sounds, to signal that the characters were traveling through outer space, or the sound of Buddy's rocket taking off. Students in all 3 classes suggested that music could be used instead of sound effects to signal different locations or as sound tracks for the different characters.

A number of students in all 3 interview groups suggested that the worst thing about the program was having the action take place in outer space. They felt that the outer space theme would appeal to younger students. This contrasts to the survey data, where 71% of students reported that they liked the demo. It might be that, when asked to criticise the program, students made suggestions even though they generally liked the program. Taking account of the survey and interview data, it appears that there was general support for the approach taken but, if any changes were to be made, then the space theme might be tempered.

Finally, there were some criticisms concerning the delivery format. Students were keen to have more interactive components added to the program. They specifically asked for games to be included in the program and suggested particular game formats from

software that they had used. These comments fit with the survey finding that students liked the interactive nature of the program.

Students also wanted more control over the way that they worked through the program. They specifically asked for more freedom to skip over some sections of the program, for instance some repetitive examples that they felt they didn't need to watch more than once. This feedback fits well with the education literature that advises that students should be able to work through learning programs at a pace that matches their learning needs (Rogers, 2002).

There was a comment made by 1 student in response to this question that is important to note, even though it did not fit neatly into any of the themes. She commented that “Buddy ... is happy about sad children”. Seeing Buddy in this light would interfere with the message that the program aimed to send, that is, that it is important to address mental health in a responsible, respectful and caring manner. It is thus important to check that Buddy's facial expressions match with the information that he is conveying in different parts of the program. This might have been overlooked because a limited number of cartoons were created of Buddy and the focus was on ensuring that each of these cartoons was used a number of times throughout the program rather than ensuring that facial expressions matched with dialogue. It may also be important to reinforce the concept that Buddy is supposed to represent a helpful and friendly guide rather than a figure of authority.

Table 7 presents the themes and key issues arising from student responses to the open-ended question, 'What would you change about this program?'. Again, the themes are listed in order, from the theme that received the greatest number of student comments to the theme that received the least number of student comments.

Table 7.

Student responses to the question, 'What would you change about this program?'

Theme	Illustrative Statements
Include more games	– "add exciting games" – "more games" – "there should be small games … to keep the students' attention" – "add games that are actually fun and interactive using the keyboard and mouse" – "The program doesn't make me want to come back. I would rather play Sims 2- life simulation"
Increase interactivity	– "more interaction" – "some interactivity like a points system ... games, bonus" – "quizzes … to find out about your relaxation style etc" – "It would be cool if you could fill out the tables and charts and print them off to keep. I think this would make the kids think about it more and apply it to their lives."
Include music	– "more sound, like music" – "music in the background...it could change for each different planet" – "add music"
Change the space theme	– "I wouldn't make it in space" – "the space theme is pathetic" – "make it less of a look like a kids program...not in space" – "Make the program realistic ... like the OC ... like a dance party"
Change the programming	– "should have categories ... more buttons to take you to each activity" – "you should also be able to go back... if you missed anything you can re-read it" – "There are too many scenes that made you click 'NEXT' instead of just a movie then a game." – "get rid of all the arrow buttons ... just make it like other computer games"

Most students asked for more games to be included in the program. They felt that including games would "keep the students' attention" or make students "want to come back". This suggests that it is important to include games to motivate students to complete the program. In light of the comments made about games in response to this questions, along with similar comments made in response to the previous question, it would seem that students expect computer-delivered programs to devote a significant amount of time to games. Students also wanted to be able to print off some of the material from the program, particularly the material relating to activities where they were asked to apply skills and knowledge to their own lives, e.g. identifying their own stress warning signs. It was suggested that this could improve learning because students could take away materials that could help them to remember and apply knowledge and skills at a later date.

Students also suggested that the program could be made to be more interactive. This is similar to feedback outlined in Table 6. They suggested incorporating quizzes throughout the program. Students proposed using a system of rewards whereby points or bonuses could be accumulated for completing activities.

Once again, the issue of having music was broached. Students proposed having a theme song for the program and individual songs to signal different locations.

Another reoccurring theme across the interviews was the dislike of the space setting. Once again, students related the outer space setting to programs for younger students. Students in 2 of the interview groups suggested changing the setting to a location paralleling the setting for the television show *The OC*. There was general agreement from the other students in these interview groups that this would be effective. Another student suggested having the whole program take place at an all-night party, with characters interacting with one another and multiple plots unfolding as the night progressed. Again, the other students in this interview group generally agreed with this suggestion.

Students made a number of suggestions concerning computer programming. They proposed having a button or icon for each activity so that they could click on the activity they wanted to go to rather than being directed in a linear fashion through the program. They also wanted to be able to move backwards to revisit individual screens rather than having to reload an entire lesson to review certain parts. Students did not like having to press a 'next' button or an arrow button to take them to the next screen and would prefer slides to follow on from one another as if they were watching a movie or playing a computer game.

4.6.3 Interviews with educators

The data from semi-structured interviews with school staff and educators were analysed using the same qualitative process as was used to analyse student interview data. As with the student data, key issues were noted. These issues were compared across respondents and categorized into themes to provide an organized view of the data.

The first question asked participants if they thought it was important for adolescents to learn about ways to cope with stress. All participants answered in the affirmative. Participants were then asked if they thought it was important for the program to concentrate on teaching coping skills to students in an effort to teach them how to help themselves and others in times of stress. Again all answered in the affirmative.

The third question asked participants to identify where the program might fit within the school curriculum. Answers are summarised in Table 8.

Table.8.

Educator responses to the question, 'Where would the program fit within the curriculum?'

Educator	Annotated Response
AN	Crucial for all aspects of learning in schools. Could be part of pastoral care, peer support, Personal Development/Health, scripture…
MA	Personal Development/Health or pastoral care. Could be taught at Yr 8 camp.
HL	Pastoral care, peer support or Personal Development/Health/Physical Education
AM	Personal Development/Health
JM	Important for all curriculum areas. Personal development or health. Within a study skills program.
JT	Within Personal Development/Health/Physical Education or a program that school counselors might offer to students.
KJ	Pastoral care, health.
CR	Personal Development/Health/Physical Education
JF	Health education
MM	Scripture, health

Most educators identified the areas of health education or personal development as possible subject areas in which the program could be used and this matches with the design aims of the program. It is interesting to note that educators identified other key curriculum area along with health and personal development, namely pastoral care, peer support, scripture, study skills and school camp. This is encouraging feedback because it suggests that schools can be flexible about finding the time to run the program in a busy schedule; rather than trying to complete the program solely within the time allocated for health or personal development lessons, schools could use the time allocated for pastoral care, peer support, scripture or study skills lessons or even plan to undertake the program during a school camp. One participant suggested that the school counselor could use the

program. This would be a problem if the counselor used the program as a targeted or indicated intervention because an important aim was to develop a program that could be delivered to the entire year 8 cohort. It appears that this particular participant may not have understood this aim. It is important to make certain that school personnel understand that the program is for all students and not only for those with special mental health needs.

Table 9 presents a summary of the responses given when participants were asked if it was appropriate to have the program consist of 8 lessons to be administered over one school term.

Table.9.

Educator responses to the question, 'Do you think it is appropriate to have 8 lessons to be administered over one school term?'

Educator	Annotated Response
AN	Maybe about 5 computer lessons would be better because then teachers would have time during other lessons to discuss the ideas that came up in the computer lessons. Time for de-briefing.
MA	I'm not sure that I'd really want to have the students interacting with a computer for 8 lessons in a term. That's all the lessons we have for health in a term and we might need to cover other topics as well. They need to spend time working in groups with their peers as well.
HL	It might be okay ... teachers will probably like to alternate between computer activities and class discussions or other activities involving group work or assignment work. Maybe 6 lessons would be better.
AM	Students might get bored.
JM	I don't think I'd cover 8 computer lessons in a term. I'd probably run it over two terms, although this might be too much time to spend on this topic. We've got to cover healthy eating, healthy lifestyles, physical activity, etc
JT	Might be okay if counselors were delivering the program to individual students. Otherwise cut back on computer directed lessons. Need a variety of activities and students need time to discuss this stuff and reflect on it.
KJ	Maybe 5 or 6 lessons would be better because the curriculum is full already.
CR	Not sure. Could be fine.
JF	It would be fine if the computer time only took up half the lesson and then there would be time to discuss new learning, make sure that the students are understanding the concepts etc.
MM	I don't think I'd be able to book the computer lab for that many lessons in one term. Maybe 5 lessons would be good.

Overall, the participants expressed concern that it might not be possible or even effective to complete 8 computer lessons about stress management over 1 school term. It was

suggested that the program might be shortened to 5 or 6 lessons. An important theme to emerge from this question was that educators wanted time during health lessons to complete group work and to have discussions about the learning material. The design decision to have students work on their own during all of the lessons may have to be revisited and the format of the program changed to incorporate time for discussion and group work.

A summary of the responses participants gave when asked if they thought that computer delivery was appropriate for the program, is presented in Table 10.

Table.10.

Educator responses to the question, 'Do you think that computer delivery would be appropriate for this type of program?'

Educator	Annotated Response
AN	Would support teachers to teach about stuff they may not know much about.
MA	Would make my job a lot easier because I wouldn't have to spend a lot of time preparing lessons.
HL	Already have good pastoral care programs that are based on group work. Would be good for kids to interact with this content on their own. Maybe have a mix of computer and group work.
AM	Easy for teachers. Students love to use the computer labs. Might be difficult in another school that didn't have our ICT facilities.
JM	Would be good to have some support materials that could offer activities to be used in class as well. Also ways to adopt similar skills across the school, in the playground, revisit at stressful times like exam time etc. Maybe have posters?
JT	Some kids will prefer to complete this stuff on their own. Some content might ask about personal things so kids should be able to interact with this content on their own
KJ	Easy to implement in our school. Not too much extra work for staff.
CR	Most schools have the facilities for this now.
JF	Students like to use the computers.
MM	We need to use computers more in schools but difficult when there are no quality programs. Students like to use computers.

Overall, the participants expressed support for using computers to deliver the program. Two participants expressed the view that students enjoy using computers, which suggests that having the program delivered by computer might act to motivate students to complete it. This response aligns well with the data collected from the student survey and student interviews. Four participants identified benefits for teachers related to decreased workload, with 1 of these participants also noting that it would make it easier to teach

about a topic that teachers may not be knowledgeable about. Two participants recognised the benefits associated with having students interact with the program on their own due to the possible sensitive nature of some of the materials. Two participants continued the theme that emerged in the data from the fourth question, specifically that it would be beneficial to combine individual work on the computer with some whole class or group activities.

It is important to acknowledge that 1 participant was concerned that there would be schools without the ICT resources available to use the program. While this concern did not emerge as a theme across the majority of the participants, it is important to note because it might hinder uptake of the program in the future and thus may need to be considered more carefully when larger studies of the program are undertaken. Nevertheless, the review of the literature concerning computer usage in Australian schools presented in chapter 3 of this thesis suggests that access to ICT equipment will not be a problem.

It is also interesting to note the comments by another participant concerning the possibility of supplying support materials to complement the computer lessons. It was suggested that posters could be developed to encourage students to use the skills they learn about in contexts outside of the classroom, such as in the playground. It was suggested that posters could also act to remind students to use particular skills, for instance problem solving or relaxation strategies, at times of high stress, such as at exam times. Posters could be designed to present summaries of the important learning points (signs and symptoms of stress, how to access help etc) and to remind students of the steps for problem solving or how to carry out the mini relaxation exercises. They could be designed to be easily printed from the internet site.

Table 11 summarises the responses educators gave when they were asked to identify the things they liked best about the program.

Table.11.

Educator responses to the question, 'What do you like best about the program?'

Educator	Annotated Response
AN	Giving students skills they can use to make a difference. Empowering the students.
MA	Using the computer.
HL	Skills focus is good. I like the CBT approach.
AM	Getting the students motivated by putting it on computer and having characters like the Simpsons.
JM	Giving the students strategies and skills they can use on their own.
JT	Computers motivate students, make it fun and make it look cool-important with mental health programs.
KJ	Teaching students easy-to-use skills… putting the responsibility in their hands.
CR	Giving students the means to look after themselves. Based on a proven technique.
JF	Easy for teachers to administer.
MM	Interesting to learn about the skills. I like the story idea....getting to know Mia and Ben.

As can be seen from Table 11, 6 of the 10 educators identified the focus on teaching skills to students as the best aspect of the program. One educator identified the use of a "proven technique" as the best aspect. This provides support for the decision to use a cognitive behavioural approach in the program.

Another important theme to emerge was the support expressed for the focus on "empowering" students to take responsibility for their own mental health. Four of the participants referred to this idea. This suggests that educators support the aim to increase students' ability to cope better and to increase their perceived competence to cope.

Three of the educators identified the use of computers to deliver the program as the best part of the program. They commented once again on themes that emerged from other questions, specifically that computer delivery makes the program more appealing to students and that it makes delivery easier for teachers.

Table 12 presents a summary of the responses that educators gave when they were asked to suggest ways in which the program might be improved.

Table.12.

Educator responses to the question, 'How could the program be improved?'.

Educators	Annotated Response
AN	Cartoons look like they might appeal to younger students- maybe target upper primary instead. Could the lessons be called 'lessons' instead of 'sessions'?
MA	Need to make sure that there are games to keep students interested. Less sound would be good. Could there be information for parents, like a pamphlet that could be printed?
HL	Could refer to 'lessons' rather than 'sessions'.
AM	Very noisy. Would be better if there was no sound. There could be information sheets for parents.
JM	Too much text. A little difficult to navigate at times- maybe because too many visuals. Decrease text and visuals on each slide. Also too much sound. It was very noisy in the computer lab.
JT	Could there be a teacher version ie how teachers can cope better with stress? Parents might also like to know about this stuff. They could support their children to use the strategies at home. Also change titles to 'lessons' instead of 'sessions'.
KJ	Pictures may be too immature for middle school students. Might need to make characters look more like characters from computer games.
CR	Call the segments 'lessons'. Involve the parents.
JF	Would be helpful to introduce these skills before adolescence- maybe more appropriate for primary school. Remove some of the sound effects. It would be too noisy to have a whole class doing it.
MM	Difficult to follow. Too much information and text on each slide. Make it more of a story.

Table 12 shows that four of the ten educators suggested that the learning segments be referred to as lessons rather than sessions. This would align the language and structure of the program more closely with school culture.

Four of the 10 educators also identified problems with the program sound. They all suggested that the sound effects be lessened and 1 educator suggested that the sound be cut from the program altogether. It appeared that the program produced too much noise when a number of students were working on it together in the same space, for instance in the school computer lab. Sound effects also emerged as a theme in the student interview data. Students similarly did not like the sound effects.

Four of the educators proposed including information materials, in the form of a pamphlet or information sheet for parents. It was thought that, if parents were informed about the skills that the students were learning, they could then act to reinforce learning by encouraging the application of the skills in the home environment.

Two educators suggested that the program might be more appropriate for primary school students. One educator suggested that the appearance of the characters would appeal to a younger audience. In contrast, the data derived from the student surveys and interviews suggested that the characters were appealing to adolescent students. Another educator felt that it would be beneficial to expose students to the skills covered in the program at a younger age. Further testing of the program would be required to explore this proposition more closely.

At the end of the interview, educators were asked to provide advice regarding plans to conduct a larger trial of the program in 8 schools. Three educators discussed research that had recently been conducted at their schools. All 3 suggested avoiding the use of questionnaires measuring mental health problems like depression and anxiety because of issues concerning duty of care and parent consent. Concerns were that schools would have to report back to parents if a students met criteria for a disorder and also that parents might refuse to give consent for their child to be involved in a study that enabled schools to find out about their child's mental health. Two of these educators suggested the use of questionnaires to measure resilience because many schools would be interested to know about resilience levels in their students and ways to increase resilience.

All of the educators agreed that the life satisfaction and perceived competence scales used in this feasibility study would be appropriate for use with adolescent students in a larger study. Six of the participants commented on the benefits of using short scales like these with students because there would be a higher likelihood that students would complete them properly.

Five educators suggested that it would be important to inform school counselors about a larger study. They felt that, because the program encouraged students to seek help from school counselors, the counselors should be forewarned. Also, counselors might want to use the same strategies that are taught in the program in an effort to reinforce them with the students.

The 19 school principals that attended the presentation given by the researcher and her supervisor expressed unanimous support for the project. There was agreement that it would be helpful to include a mechanism in the program to help school staff to identify students at risk for mental health problems. This would support school staff to get help for students in need. It was also suggested that it would be beneficial to inform educators about how to access appropriate care for students and their families. Sources of help might be listed, accessible only by teachers, such as possible counseling services or assessment centres.

4.6.4 Meetings with mental health experts

Discussions and email contact with mental health experts revealed a number of suggestions for changes to the program. Overall, they supported the approach taken, although it was suggested that it be made clear that the program was a universal prevention program and not a treatment program. This would help to ensure that school staff, students and parents did not develop unrealistic expectations about the program.

It was suggested that it would be beneficial to include activities to follow on from the computer lessons so that students could apply and practice skills. It was pointed out that, one of the most important components of a cognitive behavioural approach is homework

that requires new skills to be applied to everyday life. It was suggested that students could complete similar activities either as homework or as extra activities during class time. This is interesting feedback in light of suggestions from educators to include activities that are not computer-based and that enable students to apply new knowledge and reflect upon their learning.

A clinical psychologist felt that it would be beneficial to devote more time to exploring the issue of why some plans to solve problems don't work. For instance, plans might be unrealistic or negotiation with key people might not have occurred, or maybe the protagonist lacked confidence and was not assertive when carrying out the plan. These possibilities could be discussed and students could be offered ways to manage them, for instance, they might review their list of possible solutions to a particular problem and choose another solution to try.

Another clinical psychologist suggested that time be spent exploring what can be done when there doesn't appear to be any particularly obvious solution to a problem. The researcher was directed towards the Mindfulness literature (Baer, 2003; Carlson, Speca, Patel & Goodey, 2004) and literature concerning the Dialectic Behavioural Therapy model (Huss & Baer, 2007; Robins & Chapman, 2004). Both Dialectical Behavior Therapy and mindfulness-based cognitive therapy address the importance of acceptance (Huss & Baer, 2007). While Cognitive Behavioural Therapy is based on the rationale that people can and should exert control over situations, there are times when an individual cannot control aspects of their life, for instance when they are suffering from a chronic health condition, and in these instances acceptance can be seen to be an adaptive or beneficial coping strategy (Hayes et al., 1999). It was suggested that teaching about acceptance would be suited to a universal program because students could be guided to understand that everyone necessarily needs to learn how to tolerate a certain number of stressful life events, such as exams or problems with getting along with peers. The psychologist suggested that students could learn how to, figuratively, 'ride the wave' of stress until things calmed down.

4.7 Discussion

This feasibility study highlighted a number of changes to be considered before the research could proceed to a larger evaluation study of the prevention program (the next step in the Intervention Mapping process). These changes concerned structure, content, illustrations, sound effects and text quantity and layout.

Students, educators and mental health experts were supportive of the idea of having a universal school program to teach adolescents about stress and coping. Importantly, 88% of students agreed that people their age should have an opportunity to learn about stress and coping. There was general agreement that the content was suitable for a program to be implemented by teachers and completed by adolescents in the school setting. Educators thought that the program could easily fit within personal development and health lessons as well as pastoral care, scripture and peer support lessons. One staff member suggested that the program could even be run as an activity at school camp. Students and school personnel strongly supported the use of computers and the internet for delivery of the program. Computer delivery was seen as a plus because it could save teachers time and would make the program appealing to students. There was also support for having students work on the program on their own before moving on to group activities.

A majority of educators thought that the best part of the program was its focus on empowering students to take responsibility for their own stress levels and mental health. These comments lend support to the cognitive behavioural approach, which aims to build skills to enable individuals to care for their own mental health. Many identified the teaching of skills as the best part of the program. Two school staff members suggested that it would be appropriate to introduce similar concepts and skills to younger children. This raises the possibility of developing a sequence of 3 or 4 programs to be implemented across primary and secondary school grades to reinforce and extend learning about mental health over time.

A number of educators thought that 5 or 6 lessons would be more manageable than 8 because of time constraints and curriculum commitments. It was important to act on this suggestion as teachers would ultimately be responsible for delivering the program. Educators also suggested removing the term 'session' and using the term 'lesson' throughout the program. In light of this feedback, the program was redesigned to contain six 40-minute lessons.

The first lesson was redesigned to contain information about how to define stress, the common causes of stress, the negative and positive effects of stress and factors that protect against the negative effects of stress. This lesson delivered the message that it is possible for people to learn how to manage stress more effectively. Lesson 2 introduced the concept of coping. Helpful and unhelpful coping strategies were presented. Avoidance of stressful places, people or things was explored as an example of an unhelpful coping strategy. Helpful coping strategies included talking about problems with a trustworthy person, problem solving, challenging unhelpful thoughts and managing time effectively.

Lessons 3 through 6 focused on teaching particular skills. Lesson 3 explored how particular styles of thinking influence stress levels and taught about the process of thought challenging. Lesson 4 taught the skill of structured problem solving as well as the skills needed to analyse and achieve a goal by breaking it down into smaller, more manageable steps. Lesson 5 presented ways to restore and maintain calm, including progressive muscle relaxation and breathing exercises. Lesson 6 taught about the benefits of daily planning and gave information about seeking help. This final lesson also explored the connection between mental wellbeing and lifestyle factors such as regular exercise, spending time with friends, getting enough rest and making time for fun activities.

The program was shortened without compromising core content. This was done by eliminating a number of the outer space locations and having all of the space scenes

occur in one place, *The Mind Machine*. This alteration allowed for the tempering of the outer space theme in line with suggestions from students and educators. It also allowed students to become familiar with one learning context and one form of learning activity, namely, using flashbacks to show stressful situations and to illustrate the use of particular coping strategies. This meant that students could devote their cognitive resources to learning about cognitive behavioural skills rather than familiarising themselves with new learning contexts or activities. Using flashbacks meant that most of the action would reflect real life experiences and occur in realistic locations. This enabled the majority of the program to be set in the real world rather than outer space, in line with student suggestions.

Another way the program was shortened was to cut back on the number of examples used to illustrate the use of certain skills. Student feedback suggested that exposure to one example would be sufficient to enable effective learning, at least for a number of students. So, instead of watching both Mia and Ben apply new skills, students could choose to watch only one of the characters apply the skill before attempting to apply the skill themselves. The option to view more than one example was retained for those students requiring a number of modeled examples. This allowed the program to become more sensitive to the learning needs of individual students.

The case study was eliminated from the pre-test at the beginning of the program to shorten the program and also to decrease the amount of on-screen text. Both students and educators recommended eliminating the amount of on-screen text. The case study was retained instead as an activity teachers could print and use with small groups or with a class. It could still be used as a pre-test task or else as a reflection or revision task, depending on the teacher's professional judgement. Text was also edited on many slides and lists or summary statements were used rather than lengthy descriptions or explanations. Many of the on-screen explanations of how to navigate through the program, for instance using arrows at the bottom of the screen to go forward or backward, were eliminated in line with student recommendations. Students were already adept at navigating through internet environments.

School staff suggested that there could be a better balance between computer-based learning and follow-up learning activities that could be completed in small groups or as a class. Activity pages were added to each lesson in light of this feedback (see Appendix D). These pages were designed to summarise the learning points from each lesson and to support students to apply newly acquired coping skills. These activities also, therefore, addressed concerns expressed by the mental health experts relating to the lack of activities designed to support students to begin to apply cognitive behavioural skills in their own lives. These activity pages were designed for printing and to be kept by students to enable revision at a later date and to provide teachers with student work samples to be used as evidence of teaching and learning in line with syllabus requirements. Figure 22 shows Buddy directing the students to complete their activity pages for lesson 1.

Figure 22. Buddy directs students to complete activity pages in lesson 1

Interactive activities were included in every lesson, as requested by students. For instance, a short quiz was added to the beginning of each lesson to test knowledge about the previous lesson. Design changes allowed the program to offer students immediate results after completing these quizzes and to offer assistance in the form of a brief explanation if errors were made.

Interactive activities were also added within lessons, for instance students were able to identify and list their own stress warning signs and coping strategies and to print these lists (see Appendix E). Students were also able to receive feedback about the coping strategies they commonly used. This feedback enabled them to identify areas where they could improve their coping skills. The feedback was presented in the form of a bar graph with 5 columns representing the five main forms of coping addressed in the program, namely problem solving, helpful thinking, getting distracted, avoiding problems, and finding help. The height of each column was determined by adding together the number of times students reported using each type of coping. Figure 23 shows an example of the graph that students received.

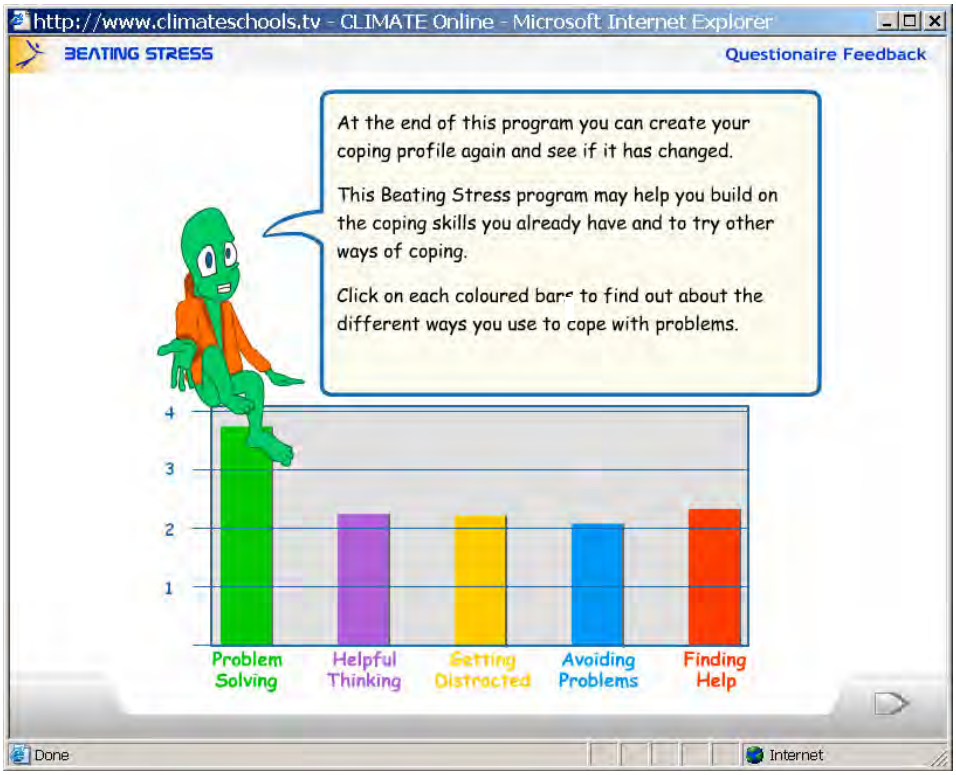

Figure 23. Feedback to students concerning their personal coping styles

Students were able to click on each column to receive more information about the coping strategy and ways to increase or decrease its use (see Appendix F). Figure 24 shows feedback concerning avoiding problems.

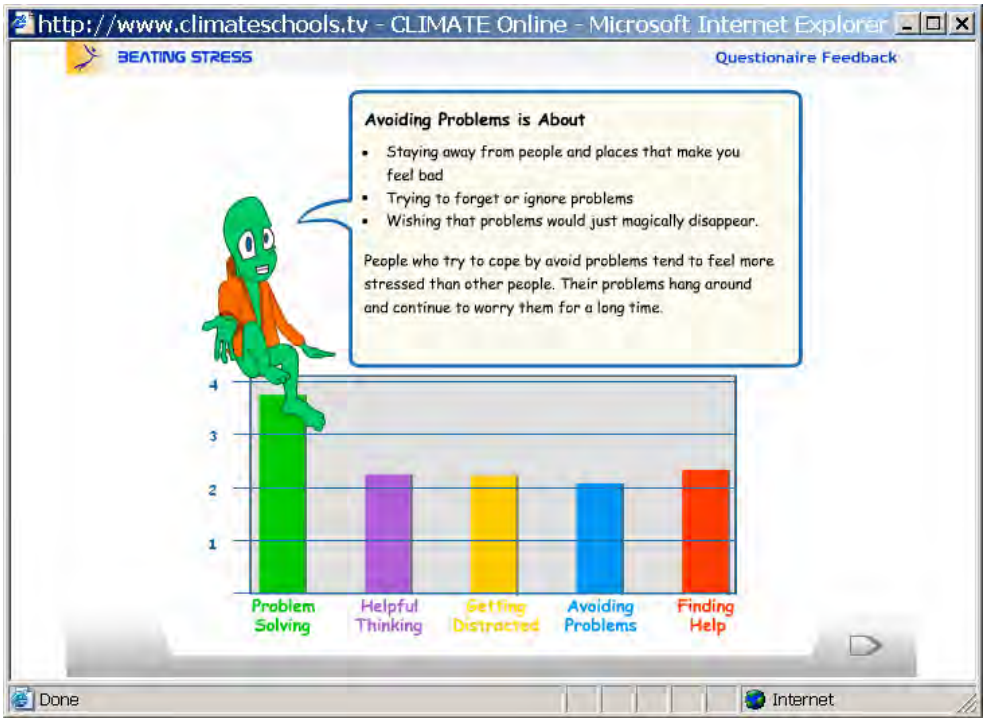

Figure 24. Feedback to students about coping strategies aimed at avoiding problems

Students requested that games be added to the program. The challenge was to ensure that the games were designed to reinforce the content of the program as well as to make the program more appealing to students. Games were added to the end of each lesson and were designed to revise the content of the lessons, for instance facts about the physiological stress response were reviewed. All of the games were aimed at having students save the Earth's moon from invading robots. The games began at the *Discovery Centre*, an outer space monitoring facility. Students were put in charge of the *Discovery Centre* and on their shift the Megaplex Base on the Moon was taken over by robots. Figure 25 shows the Discovery Centre.

Figure 25. The Discovery Centre

Students were required to launch a rocket and to land it on the moon. Figure 26 shows the rocket landing.

Figure 26. The student lands a rocket on the moon as part of the game sequence

Once the rocket reached its landing pad a door opened and a small buggy appeared. Student had to direct this small buggy to the Megaplex Base on the moon. Once inside the Megaplex Base, students were required to confront the invading robots. Students received points throughout the game for each stress fact that they reviewed.

School principals recommended including a means by which school personnel could identify students at risk for mental health problems. Revisions were made to include a brief, 7-item questionnaire at the beginning of the program consisting of the *K6 Psychological Distress Scale* (Kessler et al., 2002) and the *Delighted/Terrible Scale* (Andrews & Withey, 1976). These scales were chosen because they are short, they are not diagnostic and they are easily interpretable. Both of the scales are also available for use in the public domain. Teachers were informed that the scales were not diagnostic tools and were provided with an explanation of possible results on these scales. Teachers were advised to consider other information, including changes in student behaviour and academic performance, before deciding if a result on these scales indicated the need to

seek help for a student. Figure 27 shows an item from the *K6 Psychological Distress Scale* (Kessler et al., 2002).

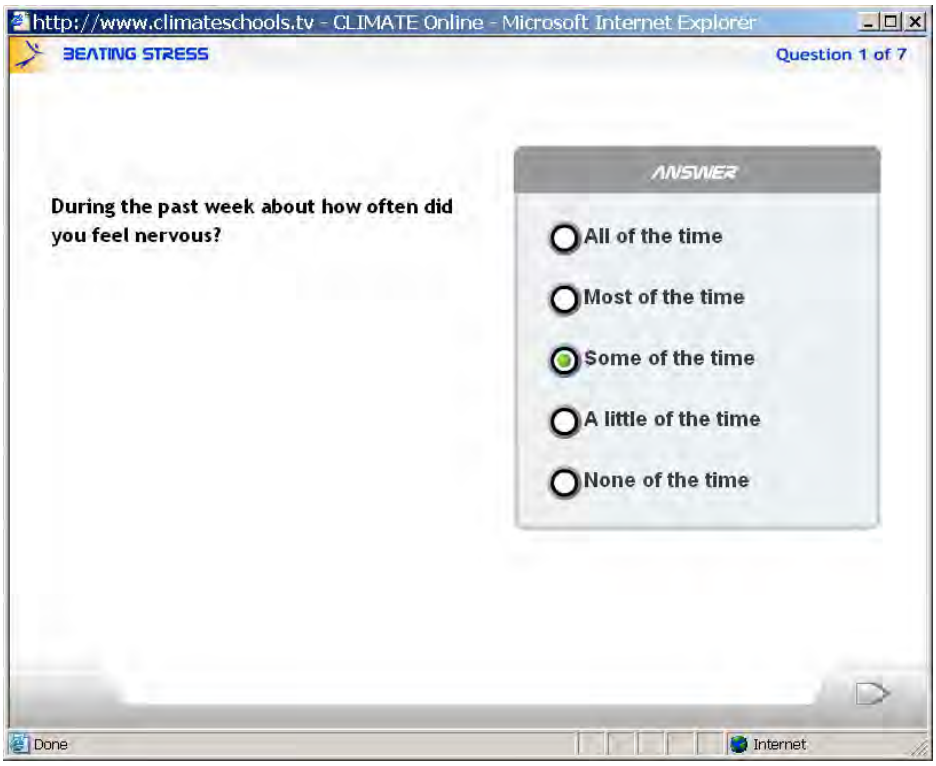

Figure 27. An item from the *K6 Psychological Distress Scale* (Kessler et al., 2002)

The *Delighted/Terrible scale* (Andrews & Withey, 1976) was shown on one screen and a character from the program was used to illustrate each of the responses. As shown in Figure 28, the character's nose turned red to indicate the selected response.

Figure 28. The Delighted/Terrible Scale (Andrews & Withey, 1976)

In light of student responses to the trial instrumentation, the *Life Satisfaction Scale* was eliminated. The *Delighted/Terrible Scale* replaced it as a measure of life satisfaction. The *Perceived Competence Scale* was retained.

Inclusion of the *K6 Psychological Distress Scale* also allowed for more interactivity to be added to the program. Programming was added to allow students access to their results on this scale for each lesson. Results could be compared across lessons. Along with results, feedback was added to provide students with information about how to interpret results and what things they might do in response to their results. Figure 29 shows an example of the feedback a student received at the end of the final lesson.

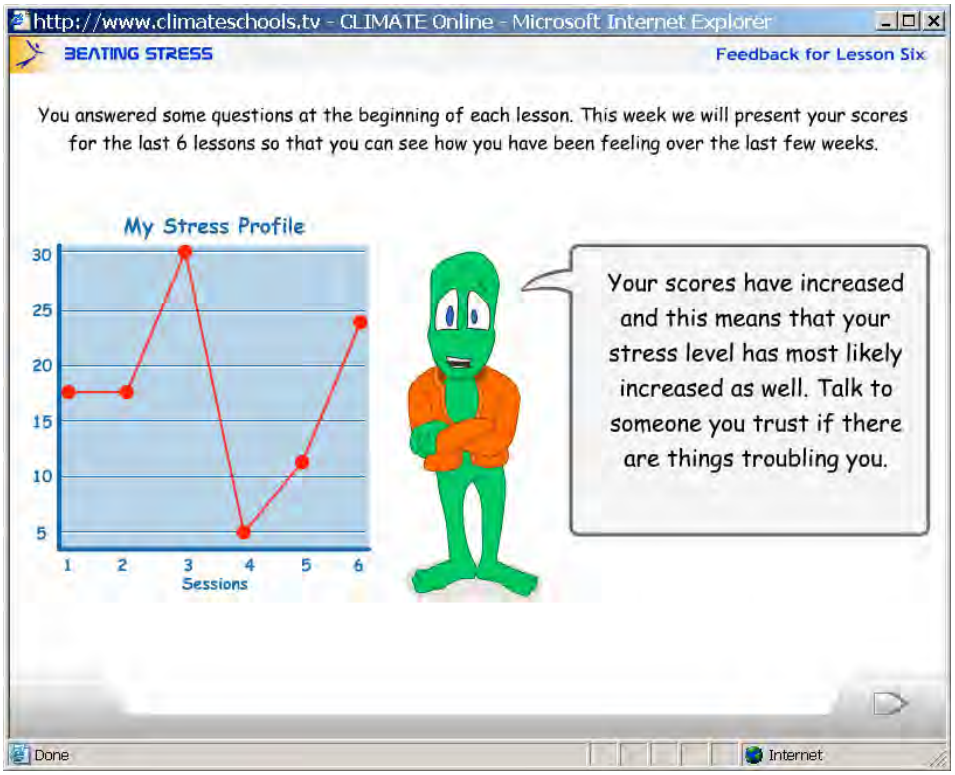

Figure 29. Slide showing feedback supplied to students in light of results on the *K6 Psychological Distress Scale*

Feedback was designed to support students to act in helpful ways. If their stress levels were high, for instance, Buddy would say,

> Are you feeling stressed out? Check back to lesson 1 activities and rate your stress warning signs. If you are scoring high for any of your stress warning signs then it is time to take action. You could (a) take time to do something you enjoy, (b) go for a walk or a swim, (c) make contact with a friend or relative, (d) watch a funny movie, or (e) take control and beat unhelpful thoughts by asking what evidence do I have? and, what are the real facts here?

Optional teaching resources were designed and added to the program in line with suggestions from school staff. These resources were placed within a new location called the 'Teachers' Club'. The Teachers' Club was designed so that it could only be accessed by using a teacher login code. Resources that were placed here were a rationale for the

program, lesson outlines, information about the content of each lesson, access to information concerning student progress and assessment and extra teaching activities and resources, such as posters (see Appendix H for examples). It would also be possible to have teacher professional development materials located here, such as research articles or a stress and coping course designed specifically for teachers, in line with suggestions from educators.

Figure 30 shows the homepage for the Teachers' Club.

Figure 30. Teachers' Club Homepage

The tab titled *Home* was designed to provide teachers with information about how to use the program, results from research about CLIMATE/Schools and access to a forum where

teachers could share their experiences with others. The tab titled *Coupons* allowed teachers to order coupons for students in their classes and to receive the coupons as an emailed attachment or hard copy in the post. Figure 31 shows a student coupon.

CLIMATE/Schools Coupon for Beating Stress

GO TO: www.climateschools.tv→ student login

Login ID: ADG67FU8
Code: str

Paste this coupon or write your Login ID and Code in your diary or workbook.

Figure 31. Student coupon

Coupons were designed to enable students to log in at the student homepage. Figure 32 shows the student login page.

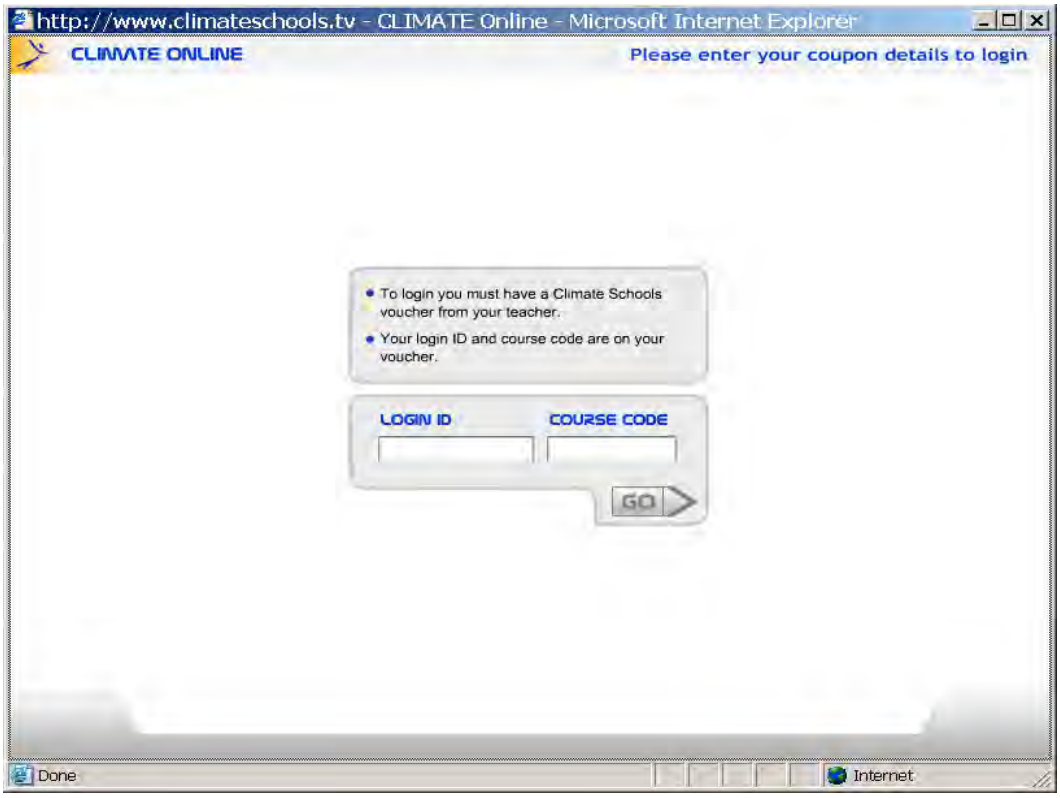

Figure 32. Student login page

The tab called *Monitoring Students* was designed to give teachers access to a list of the login codes for the students in their class so that they could look up a student's login ID code if the student misplaced their coupon. It was also designed to hold information showing the progress and assessment results for each student. It was designed so that teachers could only access results for their own students.

The tab titles *View the courses* was designed to allow teachers to view a CLIMATE/Schools course in its entirety and to access learning outcomes for the courses. This would enable teachers to select an appropriate course for their students and to become familiar with the content of the course before having students complete it. This tab was also designed to provide teachers with information about the *K6 Psychological Distress Scale* and the *Delight/Terrible Scale* and to give them access to extra activities and resources, such as posters, activity sheets and ideas for group work and whole class activities (see Appendices D, G and H for some examples).

Mental health experts suggested including activities concerned with Mindfulness and Dialectic Behaviour Therapy. New learning activities were added to lesson 5 to cover the concepts of mindfulness and acceptance. These activities introduced the possibility of unsolvable problems, such as overcoming asthma or reversing poor exam results, as shown in Figure 33. It was suggested that, in these instances, it is best to accept that the problem will not go away and to respond in an effective way, such as ensuring that asthma medications are taken regularly or preparing more effectively for the next exam.

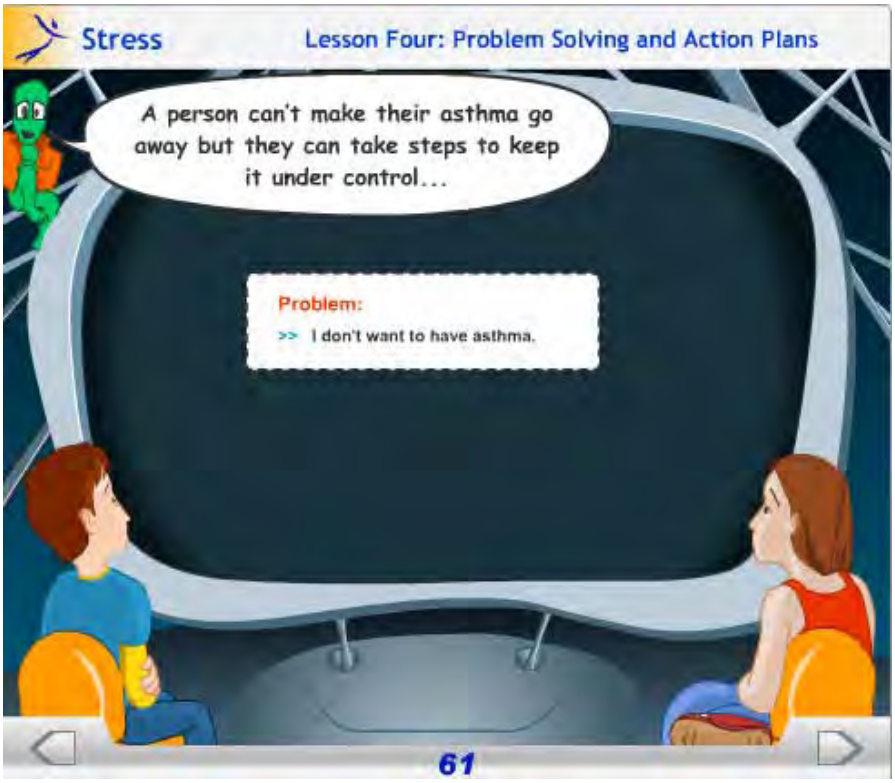

Figure 33. The concept of 'Acceptance' was added to the program

A number of students and educators felt that the cartoon characters would be more appealing to a younger audience. Others expressed support for the characters, with two participants likening the style of drawing to popular television shows. With 69% of students agreeing or strongly agreeing that they liked the look of the characters, there were no changes made to the appearances of the characters. Only 48% of students agreed that they could relate to at least one of the characters. Despite this, when asked what they liked about the program, the feedback concerning the characters was positive, for instance 1 student said that it was "easy to relate to the characters", another commented on the "the kool green man" and yet another said, "the dudes are like The Simpsons or South Park ... it's good". This apparent contradiction in the data might reflect a problem with the wording of the survey statement, 'I can relate to at least one of the characters'. In light of the positive feedback from students during the interviews, character profiles were not altered.

Although a number of students were keen to see music added to the program, some educators were against having an audio component. They expressed concern regarding the noise that was created by the few sound effects that were included in the program for the feasibility trial. Adding music tracks would intensify sound. It was evident to the researcher that classrooms or computer labs became very noisy during the feasibility study even though the preview contained few sound effects (only occasional space craft sounds, synthesizer music to signal outer space, mobile phone ring tones, Buddy's voice and a door slamming). Only one school required students to bring headphones to the computer lab and even at this school the majority of students were without headphones because they either forgot them or had lost them. This suggests that it may not be feasible to add music to the program at this stage. On the contrary, sound effects were removed in line with recommendations from students and educators. Buddy's voice was also removed, in line with student recommendations, and replaced with speech bubbles, as illustrated in Figure 34.

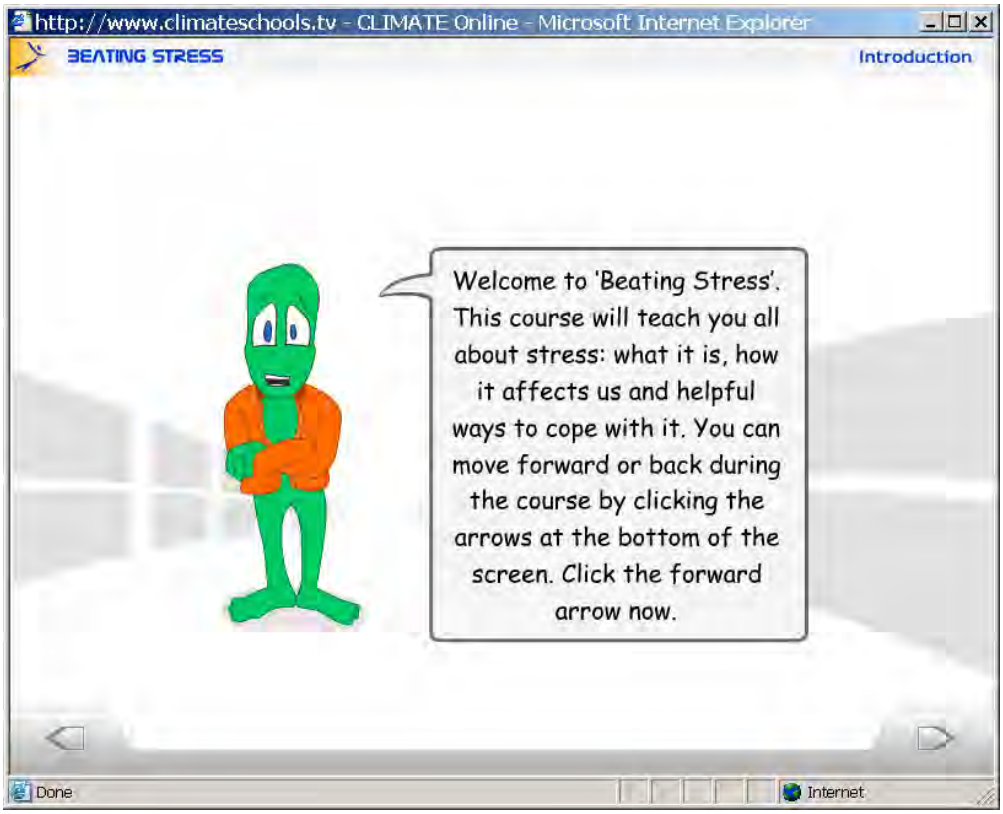

Figure 34. Speech bubbles replaced audio

CHAPTER 5 EFFECTIVENESS TRIAL

5.1 Introduction

This chapter reports the effectiveness trial of the internet-delivered universal stress prevention program involving 8 schools and 652 students. To view the program go to www.climateschools.tv. This homepage provides information about the program and a preview. Click on the 'New User' button to register (no cost involved). Once registered, access the 'Teacher's Club' to view the program in its entirety.

This trial corresponds to step 5 in the Intervention Mapping framework, specifically the adoption and implementation of the new health prevention program (van Bokhoven et al., 2003). It represents a step that is "between the tightly controlled randomised efficacy trial (that is used to prove effect in a highly controlled environment) and the uncontrolled implementation of an intervention in a program setting" (Andrews & Wilkinson, 2002, p. 98-99). As such, it is a before-after design with no control group. Causal inferences can thus be surmised concerning the relationship between exposure to the intervention and changes in behaviour and mood but further evidence (in the form of randomized controlled trials) is needed before firm conclusions about effectiveness of the program can be posited (Cook & Shadish, 1994).

The aim was to gain information about how well the program was matched with the naturalistic setting for which it was designed and to give an indication of the likelihood of long-term utility (Kok et al., 2004). It was important to run such a trial because so many similar school mental health programs have not survived to be implemented widely in schools and this may be due to a mismatch between program design and the context for implementation (National Institute of Mental Health, 1998).

Repeated measures trials of the internet mental health prevention program, from here on called the intervention, were undertaken in the second half of 2006. Participants were 463 students in year 8 at 6 schools who were exposed to the intervention and 189 students in year 8 at 2 other schools who completed lessons as normal and acted as a comparison group.

For the repeated measures trial, students completed a research questionnaire designed to measure knowledge, coping competence and coping behaviour at three time points. First, pre-intervention data were collected in the first week of the third school term in 2006. Students worked through the program during the 9 weeks of the third school term. Then, post-intervention data were collected in the last 2 weeks of the third school term, 8 to 9 weeks after pre-intervention data collection. Finally students filled in the research questionnaire for a third time at the end of the 2006 school year, corresponding to a three-month follow-up data collection point. Data were analysed using two-tailed paired-samples t-tests and repeated measures multivariate analysis of variance (MANOVA).

Students exposed to the intervention also completed a research questionnaire designed to measure mood (psychological distress and life satisfaction) at 6 time points in the course of the intervention. A time-series design was used to determine if mood changed at any particular time point during the intervention. Data were analysed using two-tailed paired-samples t-tests and repeated measures multivariate analysis of variance (MANOVA).

5.2 Measuring program effectiveness

As Hosman (2001) points out, program effectiveness can be taken to mean different things to different stakeholders; mental health groups will be interested to see a decrease in signs and symptoms of illness, government departments may want to see a decrease in expenditure, consumers are hoping for improvements in wellbeing, and schools will be concerned with the benefits for student learning. Despite these various views, there has been a focus on measuring indicators of disease, such as levels of symptoms or prevalence, in studies designed to test the effectiveness of school-based mental health prevention programs (see Bartholomew et al., 2000; Botvin & Griffin, 2004; Durlak & Wells, 1997; Neil & Christensen, 2007; Prins & Ollendick, 2003). This is problematic for a number of reasons. First, it can take many years before a prevention program leads to significant changes in disease-related outcomes, particularly if the program is universal (Bartholomew et al., 1998; Cicchetti et al., 2000; Fletcher & Fletcher, 2005; Kendall et

al., 1997). This is because the majority of the participants will be healthy; thus, the program will need to be administered to successive populations over many years before disease indices are likely to show significant change (Pencheon, et al., 2001; Rose, 1992). A number of previous studies measuring disease outcomes may not have found significant effects because they were not conducted over a long enough time period to allow for significant changes (see, for instance, Beardslee et al., 2003).

Another problem with relying on disease measures to test the effectiveness of a health prevention program is that it disregards intermediate or mediational variables, even though most programs are designed to influence these variables. Such variables include knowledge acquisition, coping skills (including cognitive behavioural skills), explanatory style (the tendency to explain causation in optimistic versus pessimistic terms) and social behaviours (Mrazek, & Haggerty, 1994; Seligman, et al., 2001; Sheffield, et al., 2006; World Health Organisation, 2004b). The Intervention Mapping approach warns prevention program developers that, although long-term outcomes may be hypothesized, it is important to measure relevant short-term outcomes because there is a better chance that an intervention will survive to affect long-term outcomes if short-term outcomes can be shown to change in positive ways (Bartholomew et al., 2006).

Measuring mediator variables can also shed light on whether these variables are in fact altered by a program and, if so, whether these changes are linked to changes in mental health (Ratelle, Vallerand, Chantal & Provencher, 2004). Prins & Ollendick, (2003) suggest that factors such as cognitive change and enhanced coping should be measured in evaluation studies of cognitive behavioural programs because research needs to establish mediational links between these factors and more distal outcomes, such as change in symptoms or disease incidence. Without such evidence it is impossible to be certain that change in disease outcomes is related to the cognitive behavioural components of a program, and impossible to pinpoint specific program components that are most strongly related to mental health outcomes. A number of researchers have noted that there is generally very little research concerning the nature of the psychological processes that

constitute cognitive adaptation and the resultant mental health gains (Clemens, 2003; Ratelle et al., 2004).

Program design literature strongly advises the measurement of proximal factors because research should test the theory on which basic design decisions are made (Bartholomew et al., 2006). For prevention programs, it needs to be established in the first instance that administration of a program can in fact lead to favourable changes in the risk and/or protective factors that it aims to target. Then it needs to be established that change in risk and/or protective factors relates to change in disease outcomes. Such evidence would satisfy the design requirements put forward by Sawyer and Patton (2000), specifically that risk factors selected for change must have a strong causal relationship with the mental disorders to be prevented and that risk factors must be modifiable.

It is important to address these requirements when testing mental health prevention programs that take a cognitive behavioural approach because this approach needs to be altered to make it suitable for prevention rather than treatment, and alterations may interfere with the effectiveness of the approach. For instance, Greenberg and colleagues (1999) note that prevention programs tend to be shorter and/or less intense than treatment programs and they express concern that these changes might lead to insufficient exposure to cognitive behavioural techniques.

Another reason to pay particular attention to mediational variables is to find out if there are particular risk and protective factors that are more strongly linked to prevention effects than others (Donovan & Spence, 2000; Smit, Beekman, Cuijpers, de Graaf & Vollebergh, 2004). This information is vital to program designers because it can inform choices concerning content and delivery, and it is important to users because it can inform choices concerning program suitability and effectiveness for their particular needs (Greenberg et al., 1999; Hosman, 2001). The lack of studies measuring changes in risk and protective factors makes it difficult for designers to identify key variables to target for mental health prevention (Grant et al., 2003).

Cognitive behavioural prevention programs target multiple and varied risk and protective factors, including coping skills, attributional style, optimism, social behaviour, psychoeducation, personal skills, social skills, cognitive restructuring and problem solving (Clarke et al., 1995; Kowalenko et al., 2000; Mifsud & Rapee, 2005; Roberts et al., 2003; Spence et al., 2003). Defining these constructs, let alone effectively measuring them can be difficult. Some researchers, for instance assert that coping skills include working hard, achieving academic success and seeking spiritual support (Frydenberg et al., 2004). Other researchers focus on more traditional cognitive behavioural skills, including problem solving, thought restructuring and seeking support (Ayers, Sandler, West & Roosa, 1996). Grant and colleagues (2003) point out similar problems with definitions of and markers for stress: "This analysis reveals (a) problems with conceptualisation of stress, (b) variability in measurement of stressors, and (c) lack of theory-driven research" (p. 447). Difficulties concerned with defining and measuring mediational variables make it even more important for research to focus on these variables because increased knowledge about these variables could allow for more accurate measures to be developed (Grant et al., 2003).

There are further problems with measuring and reporting about disease variables in studies of school-based prevention programs. Changes in disease-related factors are often measured and reported in terms of effects across populations, such as prevalence rates, rather than as effects within individuals (Rose, 1992). In contrast, schools are required to report short-term effects of programs for each student. As Barnekow and colleagues (2006) observe:

> Other challenges facing those building partnerships for school health promotion are the different goals and expectations of partners about what a school health education programme can achieve. For example, some partners in the health sector may have expectations that a programme should aim to produce prescribed behavioural responses and, through this, directly affect health status ... the education sector do not feel this is an appropriate way of measuring the success ... and that it should be measured using, for example, the level of the knowledge and understanding and skills development of the students (p. 20).

More importantly, schools will not use a program if staff members are not convinced that there are benefits for, and conversely no risk to, students. Schools will want to "know the innovation's advantages and disadvantages" with respect to their circumstances (Haider & Kreps, 2004, p4). The types of advantages that schools are interested in are indications that a program enables learning based on curriculum outcomes and acts to supports wellbeing and resilience in students (Curriculum Corporation, 1994a and 1994b; MCEETYA, 1999). This requires the measurement and reporting of mediational variables, such as knowledge acquisition, as well as factors that relate to wellbeing and resilience, including coping skills, explanatory style and social behaviours (Luthar et al., 2000; Masten et al., 1999).

Mediational factors that could be measured to reflect program effects on student wellbeing and/or resilience include quality of life, life satisfaction, self-efficacy and perceived competence (Brunner & Marmot, 2006; Cicchetti et al., 2000; Skinner & Edge, 2002). People who are convinced of their own ability to overcome obstacles are more likely to see failures and stressors as challenges, to cope using problem-solving and strategizing and to remain optimistic in the face of obstacles (Jane-Lloplis, Hosman, Jenkins & Anderson, 2003; Seligman, 2002). Cottler and colleagues (2000) suggest using functionality as an indication of success with prevention programs for young people because improvements in functionality (social behaviour, substance-use behaviours, cognitive ability and academic achievement) represent important practical gains.

While schools would welcome the measurement of wellbeing and resilience, such variables can also give a good indication of the success of a program in terms of health promotion (Barnekow, et al., 2006; Cicchetti et al., 2000). A health promotion approach does not aim, in the first instance, to avoid disease, and does not focus on curing, but rather aims to "develop young people’s competencies" (Barnekow et al., 2006, p. 27). Improvements in coping skills or behaviours reflect the capacity of individuals to “exercise more control over their own health and over their environment” (WHO, 1986, p. 3). Improvements in self-efficacy or perceived competence reflect increased capacity

of participants to look after their own mental health (Barnekow et al., 2006). Improvements in life satisfaction or quality of life reflect improvements in mental health (Cicchetti et al., 2000). Measuring variables that reflect wellbeing and resilience can thus meet certain needs or expectations of both the education and health sectors. This strategy illustrates that different sectorial views of what a program should aim to achieve are not always incompatible (Barnekow et al., 2006). The needs and expectations of each sector can be mapped out and common ground can be found (St. Leger & Nutbeam, 2000).

Unlike variables reflecting disorder, such as symptom level or disease incidence, wellbeing variables do not require mental health experts to diagnose or to provide care. Schools could safely and effectively track and report wellbeing factors such as coping behaviours and life satisfaction without the assistance of mental health experts.

While risk and protective factors are important variables to include in effectiveness studies of health prevention programs, so too are factors that reflect the successful translation of research-based preventive interventions into routine practice (Greenberg et al., 1999; Lowry-Webster et al., 2003; Sawyer & Patton, 2000). Sawyer and Patton (2000) suggest that effectiveness studies should measure and report on cost-effectiveness, problems of low participation and differential attrition. In a review of mental health prevention programs, Greenberg and colleagues (1999) identified implementation effectiveness as a key indicator of program success. Research concerning the uptake and diffusion of health prevention programs stresses the importance of tracking the responses of users and responding quickly and effectively to their suggestions and concerns (Rogers, 2004; Haider & Kreps, 2004).

5.3 Aims

In light of the previous discussion concerning appropriate ways to measure the effectiveness of mental health prevention programs, the aims of this effectiveness study were first, to determine whether the intervention could be delivered by teachers in schools and, second, to determine whether participants benefited from exposure to the

intervention in terms of learning new knowledge about stress and coping, using more helpful coping behaviours and reporting improvements in mood. These aims reflect the variables that the program was designed to target.

5.4 Hypotheses

There were five main hypotheses:

1. Implementation: Teachers would be able to implement the intervention in the school setting with no assistance from research staff or mental health experts.
2. Knowledge: After exposure to the intervention, students would show increased knowledge about stress and coping
3. Competence: After exposure to the intervention, students would feel more competent to cope with everyday stresses.
4. Coping Behaviours: After exposure to the intervention, students would report using more helpful coping behaviours, namely support-seeking, pro-social behaviour and problem-solving behaviour, and less unhelpful coping behaviours, namely avoidance and 'difficult' behaviours (hyperactivity/inattention, conduct problems and unsociable behaviour).
5. Mood: After exposure to the intervention, students would report a lower level of psychological distress and a higher level of life satisfaction.

5.5 Method

5.5.1 Recruitment of participants

In line with the before-after design with no control group, the aim was to recruit 6 to 8 schools to run the program to ensure approximately 500 participants. This number of participants would enable MANOVAs to be carried out to investigate the 9 variables of interest (Field, 2006). It would also easily meet Cohen's (1992) requirement of at least 393 participants for a study seeking to find small effect sizes. The universal nature of the intervention made it likely that effect sizes would be small (Jane-Llopis et al., 2003; Possel, 2005). Evaluation studies of similar universal mental health prevention programs found small effect sizes of around 0.2 (Barrett et al., 2006; Spence et al., 2003).

Schools were recruited in the first instance by contacting independent sector schools in

the Sydney region by phone or by email. The selection of schools was based on the technological capacity of the schools to access the internet program. The researcher visited 8 independent schools and 4 of these schools agreed to participate in the research. The NSW Catholic Education Office was contacted and an advertisement was posted in a newsletter sent to all NSW Catholic Schools in the Sydney region. Five Catholic schools contacted the researcher after receiving the newsletter and 2 of these schools agreed to participate. Another 2 independent sector schools were recruited after the researcher delivered a presentation about adolescent mental health to a group of principals from schools belonging to the Association of Independent Schools of NSW. An application to conduct research in NSW government schools was submitted to the NSW Department of Education and Training in July of 2004 in an attempt to involve public schools but this application was still under review at the time of data collection.

Of the 8 schools originally recruited, 2 were subsequently unable to implement the intervention due to timetabling constraints and staffing issues (2 teachers who had shown interest in running the program were on maternity leave). However, these schools agreed to have students complete the research questionnaire at the 3 data collection points. Students from these schools thus became a defacto comparison group. Because these schools were both all-boys' schools, the comparison group, 189 students in total, was all-male. The 6 remaining schools that implemented the intervention were 3 all-girls' schools, 2 co-educational schools and 1 all-boys' school. There were 463 students in total in this intervention group, with 119 males and 345 females. All of the recruited schools were located in urban suburbs with most households in the medium to high socioeconomic status bracket.

An information letter and a consent form conforming to the University of NSW Human Ethics Committee requirements, were sent to school principals. Once these consent forms were signed, an information letter and a consent form for parents/guardians, were distributed by teachers to students in year 8. Only 1 student across all of the schools did not gain permission from parents/guardians. This student did not participate in the research.

5.5.2 Measures

Implementation

The degree to which teachers were successful in implementing the intervention was measured in terms of the proportion of students completing each of the 6 lessons. The intervention was designed such that participants had to work through lessons in order from 1 to 6 and all components of a lesson had to be completed before it was possible to move on to the next lesson.

Knowledge

The researcher designed a knowledge test consisting of 12 true/false statements about stress and coping (see Appendix I). The statements tested knowledge about defining stress, helpful ways to cope, thought challenging, structured problem solving, de-arousal strategies, and the relationship between stress and lifestyle factors. There is no published reliability or validity data concerning this knowledge test because it was designed to specifically address the content in the program. The researcher was unable to find an existing measure that aligned well with the content of this new program. Colleagues from the School of Education at UNSW, most of who teach in schools, checked the questions and approved them. This provides a degree of face validity.

Perceived Competence

The *Perceived Competence Scale* (Williams & Deci, 1996) was used to measure students' beliefs in their own competence to cope with everyday stresses (see Appendix I). Beliefs about one's competency to cope can influence coping behaviours and, likewise, experiencing effective or successful coping can bolster self-beliefs in one's coping competency (Frydenberg, 2004). The scale used in this research allowed the researcher to word items to specifically reflect the domain being studied, in this instance respondents' beliefs about their competence to cope with everyday stresses. For example, the first item read, "I feel competent to manage when I get stressed" (see Appendix I). Another advantage of this scale was its brevity. It consists of only 4 items, each with a 7-point Likert scale ranging from 'not at all true', through 'somewhat true', to 'very true'. The

alpha measure of internal consistency for this scale has been reported above 0.80 (Williams, Freedman & Deci, 1998; Williams & Deci, 1996). The version of the scale used in this study was trialed by the researcher with 88 adolescent school students (see feasibility study in chapter 4 of this thesis). The alpha measure of internal consistency obtained in the feasibility study was 0.90.

Coping Behaviours

Coping behaviours were measured using 2 instruments. First, the *Children's Coping Strategies Checklist* (CCSC) (Ayers & Sandler, 1999) was used to assess the coping strategies that students reported using most often in everyday life to manage problems (see Appendix I). The CCSC is a self-report inventory designed for children aged 9-13 years, with 54 items asking about specific strategies employed to cope with problems in the preceding month, for example the first item reads, "When you had problems in the past month, you thought about what you could do before you did something" (Ayers & Sandler, 1999, p. 14). Items are scored using a 4-point Likert scale ranging from 'Never' (1), through 'Sometimes' (2), 'Often' (3) and 'Most of the Time' (4).

The CCSC was chosen ahead of other coping behaviour measures because 3 of the 4 main coping factors it measures correspond to the cognitive behavioural elements of the intervention. These are Active Coping (cognitive decision-making, direct problem-solving, seeking understanding, positive reframing); Avoidant Coping (avoidant actions, repression, wishful thinking) and Support Seeking (support for actions, support for feelings). The internal consistency for these factors has been found to range from 0.76 to 0.90 (Ayers & Sandler, 1999). The fourth main factor measured in the CCSC, Distraction Coping (distracting actions, physical release of emotion) was not used in this trial because it did not reflect the content of the intervention. Distraction coping items ask participants to indicate whether they use physical activities (like bicycle riding and going for a walk) and pleasant activities (like listening to music) to distract themselves from problems. The CCSC classifies these strategies as unhelpful since they take attention away from facing problems. The intervention, on the other hand, encouraged the use of physical activity and the scheduling of pleasant events to cope more effectively, in line with a cognitive behavioural therapy approach.

The second instrument used to measure coping behaviours was the *Strengths and Difficulties Questionnaire* (SDQ) (Goodman, 2002), a behavioural screening questionnaire designed for 3-16 year-olds (see Appendix I). Rather than asking about particular coping strategies, the SDQ measures patterns of behaviours associated with underlying emotional difficulties or strengths. The total difficulties subscale asks about behaviours associated with emotional problems (anxiety and depression), conduct problems, hyperactivity/inattention and socialising problems. The strengths subscale asks about prosocial behaviours, for example, "I try to be nice to other people. I care about their feelings" (Goodman, 2002, p. 1). This trial employed a self-report version of the SDQ designed for 11-16 year olds that asks participants to rate how well each item describes them on a 3-point scale ranging from 'not true', through 'somewhat true' to 'certainly true'.

The psychometric properties of the SDQ have been well established across general and clinical populations and for different cultural groups (Bourdon et al., 2005). A substantive body of research supports its validity and reliability, including the validity and reliability of the self-report version (Muris, Meesters, Eijkelenboom & Vincken, 2004). This questionnaire is currently the most widely used instrument in research concerning child and early adolescent mental health probably because it is easy to complete, it contains items about positive attributes, comparisons can be made between populations and it is sensitive to change (Vostanis, 2006).

Scores can be classified as normal, borderline or abnormal (Goodman, 2002). Approximately 10% of community samples score in the abnormal band and another 10% score in the borderline band. An abnormal score can be used to identify likely cases of mental health disorders although the authors suggest that this is only a "rough and ready method for detecting disorders" (Goodman, 2002, p2). Outcomes can also be defined in terms of changes in continuous SDQ scores (Vostanis, 2006). This trial measured changes in continuous scores as the aim was not to measure changes in rates of disorder.

Mood

Mood was measured using 2 instruments. First, the *K6 Psychological Distress Scale* (K6) was used because it measures non-specific psychological distress rather than specific disorders (Furukawa, Kessler, Slade & Andrews, 2003) (see Appendix I). Since the intervention was designed for universal delivery, the aim was not to target specific disorders but to modify mood across the whole population. Also, psychological distress represents a measure of stress, albeit negative stress (in contrast to eustress, that enables effective performance) (Seyle, 1991). The K6 is short and easy to complete (6 items, each with a 5-point scale that reads 'all of the time', 'most of the time', some of the time', a little of the time' and 'none of the time' (Kessler et al., 2002). The version used in this trial asked participants to report symptoms for the last 30 days, for example participants were asked, "During the past 30 days, about how often did you feel so sad that nothing could cheer you up" (Kessler et al., 2002).

The K6 has been used widely with adult populations in many countries including Australia and has been shown to be superior to other measures including the *General Health Questionnaire* for screening for mood and anxiety disorders (Furukawa et al., 2003). The items have been found to be very sensitive (90th-99th percentile) for measuring psychological distress in the general population and have consistent psychometric properties across major sociodemographic subsamples (Kessler et al., 2002). There are a smaller number of studies that have used the K6 successfully with adolescents, including large national surveys in Canada and the US (Statistics Canada, 1995; M. Gruber, personal communication, 2007).

The second instrument used to measure mood was the *Delighted/Terrible Scale*, a 1-item measure with a seven-point scale, that asks respondents how satisfied they are with life (Andrews & Withey, 1976) (see Appendix I). The scale can be represented in pictorial form (faces showing a range of feelings) and/or in words. In this study both pictures and words were used (see Figure 28 in chapter 4 of this thesis). This scale has been used extensively with children and adolescents and has been shown to be a reliable measure of life satisfaction in young people (Sousa & Lyubomirsky, 2001). However, single item

measures can be criticized for being biased (wording cannot be averaged out across a number of items), skewed and less reliable (Diener et al., 1985). These criticisms do not appear to be justified in the case of the *Delighted/Terrible Scale* because validity and reliability have been established in many studies (Andrews & Withey, 1976; Larsen, Diener & Emmons, 1985; McCrae, 1986; McDowell, 2006) and the scale has been shown to correlate well with established multiple-item scales (Diener & Fujita 1995; Sousa & Lyubomirsky, 2001).

5.5.3 Procedure

The researcher visited all intervention schools. Teachers were given verbal and written instructions for accessing the intervention on the internet, lesson outlines (including learning outcomes and indicators from the NSW Personal Development, Health and Physical Education school syllabus) and assessment and reporting information (see Appendix G). Teachers were also given class sets of student activity books containing paper-and-pencil tasks for students to complete after the internet activities (see Appendix D). Teachers were shown the research questionnaire and were informed of the importance of having students complete the questionnaire carefully and truthfully. Finally, teachers were given enough login codes for each student in their class. These codes were handed out to students who were required to enter these codes every time they accessed the intervention, along with their first name, initial of their surname, gender and age.

A school counselor at each intervention school was either visited or contacted by phone and the trial was explained. The counselors were informed that the intervention encouraged students to seek help from a school counselor if they were concerned about how they were coping with stress. Counselors were informed that schools would be contacted if students scored in the high range on the SDQ difficulties subscale or the K6. They were informed that class teachers might ask for their help to determine whether high-scoring students required assistance. Counselors were given the researcher's contact details if they required further information or help.

The researcher visited 2 of the intervention schools on a second occasion, as requested by staff, to speak to the students. The aims of the research were explained and students were assured that their privacy would be protected. Students were shown how to access the program using their unique login codes and how to navigate through the program. They were shown how to complete the research questionnaires and were told about the importance of filling in the questionnaires carefully and truthfully.

One of the comparison schools was visited and the other contacted via email and telephone 3 weeks before the first administration of the study questionnaires. The coordinators at these schools (Head of Student Welfare in one instance and the school counselor at the second school) were shown the research questionnaire and informed of the importance of having students complete the questionnaire carefully and truthfully. Copies of the questionnaire and instructions for administration were delivered to each of these schools. The coordinators were asked to arrange for students to complete the research questionnaire at the beginning and end of the third school term in 2006, in line with the times that the intervention school students were completing pre- and post-questionnaires, and then again after 3 months, to correspond to the follow-up data collection point for the intervention schools. School counselors at these schools were also contacted and alerted to the fact that they might be asked to offer assistance to any student scoring in the high range on the SDQ difficulties subscale or the K6.

All participants in the intervention and comparison schools were administered the research questionnaire during regular class time and under the supervision of their regular class teachers. The researcher observed this process at 3 sites, 2 intervention schools and 1 comparison school, to ensure that teachers and students were able to manage effectively. Teachers were given brief instructions to read at the beginning of the class and each measure began with written instructions for students. These instructions emphasized the need to complete the questionnaire independently (without the help of friends) and truthfully and to take their time. Students and teachers were assured of confidentiality, and contact details for the researcher (email, phone and address) were given to teachers in case there were any questions or queries. Students were also provided

with the researcher's email address. The intervention was delivered during regular class time and under the supervision of the regular class teacher. Schools ran the intervention during personal development/health lessons or during lessons designated for student welfare activities.

5.5.4 Ethical considerations

Consent was gathered from all school principals and parents/guardians in line with the University of New South Wales research ethics guidelines. Students were informed that they did not have to participate in the trial even if their parents/guardians had given consent. No student declined to be involved. Confidentiality was protected at all times. Student names, teacher names and school names were not recorded on any materials. Alphanumeric 8-digit login codes were used to track student and teacher participants.

There was an effort to protect student confidentiality whilst they worked through the intervention. Students completed the program on their own on separate computers. This decreased the likelihood that peers could view each other's answers to quizzes or view graphs giving feedback concerning an individual student's stress level. Each student was only able to access feedback concerning their own stress level. This feedback, in the form of a bar graph, was unable to be printed or sent electronically to anyone else. Personal information, for instance stress level feedback and answers to quizzes, was presented in visual form only so that there was no risk of peers overhearing verbal accounts of this information from another student's computer.

Although the SDQ and the K6 are not diagnostic measures, the researcher reported high scores on these measures to schools. She did this by using teacher and student codes. Class sets of student login codes were linked to a numeric code for the class teacher. Teacher codes were linked to schools. A staff member was designated to coordinate the research at each school site. This person kept a record of the codes for teachers and students at his or her school. The researcher informed the coordinating staff member at each school of any student scoring in the abnormal range on the SDQ difficulties subscale or K6 by quoting the teacher code and the student code, first name and initial. The

coordinator was then able to match the codes to a teacher and student. The coordinators were advised to consider information such as observed student behaviour and learning progress, along with scores on the SDQ or K6, before deciding if high-scoring students required assistance from the school counselor. The intervention also encouraged students to seek help from a trustworthy adult (parent, teacher or school counselor) for themselves or others, if they noticed that stress, worry or low mood were impacting negatively on their daily functioning. This message was included in all of the 6 lessons.

Students and their parents/guardians were informed in the information letter that, even though the research questionnaire did not allow for the diagnosis of mental health problems, it could allow for the identification of students at risk for developing or having such problems. They were told that students with high scores on certain parts of the research questionnaire would be able to be identified by the class teacher and that these students might be asked to visit the school counselor. They were told that school staff members could make contact with the researcher if further information was required about how to interpret the high scores but that the identity of students would remain confidential during any discussions with the researcher. Students were also informed at the beginning of the intervention that teachers would have access to their scores on the research questionnaire, as illustrated in Figure 42.

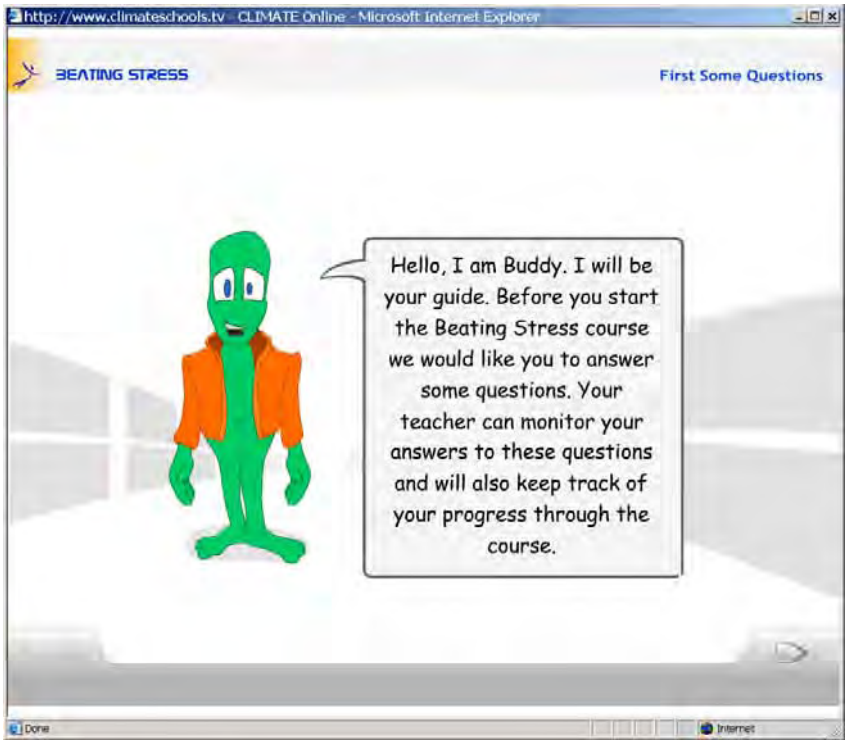

Figure 34. Students are informed that their teacher can access their results on the research questionnaire

One of the main problems when implementing mental health prevention programs for children and adolescents is the risk of stigmatising subjects who are at increased risk or who have a disorder (Dadds, 2002). It was not expected that stigma would be an obvious problem in this trial because the intervention was delivered universally, so that, unlike selective or indicated programs, at-risk subjects were not selected out. Also, the program emphasized that stress, worry and low mood were emotions that everyone experienced at different times and discouraged students from singling out and teasing others on the basis of mood, feelings or emotions.

Another issue to consider when trialing mental health prevention programs is the effect these programs might have on the small number of participants suffering from a mental health problem or experiencing high levels of risk when the program is administered (Dadds, 2002). It is probable that, in this instance, such subjects would have scored in the

high range on the SDQ difficulties subscale or K6 and thus would have been brought to the attention of school staff. Also, the intervention advised participants in each of the 6 lessons to seek help from appropriate adults if stress, worry or low mood were impacting negatively on their lives.

5.6 Results

The SPSS program for windows, version 15.0 was used to conduct two-tailed paired-samples t-tests and repeated measures MANOVAs. Results were deemed to be significant if $p \leq 0.05$. Cohen's *d* was used as an index of effect size and was calculated using the equation (pre-treatment mean – post-treatment mean)/pre-treatment SD (Cohen, 1988). Gender and school were included as between-subject factors to determine if these factors influenced outcomes. School characteristics have the potential to influence the impact of school-delivered interventions (Lee, 2000; Spence et al., 2003). Gender has been found to influence the impact of school-delivered mental health interventions (Embry, 2002; Kowalenko et al., 2000).

Before conducting the analyses, the data were inspected to ensure that they met the necessary preconditions for utilizing multivariate analysis of variance (MANOVA). Tests of skewness and kurtosis were conducted with all variables prior to their inclusion in statistical analyses. All variables examined in the study did not evidence significant departures from normality. In addition, box plots and z-scores were utilized to identify outliers prior to conducting statistical procedures. There were 10 or fewer outliers identified for each of the three subscales on the *Children's Coping Strategies Checklist* and the two subscales on the *Strengths and Difficulties Questionnaire*. However, since the scores for these outliers were reasonable for participants recruited from a universal adolescent population, the outliers were not removed from the data set (Field, 2005).

5.6.1 Profile of participants

There were 463 participants, 345 females and 119 males, who were exposed to the intervention. Ages ranged from 12 to 15 years, with a mean of 13.20 years (SD 0.65).

The rate of attrition was 27% at post-intervention and 45% at 3-month follow-up. Although this reflects relatively high attrition, especially at follow-up, other universal trials of school-based mental health prevention programs found similar medium to high rates of attrition, ranging from 21% to 41% (Barrett et al., 2006; Barrett et al., 2005; Lowry-Webster et al., 2003). Reasons for attrition in this trial were similar to reasons in other trials, including students being absent from class due to extracurricular activities such as sports practice, meetings, office duty, music classes, debating and learning support classes. Attrition at follow-up was also affected by school events such as end-of-year assemblies, prize giving ceremonies and farewell ceremonies. The relatively high attrition rates thus reflect the real-life experience of applied health research where attrition rates can be relatively high (Heritier, 2003). Importantly, t-tests revealed no significant differences on any of the measures at pre-testing between the students in the intervention group who remained in the study at the 3-month follow-up and those whose classes dropped out.

5.6.2 Implementation

Table 13 shows the number and percent of students that completed each lesson.

Table 13.

Number and percent of students completing each lesson

Lesson	n	%
1- defining stress and coping	464	100
2- identifying helpful and unhelpful coping strategies	464	100
3- thought challenging	439	95
4- structured problem solving	404	87
5- de-arousal (relaxation) techniques	368	79
6- lifestyle changes to modify stress	321	69

Of the 464 students who began the program, 69%, or greater than two thirds, completed all components of all 6 lessons. A majority, 79% of participants, completed all components of 5 lessons. These 5 lessons covered the core knowledge and skills that the intervention aimed to teach about, namely the theory concerning stress and coping, thought challenging, structured problem solving and de-arousal techniques.

5.6.3 Intervention Effects

Intervention Schools

The means, standard deviations, number of students, significance (paired t-tests) and effect sizes for all measures are displayed in Tables 14 and 15.

Table 14.

Means, Standard Deviations and Effect Sizes for Outcome Variables from Pre- to Post-Intervention and at 3-Month Follow-up

		n	Mean	SD	*p*	*d*
Knowledge	pre	464	6.99	2.56		
	post	317	6.90	3.34	0.544	0.04
	3-mths	248	7.92	2.67	0.003	-0.36
Competence	pre	464	4.66	1.31		
	post	321	4.69	1.60	0.778	-0.02
	3-mths	249	4.85	1.26	0.005	-0.15
Active coping	pre	464	2.56	0.62		
	post	320	2.54	0.74	0.684	0.03
	3-mths	253	2.53	0.57	0.596	0.05
Support-seeking coping	pre	464	2.19	0.73		
	post	319	2.33	0.80	0.003	-0.19
	3-mths	253	2.30	0.59	0.007	-.015
Avoidant coping	pre	464	2.45	0.58		
	post	320	2.31	0.68	0.000	0.24
	3-mths	253	2.32	0.51	0.033	0.22
Total Difficulties	pre	464	11.07	5.44		
	post	340	10.88	7.13	0.174	0.03
	3-mths	253	10.21	6.02	0.006	0.16
Pro-social Behaviour	pre	464	7.35	1.81		
	post	340	7.42	2.15	0.485	-0.04
	3-mths	253	7.71	1.82	0.174	-0.20

Table 15.

Means, Standard Deviations and Effect Sizes for Psychological Distress and Life Satisfaction from Lesson 1 Through Lesson 6

			n	Mean	SD	*p*	*d*
Psychological Distress	lesson	1	464	11.55	4.40		
		2	464	11.03	4.73	0.000	0.12
		3	439	10.50	4.92	0.000	0.21
		4	404	10.26	5.16	0.000	0.29
		5	368	10.74	6.08	0.015	0.18
		6	321	10.85	6.53	0.031	0.16
Life Satisfaction	lesson	1	464	5.32	1.55		
		2	464	5.27	1.62	0.328	0.03
		3	439	5.43	1.58	0.034	-0.07
		4	404	5.44	1.68	0.065	-0.08
		5	368	5.42	1.82	0.457	-0.06
		6	321	5.48	1.85	0.262	-0.10

A repeated measures MANOVA was conducted for all of the pre-, post- and follow-up outcome variables, with time as a within subjects factor. This analysis revealed a significant effect for time, Pillais F (2,159)= 6.481, p< 0.001, η^2= 0.38. Post-hoc univariate tests revealed significant effects for time x knowledge, F(2, 159)= 9.735, p< 0.001, η^2= 0.06, time x support-seeking coping, F(2, 159)= 9.921, p< 001, η^2= 0.06, time x avoidant coping, F(2, 159)= 3.331, p= 0.037, η^2= 0.02 and time x total difficulties, F(2, 159)= 3.298, p= 0.038, η^2= 0.02, from pre-intervention to 3-month follow-up. There were significant increases in knowledge and support-seeking coping and significant decreases in avoidant coping and total difficulties over time. There were no significant effects for time x perceived competence, time x active coping and time x pro-social coping.

School site was entered as a covariate to investigate its potential moderating effect. There were no significant differences for any of the outcome variables for time x school site.

Gender was entered as a between subject variable to investigate its potential moderating effect. There were no significant differences for any of the outcome variables for time x gender.

Another repeated measures MANOVA was conducted for the outcome variables that were measured at six time points, corresponding to the 6 lessons in the intervention, namely psychological distress and life satisfaction, with time as a within subjects factor. This analysis revealed a significant effect for time, Pillais F (5, 315)= 6.481, p< 0.001, η^2= 0.12. Post-hoc univariate tests revealed significant effects for time x psychological distress, F(2, 315), p< 0.001, η^2= 0.02, and for time x life satisfaction, F(5, 315), p= 0.027, η^2= 0.01, from lesson 1 to lesson 6. There was a significant decrease in psychological distress and a significant increase in life satisfaction over the study period.

School site was entered as a between subjects variable once again to investigate its potential moderating effect on mood variables. There were no significant differences for either psychological distress or life satisfaction for time x school site.

Gender was entered as a between subjects variable to investigate its potential moderating effect on mood variables. Once again, there were no significant differences for either psychological distress or life satisfaction for time x gender.

Comparison Schools

A repeated measures MANOVA revealed no differences on any of the outcome variables at pre-testing between the intervention and comparison schools. This suggests that the comparison population was similar to the intervention population on the outcome measures before the program was administered.

A repeated measures MANOVA was conducted for all of the pre-, post- and follow-up outcome variables, with time as a within subjects factor, for the comparison schools. This analysis revealed no significant effect for time for any of the outcome variables.

5.6.4 Qualitative data

Research coordinators at 4 of the 6 intervention schools contacted the researcher to

inform about difficulties concerning the student login process. On average, 2 students per class at these 4 schools appeared to have difficulty accessing the program using the 8-digit login code that they had been issued. The researcher also received 3 emails from students complaining that their login ID code did not work. When the researcher trialed 5 of the problematic login codes she was able to gain access to the program. This suggested that the problem did not reside with the code or the program but concerned students' ability to enter an 8-digit alphanumeric code. Even so, in all instances teachers issued students with new codes (the researcher had given each teacher spare codes) and this fixed the problem in all but two cases. The researcher attended one of the schools reporting a continuing problem and watched as the student attempted the login process. The problem in this instance was related to entering the wrong web address because when the address www.climateschools was entered the login page malfunctioned but when the entire web address was entered, i.e. www.climateschools.tv, the problem did not occur. Phone contact with the other school with continued login problems confirmed the same problem. The computer programmers were informed of this problem and the fault was fixed by stopping the address www.climateschools providing access to the program.

A number of students contacted the researcher via email to complain about the repetitive nature of the *K6 Psychological Distress Scale* and the *Delighted/Terrible Scale* because they were asked to fill out these questionnaires each lesson. There were no problems reported from teachers or coordinators concerning students completing the research questionnaires.

Schools were informed of a number of students scoring in the high range on the K6 (19 or above) or on the SDQ total difficulties subscale. Students meeting criteria were identified at every school. Numbers of students meeting criteria on the K6 ranged from 3 students at one school to 7 students at another school. This represented 5% or less of the study population at the 8 schools, which is compares well with a study of a similar population in North America (M. Gruber, personal communication, March 1, 2007). Three coordinators and two school counselors contacted the researcher to support the use of the K6 as a tool to identify students at possible risk for mental health problems. One

coordinator pointed out that, all students who were identified through the trial as being at 'high risk' were already known to the school counselor.

A counselor and two teachers suggested that parents needed to be more involved in the program. They suggested that a booklet or pamphlet be published for parents informing them of the content of the program and giving them step-by-step instructions about how they might encourage students to use helpful coping strategies at home.

5.7 Discussion

This trial was planned as a simple evaluation (before-after design with no control group); no schools were prepared to be randomised to a control condition. Fortuitously, the teachers in 2 schools went on maternity leave. Those schools did not run the intervention but did administer the outcome measures. In the intervention schools, 6 outcome measures changed in the desired direction, namely knowledge, support seeking, avoidance, total difficulties, distress and life satisfaction. These changes were not affected by gender or school. Measures in the 2 'comparison' schools did not change.

Implementation

Teachers were successful in implementing the computer-based intervention. While computer delivery did not lead to completion of all 6 lessons by all students, a 79% completion rate of 5 of the 6 lessons compares favourably with completion rates for other mental health interventions delivered by teachers. For instance, Shochet and collegues. (2001) reported that 75% of the adolescents participating in a universal school-based program to prevent depression completed at least 9 of 11 sessions. The completion rate compares even more favourably when the integrity of each lesson is considered, since all components of each lesson were completed in this trial whereas Shochet and colleagues. (2001) found that the median percentage of content areas correctly covered for sessions in the program was 89%.

Qualitative data revealed a threat to implementation that related to the login process. While a programming error that caused problems in 2 cases was fixed, problems

concerning students' ability to enter an 8-digit alphanumeric code need to be addressed. It would be wise to inform prospective teachers to expect that a small number of students may have difficulty entering a login code and that, in such cases, teachers should ensure that the student has entered the code correctly and contact the program team if problems continue.

Intervention Effects

Students at the intervention schools showed a significant increase in their knowledge about stress and coping over the 21-week study period. An increase in knowledge about stress and coping suggests that the intervention was successful in relaying information about stress and coping in an effective manner to an adolescent audience. This is important for a school-based program because schools aim to build student knowledge and it is likely that schools will use a program that can achieve this aim.

Students reported increased use of support-seeking coping behaviours. This increase suggests that the program not only affects knowledge but also enables change in behaviour. Support-seeking coping may have increased because the intervention addressed help-seeking in all 6 lessons. Students may have benefited from repeated exposure to this message. Repeated exposure may also explain the significant decrease in avoidant coping behaviours because students were reminded of the negative impact of avoiding problems in all 6 lessons.

Other coping behaviours, such as active coping (structured problem solving and thought challenging) were addressed in detail in only one lesson and revised briefly in a follow-up lesson. This might explain why students did not report using active coping behaviours more often after the intervention. These coping behaviours remained relatively stable over the study period. Also, structured problem solving and thought challenging are relatively complicated strategies, with a number of steps to follow, and this might have deterred students from using them.

The short time between pre-intervention to follow-up data collection, 5 months in all, might also explain why students did not report an increase in active coping behaviour. It

might be that students did not face problems or challenges that were serious enough to require the use of these strategies in the 5-month trial period. Longer-term follow-up might be needed to show changes in active coping behaviour. Certainly, other researchers have found that it can take from 6 to 36 months for behaviour and mood changes to become apparent after exposure to a universal mental health intervention (Barrett et al., 2006). It may be that students use active coping strategies such as structured problem solving and thought challenging more regularly as they get older and are faced with more demanding stressors for which these strategies could be more helpful, such as entering into serious relationships, completing end-of-school exams, making decisions about future careers and becoming financially independent. Longitudinal studies would be required to see whether students taught these strategies during adolescence go on to use them more regularly at a later developmental stage.

It is interesting to note that pro-social behaviour did not increase along with support-seeking behaviour as both constructs asked about spending time with friends and family. This discrepancy most probably reflects a difference in the focus of these 2 constructs. Support-seeking behaviour asked about seeking out social interaction to gain direct benefit for self, for instance "you told people what you wanted them to do", whereas pro-social behaviour asked about caring for others, for instance "I try to be nice to other people. I care about their feelings". While students were regularly reminded of the benefits of seeking help for themselves, the program did not explicitly teach about the mental health benefits of offering help to others. This might explain why there was no change in pro-social behaviour. Another possibility is that change in pro-social behaviour might become significant over time. There was an upward trend across the 3 data collection points and the effect size from pre-intervention to 3-month follow-up of 0.20, although small, is encouraging.

Students may not have reported an increase in their perceived competence to cope because they may not have had enough time to apply many of the coping strategies that they learnt about during the intervention. It is unlikely that students would have faced many stressful challenges from pre-intervention to 3-month follow-up. With little

opportunity to try out new coping strategies, students would not have experienced much success with coping and would therefore not have had the opportunity to develop an increased sense of competence. It might be that changes in perceived competence will take more than 5 months to manifest. Dubow and colleagues (1993) noted improvements in self-efficacy 6 months after implementation of a universal anxiety prevention program. Perceived competence scores did show an upward trend over the 3 time points and a post-hoc t-test showed a significant increase in perceived competence from pre-intervention to 3-month follow-up, lending support to the possibility of significant change in this measure with time.

There were significant changes in psychological distress, as measured by the K6, and life satisfaction, as measured by the *Delighted/Terrible Scale*, over the course of the intervention. Psychological distress decreased and life satisfaction increased, suggesting that the intervention may have a beneficial effect on mood. It can also be said that the intervention appears to improve wellbeing because life satisfaction has been shown to reflect wellbeing (Diener et al., 1995).

Interestingly, univariate tests showed that gender did not affect outcomes in the intervention group. Both males and females benefited from the program. Trials of other mental health prevention programs have found different effects for males and females, for instance Kowalenko and colleagues (2000) found that the CBT-based *Adolescents Coping with Emotions* (ACE) program decreased depression and increased the use of helpful coping skills in females but had no effect in males. It might be that, in this case, both males and females benefited from the program because there was an effort to design the program to appeal to both genders. For instance, there were 2 main characters, one female and the other male. Students were exposed to examples of stressful events in the lives of both characters. They watched both characters try to cope using a number of different strategies. Also, Buddy, the tutor, and his assistants, were drawn to look like aliens to avoid gender or ethnic stereotyping. Another reason that the program had positive outcomes for both genders might be related to the use of different teaching strategies, for instance, the games in the program may have appealed to males whereas

the cartoon story may have appealed to females. Further research would be required to test this hypothesis.

School site was found to have no effect on outcomes. Evaluation trials of other programs have reported significant effects for school site and for teacher characteristics (Barrett et al., 2006; Frydenberg, 2004). It might be that internet delivery protected program integrity because neither the quality of teacher training nor particular teacher characteristics could influence implementation with students engaging with the learning material via the computer. In comparison, other programs have required "good training for instructors and ongoing support" to ensure effective implementation (Frydenberg, 2004, p. 21).

There were no significant changes across time in the 'comparison' group. This provides evidence that the changes in the intervention group were related to exposure to the program. This hypothesis, however, needs to be further tested. Even though the comparison group was similar to the intervention group on the outcome measures at pre-test, the groups were very different in relation to total number of participants and gender. These differences make it difficult to make comparisons between the groups.

Qualitative data provided positive feedback from school staff concerning the use of the *K6 Psychological Distress Scale* for identifying students in need of assistance. However, student feedback suggested that having the same set of questions at the beginning of every lesson was somewhat monotonous. It would appear that students would prefer to fill out this scale and receive feedback concerning their progress less frequently. It may be more effective to administer the *K6 Psychological Distress Scale* and *Delighted/Terrible Scale* on 2 occasions, before and after the program, rather than at each lesson. The scales could be added to the pre- and post- knowledge test. This would enable teachers to identify students in need of assistance at the beginning of the program and to see if there is any improvement in these students after completing the program.

It also appears important to provide a handout for parents that teachers can print and

distribute. The handout could provide an outline of the program and information about how parents could support adolescents to use helpful coping skills at home. This feedback matches with the data collected from educators in the feasibility study. Researchers involved in evaluations of the FRIENDS program as a universal intervention suggested that "future research could provide parents with a parent booklet of the key strategies, which is sent home, and enclose a phone number they can contact for further support and assistance" (Lowry-Webster et al., 2003, p. 39).

CHAPTER 6 CONCLUSION

6.1 Introduction

This sixth and final chapter posits some conclusions about the development and testing of an internet-delivered universal mental health prevention program for use in schools with adolescent students. There is a discussion about the broader implications that this research might have for mental health prevention, especially school-based interventions. Government bodies from both the health and education sectors support the implementation of a universal approach to mental health prevention that actively focuses on mental wellbeing, and employs a cognitive behavioural approach (Ministerial Council on Employment, Education, Training & Youth Affairs 1999; Australian Health Ministers 2003). This project provides evidence that such an approach may well be effective. It also provides support for using computers and the internet for delivering such an intervention. Suggestions for further development and evaluation of the mental health prevention program, in line with the Intervention Mapping framework, are also presented.

6.2 Summary of the Project

This research describes the design and evaluation of an internet-based universal program for use in schools with adolescent students to prevent common mental disorders and promote mental health. The evaluation trial used a before-after design with no control group. Results showed that the program was acceptable and effective for use in the intervention schools by teachers and that student behaviour and mood changed after exposure in terms of increased knowledge about stress and coping, increased use of help-seeking behaviours and improved life satisfaction. Correspondingly, it was beneficial for students in terms of decreased use of avoidant coping, decreased total difficulties and decreased psychological distress. No changes were found for active coping and pro-social behaviour outcomes. This trial allows causal inferences to be surmised concerning the relationship between exposure to the intervention and changes in behaviours and mood but further evidence (in the form of randomized controlled trials) is needed before conclusions about effectiveness of the program can be posited (Cook & Shadish, 1994).

Likewise, trial design precludes the generalization of the intervention effects to other populations, settings and times (Cook & Campbell, 1979).

The research began in response to findings from the Australian National Survey of Mental Health and Wellbeing and the Burden of Disease and Injury in Australia study (Andrews et al., 1999; Mathers et al., 1999; Sawyer et al., 2000). These investigations showed that rates of mental illness in Australian children, teenagers and adults were high, that these illnesses caused significant burden to individuals and society, and that there were insufficient services to help the large number of Australians with these illnesses or at risk for developing them. Along with calls to increase treatment coverage, there followed an acknowledgement of the importance of developing effective ways to prevent mental disorders because it was clear that current interventions were unable to alleviate a large portion of the burden associated with these disorders and it would take years to bolster the mental health workforce to levels matching other health sectors, let alone to levels sufficient to meet demand (Andrews, et al., 2000).

This research project targeted adolescents for mental health prevention because prevention programs need to be implemented before common disorders become established and cause significant disability and restriction of life choices (Mathers et al., 1999). Schools were chosen as the site for implementation because almost all young people can be reached at school and schools accept that it is part of their job to support the wellbeing of students and to enable students to learn how to look after their own mental health and the mental health of others (Curriculum Corporation, 1994; Weist et al., 2003). It is widely accepted in the school sector that mental health influences learning (Adelman & Taylor, 2000).

A review of the literature revealed that there were a number of mental health prevention programs for adolescents already in existence. Some of these programs had been trialed in schools and had been shown to be variably successful in decreasing signs and symptoms of mental disorders (Weist et al., 2003). Despite this, there was little evidence that schools were using these programs in routine practice (Andrews & Erskine, 2001).

Literature suggested that school health programs addressing other topics had not been implemented widely because they had not been designed to suit the context of schools (Bartholomew et al., 2006). A review of existing mental health prevention programs revealed that most were similar in structure and content to programs used by mental health clinicians rather than being similar to school-based learning programs. An important problem was that most programs targeted students at risk for developing a mental illness (see Beardslee et al., 2003; Kendall, 1994, Kowalenko et al., 2000) whereas school-based learning programs are commonly designed for universal delivery.

In contrast to many of the pre-existing programs, this research project developed a mental health prevention program that was designed for universal delivery. It employed the educational literature, including policy and curriculum documents, to guide the choice of content, learning activities and presentation formats, in an effort to match the program to school practice and to increase the chance that the program would be adopted by schools for routine use. The program addressed the concepts of stress and coping rather than focusing on disease: it was designed to improve coping resources and build resilience in line with Australian school education goals rather than to ameliorate signs and symptoms of disease (Curriculum Corporation, 1994: Ministerial Council for Employment, Education and Youth Affairs, 1999). Research and theory concerning mental health prevention supported the use of a cognitive behavioural approach (Birmaher et al., 1996; Durlak & Wells, 1997; Lowry-Webster et al., 2003; Shochet et al., 2001). Health prevention design literature, particularly papers reporting on the Intervention Mapping approach, provided a sound framework to guide the development of the program (Bartholomew, et al., 2006). This literature stressed the importance of consulting the target audience at each step of the design process (Kok et al., 2004). This consultation process was followed in this study (see Chapter 4).

The program was designed to be located on the internet and completed by students on computer. This meant that teachers did not have to undertake lengthy training before using the program, they did not have to spend time preparing lessons and they could monitor student progress easily and confidentially. Computer delivery also ensured that

quality content was delivered uniformly to all students and that motivational features could be included, such as student access to immediate feedback concerning their progress, learning through cartoon narratives, having interactive activities and allowing students to move through the program at their own pace. Delivery via the internet also has the benefit of being cost effective and can enable to program to reach remote areas.

6.3 Implications and Applications

This research project provides evidence that the intervention, a universal internet mental health prevention program, was acceptable and effective for use in schools by teachers with adolescent students. It also provides evidence that the intervention led to benefits for students, not only in terms of increased knowledge about stress and coping, but also in terms of increased use of helpful coping behaviours (specifically support-seeking), decreased use of unhelpful coping behaviours (specifically avoidant coping and total difficulties), decreased psychological distress and increased life satisfaction. The thesis suggests that a computerised cognitive behavioural approach is an effective way forward for universal mental health prevention, and that such an approach is suited for delivery in the school setting.

6.3.1 Intervention Mapping

The Intervention Mapping approach provided a helpful framework for directing the design and evaluation process. The step-by-step approach this framework offered ensured all aspects of design were evidence-based. Care was taken to design the intervention in light of theory regarding teaching methods, online learning methods, child development and mental health prevention approaches. Evidence-based design appears justified in light of the positive outcomes. Most importantly, Intervention Mapping provided steps to ensure that every aspect of design and development was informed by feedback from the target audience, namely school staff and students. This allowed literature-based evidence to be combined with practical advice from staff and students to create a program well suited to the school context. For instance, including links to syllabus documents and providing assessment tools meant that teachers were able to integrate the program easily into their teaching plans. In the case of students, ensuring that cartoon characters and plot lines were appealing, and having interactive activities may well have encouraged engagement with the program and this in turn may well have supported positive outcomes. This suggests that Intervention Mapping represents a useful framework for designing school-based health prevention programs.

Mental health experts were also consulted during the design and development phase of this project, in line with Intervention Mapping protocol. This consultation led to important adjustments to the program in line with evidence-based practice. It also means that end users can be assured that the program has been checked thoroughly by clinical and research experts in mental health in relation to content and mode of delivery.

Intervention mapping not only allows the design process to be rigorous but enables it to be transparent. Research shows that the uptake and diffusion of new public health programs depend on convincing the target audience by providing them with "innovation-evaluation information in order to reduce uncertainty about an innovation's expected consequences" (Haider & Kreps, 2004, p4). This project provides detailed information about the design of the intervention and this information can now be shared with the target audience to encourage them to use the intervention more widely. In contrast, other mental health prevention programs offer little information about program design and there is little evidence that the design process involved detailed planning and was informed by evidence-based theory and practices.

Careful documenting of the design process is also important because it allows decisions concerning content, delivery and evaluation to be scrutinised. The documentation of the process, in terms of instructions to the intervention designers, can be seen in Appendix J. Now that this thesis has provided evidence that the intervention is effective and can be efficiently used in schools, it would be helpful to look more closely at particular aspects of content, delivery and evaluation to determine if there are particular characteristics of the intervention or its delivery that enabled its effectiveness. Intervention mapping can provide the means to identify such factors. As Barrett and colleagues (2005) state,

> Much more research is needed to determine the factors that contribute to optimal intervention. Future research investigating individual factors such as intelligence, child attendance at sessions and completion of homework, and environmental factors such as school, environment, psychologist or teacher characteristics, and classroom layout would increase our knowledge in this area. (p. 552).

As well as providing opportunities to reflect on particular program design elements and to make further changes to these elements in light of evidence from trials, Intervention Mapping provides opportunities to reflect on ways to encourage uptake of an intervention by the target audience. Step 4 of the framework requires the development of strategies to bridge the gap between program developers and program users as part of an implementation plan (van Bokhoven et al., 2003). Designers of school-based health programs have found that close collaboration between program designers and end-stage users, in this case teachers, is an effective ways to encourage use of a new intervention (Paulussen, Kok, Schaalma & Parcel, 1995). It is likely that, in the case of this project, close collaboration with teachers and students not only facilitated successful outcomes but will encourage further use of the program.

6.3.2 Internet delivery

The decision to have the intervention available on the internet appears to have been justified. There were very few technical problems and relatively good completion rates. Teachers were capable of running the program without lengthy training or constant supervision by research or mental health experts, in contrast to other mental health prevention programs that require lengthy teacher training and supervision and/or delivery by experts. It is likely that the easier it is to implement a mental health prevention program, the more appealing it will be for teachers, and the greater the chance that it will be used widely in schools. Further research should be conducted to verify this is the case.

Using the internet to deliver the intervention rather than training up and relying on teachers to deliver it meant that all students were exposed to the same learning materials in the same manner. This may explain why school site did not appear to influence outcomes, in contrast to evaluation trials of other programs where both school site and teacher characteristics have been found to mediate outcomes (Frydenberg, 2004). In this research, neither the quality of teacher training nor particular teacher characteristics could influence implementation because students engaged with the learning material via the computer and without direct teacher involvement. While other programs require "good

training for instructors and ongoing support" (Frydenberg, 2004, p. 21) to ensure effective implementation and positive outcomes, in this case, internet delivery appeared to have protected the integrity of the program.

Importantly, using the internet to deliver mental health prevention in schools has important financial benefits because schools do not have to spend money on teacher training, hiring of experts, purchasing course materials or even buying computer software. Cost effectiveness is also an important consideration in light of the universal nature of the intervention because it can be very costly to reach the large audience necessary to bring about significant benefits for a population. For this reason, critics of a universal approach to mental health prevention commonly argue that limited funds should be spent on programs for those most at risk for developing problems (Shochet et al., 2001). In this case, internet delivery represents an inexpensive method to deliver a universal intervention, even to people in remote and regional areas.

Improvements in knowledge, coping behaviour and mood provide proof that the internet was an effective medium for teaching adolescents about mental health prevention. This has important implications for internet-based health education. It appears possible that an internet health education program has the potential not only to increase knowledge about a topic but also to change behaviour and mood, at least over a 3-month period. Further research is recommended to determine if theses changes are maintained in the longer term and at what point a 'refresher' program might be necessary.

6.3.3 Cognitive Behavioural Approach

This thesis supports targeting adolescents for cognitive behavioural mental health prevention programs in line with a number of other studies that have shown improved outcomes for this age group (Barrett et al., 2006 Shochet & Osgarby, 1999; Spence et al., 2003). Interestingly, while help-seeking behaviour increased and avoidant behaviours decreased, there was no change in active coping strategies, including problem-solving or cognitive restructuring, even though these are important components of a cognitive behavioural approach. This finding was similar for males and females. This might reflect

a focus in the program on help-seeking and avoidant behaviours. Students were reminded about the benefits of help-seeking and the disadvantages of avoidant behaviours a number of times during the program.

It might also be an indication of a mismatch between the program content and the developmental stage of the students. Adolescents aged around 13 years might be more inclined to respond to messages that encourage help-seeking (interactive) coping behaviour rather than coping behaviours that reflect problem solving or cognitive restructuring (internal cognitive processes). It might be more appropriate for a universal program to teach structured problem solving and cognitive restructuring skills to older teenagers because in the later teenage years people rely less on their parents and make more decisions for themselves. As Frydenberg, (2004) states, "Once individuals have a sense of their own capabilities, it is more likely they will approach their problems with the aim of solving them rather than avoiding them" (p. 21). She suggests that preventive interventions for younger people "should focus more on the reduction of maladaptive coping strategies ... rather than focusing only on the more common goal of increasing problem-focused coping" (Frydenberg, 2004, p. 18). While there is good evidence to support the teaching of problem solving and cognitive restructuring in treatment programs for adolescents (Birmaher et al., 1996; Harrington et al., 1998; Hoagwood, et al., 2001), further research is required to test hypotheses concerning the developmental appropriateness of teaching such skills to adolescents as part of a universal prevention program.

6.3.4 A flexible approach

Interestingly, even though the intervention was designed to addressed learning outcomes from the NSW Personal Development, Health and Physical Education syllabus, educators suggested that it could be implemented during student welfare time, pastoral care time or even at school camps. In fact, some schools involved in the effectiveness study chose to run the program during student welfare time. This is important to note because it suggests that program designers need to provide a program that is flexible enough to be administered during different lesson times. Also, ensuring flexibility concerning delivery

will enable the intervention to be used in different school settings, different areas within Australia and even in schools overseas, as is occurring presently in a school in New Zealand (correspondence from a teacher at this school was posted in the Teachers' Club forum).

6.3.5 Providing feedback to teachers

School staff expressed support for the use of the *K6 Psychological Distress Scale* and the *Delighted Terrible Scale* as measures that they could use to monitor student mental health. The researcher was not aware of any problems concerning misinterpretation of the results on these measures. It was interesting to note the students who were identified 'at risk' by the instruments were those who had already been identified by the schools. Lowry-Webster and colleagues (2003) note, "short succinct measures that teachers can use are desperately needed" (p. 38). These scales may represent such measures, although further research is required to explore this issue further.

6.3.6 Outcome measures

The decision to use knowledge, competence, coping behaviours, life satisfaction and psychological distress as outcome measures contrasts with many other trials of mental health prevention programs that tend to focus on disease-related outcomes. Most trials aim to show a reduction in the number of symptoms, symptom severity or disease status (Greenberg et al., 1999; Payton et al., 2000). While disease-related outcomes may give a good indication of the success of treatment programs, they do not give a good indication of the success of a prevention program, especially a universal prevention program, because the target population is generally healthy and shifts in symptoms or disease prevalence are likely to be very small and may only become significant across large populations over many years (World Health Organisation, 2004b). This may explain why trials of mental health prevention programs to date have reported inconsistent findings concerning the prevention of internalising disorders (Lowry-Webster et al., 2003).

This project supports the call for the measurement of more proximal or mediational outcomes to evaluate mental health prevention programs, such as level of functioning at

home, school, and with peers; subjective wellbeing (quality of life, satisfaction); changes in coping behaviours; and impact on social development (emotional, behavioural and substance-use measures) and/or cognitive development (academic achievement measures) (Cottler et al., 2000; Hoagwood et al., 2001). Outcomes such as these are likely to show change in the short to medium term. It is important to measure these types of outcomes because many programs are designed to influence such outcomes and research should aim to find out if this actually occurs. In this study, not all of the hypothesised mediational outcomes indicated improvement. More study is recommended to focus on matching outcomes to the actual skills taught in the program. As Prins and Ollendick (2003) state, "recent CBT research has not been designed to test mediational issues and does not clarify whether cognitive change and enhanced coping- the presumed central components of CBT- are in fact responsible for its efficacy" (p. 87). Also, finding positive changes in these outcomes and sharing this with the target audience can encourage further use of the program.

6.4 Limitations of the research and future directions

This project collected self-report data from adolescent students. There are some investigators that argue that young people are unable to report reliably about their own emotions and behaviours, citing differences in data collected from youth and data collected from parents and teachers (Andrews, Garrison, Jackson, Addy & McKeown, 1993; Bird, Gould & Staghezza, 1992). On the other hand, Cottler and colleagues. (2000) argue that collecting data from children and adolescents using an approach that is child friendly (for instance, non-judgmental and with cognitive demand matched to developmental stage) provides more chance of revealing a true picture. Their justification is that primary sources are generally more reliable than secondary sources. Further research should be conducted on this question, even though the students' reports found in this study remained consistent (few outliers) in response variance.

Another problem with collecting self-report data from only one group of participants is that the data may be biased in regards to the opinions of the selected group. Data could

have been collected from teachers and parents, as well as students, in an effort to better assess outcomes such as coping behaviours and mood and to enable comparisons across these groups. On the other hand, the aim was to have teachers run the intervention as they would any other learning program and requiring them to collect data could have disrupted this process. As Lowry-Webster and colleagues (2003) state, "A further limitation was that teachers did not have the time to complete lengthy forms for each student at pre-, post- and 12-month follow-up. Rather than lose teacher participation, we omitted teacher reports" (p. 38). Correspondingly, this study focused on the efficacy and effectiveness of a computer-delivered prevention program. Further research can involve more mixed methods and triangulation of perceived outcomes.

It was important to trial the program in the real context of schools rather than setting up an artificial experimental situation, even though a more controlled approach could have ensured higher internal validity. Previous mental health prevention programs trialed under experimental conditions have been shown to be somewhat effective but they were not taken up and used widely in schools despite positive research outcomes. There is limited research exploring why this might be the case. Whilst many prevention programs have been found to be effective when delivered by health care professionals in the school setting, there is little evidence that these programs are effective or survive in schools over the longer term when teachers become responsible for administration (Andrews & Wilkinson, 2002). Evaluation trials of treatment and prevention programs for children and adolescents with mental disorders have been criticized for neglecting to test effectiveness in naturalistic settings (Andrews & Wilkinson, 2002; Hoagwood, Jensen, Petti & Burns, 1996). A number of researchers have called for studies of school-based prevention programs to be conducted in the school setting with school staff delivering the program so that results can be said to reflect actual practice (Cuipers, 2003; Ozer, 2006).

This project trialed the intervention in real contexts rather than in a controlled environment in an effort to find out if the intervention was suited for delivery in schools. Trochim (2006) explains, choosing controlled conditions for social research can "achieve greater internal validity" but external validity suffers and researchers limit the degree to

which they can "generalize their results to real contexts". As Sawyer and Patton (2000), state, "it cannot be assumed that the efficacy of individual psychological therapies identified in formal outcome studies accurately reflects the results achieved in clinic settings" (p. 337). This statement could easily be applied to prevention programs run in schools.

A number of reviews of mental health prevention programs support evaluation studies that follow strict protocols concerning randomisation and controlled conditions (Greenberg et al., 1999; Payton et al., 2000). The design literature, on the other hand, suggests that, while there is a place for randomised controlled studies, this approach should only be one of a number of strategies used to evaluate programs and should be used when a program is ready for large scale testing (Bartholomew et al., 2006). This thesis was concerned with program design and initial trialing, and therefore it was aimed at providing evidence to support progress towards larger scale studies. This thesis provides such evidence and sets the scene for a larger randomised controlled study, in line with step 5 of the Intervention Mapping approach (van Bokhoven et al., 2003). A randomised controlled study would require further human and financial resources because it would need to include 2 relatively equivalent groups of students from a number of schools. Even so, considering the growing need for mental health prevention interventions in this country and elsewhere, and the positive findings of this project, this step would now appear to be warranted.

Further study could involve a more diverse group of schools and students, for instance public schools could be included and schools could be recruited from a range of socio-demographic areas, considering that mental health needs are influenced by socio-economic and demographic indices (Eckersley et al., 2006; Sawyer et al., 2000). To do such a study, half of the participant teachers would have to be willing to include the program as part of their yearly teaching plan while others would have to be willing to collect control group data. Because most teachers plan their lessons well in advance, commonly in the preceding year, it would be wise to approach schools in the year before implementation. Also, because curriculum is already detailed and demanding, teachers

and schools need to be assured that it is worth their while to run the intervention or, in the case of control schools, to collect data. Having the intervention designed to address school syllabus outcomes and to present learning material using effective teaching and learning methods made it appealing to the educators who were involved in this project. The positive results from this research project can now be shared with educators and this may also go some way to assuring intervention schools of the benefits of being involved in further research. In the case of control schools, it may be helpful to explain how they might be able to use results on research measures to obtain a stress and coping or resilience profile for a group of their students. This profile could help them to identify students at risk and to intervene where appropriate. It can also inform future curriculum planning regarding learning and teaching about mental health and wellbeing and can guide student welfare initiatives.

It would be helpful if further research into the effectiveness of the program included a focus on attrition and drop-off rates. Attrition may well reflect the daily practice of schools, where teacher schedules and student timetables need to be adhered to. It may also reflect a lack of engagement with the program on either students' or their teachers' part. Further research could explore this hypothesis and may inform about strategies that could be used to increase the number of students completing the entire program.

Another way to address the problem of drop-out would be to employ methods of analyses that can take account of subjects who do not comply with an intervention. One such method is ‘principal stratification’ (Frangakis & Rubin, 2002). Principal stratification allows researchers to formulate designs and address challenging statistical problems when there is only partial control. Specifically, this method measures the degree to which the effect of a controlled treatment or factor on a main outcome is explained by the effect of the controlled treatment on the activation of intermediate causal pathways that are not directly controlled (Frangakis & Varadhan, 2004). Principal stratification has been applied in a broad range of health areas, including HIV, cancer, ophthalmology, orthopaedics, mental health, nephrology, noncompliance with missing outcomes, and effects of vaccines on viral load for those infected. It is important to note that, in the case

of the evaluation trial reported in this thesis, the subjects did not themselves choose to drop out of the trial. Unlike patients wilfully dropping out of a trial, students missed lessons due to sporting events, assemblies, debating meetings and other school-related matters."

Other methodological issues that warrant focus in further research include the nested school structure and the interdependencies in the student data. Students from the same school tend to be slightly more alike in their behaviour and mental characteristics than individuals chosen at random from the population at large. We addressed this clustering effect by including 'school' as a covariate in the repeated measure MANOVA, and it was not significant. Data on class membership within a school was not available to the researcher.

It has been argued that this doesn't fully address the source of variation in the response variables. Failure to account for clustering of data when schools are studied may produce misleading results due to aggregation bias, underestimating standard errors of regression coefficients leading to an overstatement of statistical significance, and problems of model misspecification due to lack of independence between measurements at different levels (Everitt, 1996). Hill and Rowe (1996) caution researchers to pay attention to the "multilevel organisational structure in which schooling occurs (i.e., students within classes within schools)" (p1). While these authors suggest that variation between classes is far more significant than variation between schools, further trials of the intervention should employ multilevel modelling, using for instance the generalized linear model and the method of generalized estimating equation (GLM/GEE) (see Everitt, 1996) to account for the nested nature of school-based research.

Another recommendation for future research would be to monitor outcomes over the longer term to determine if the intervention has lasting effects. It would be particularly interesting to find out if problem-focused coping strategies and cognitive restructuring became more widely used as students mature. Cognitive development may well influence the use of the strategies taught in this intervention program as they require an individual

not only to remember the sequence of a number of steps but to evaluate and synthesise as they carry out each step. Also, as students get older and are given increasing responsibility for their own lives, they may well be faced with more challenging problems that require the application of more problem-focused coping strategies. Increases in knowledge about stress and coping suggest that students did learn something about structured problem solving and thought restructuring and thus it may well be that students have yet to be presented with opportunities to use these strategies.

Another recommendation would be to look in more detail at particular components of the intervention to determine if particular parts were more effective than others. Such components would include the interactive activities, the games at the end of each lesson, the paper and pencil tasks, the use of feedback to students and also content and delivery modes (cartoon drawings, music and sound effects). This type of analysis would allow the program to be refined to its most powerful components. It would also allow for the investigation of how coping strategies are acquired or developed in adolescence. For instance, there may be aspects of coping that can be learned through simple explanation and modeling, possibly support-seeking coping, and others which require further direct practice to attain mastery and application, possibly structured problem solving and thought restructuring (Compas, Orosan & Grant, 1998).

Alongside this issue is the issue of exposure intensity. It is likely that students would benefit more from the program if they were being encouraged to use their new coping skills more widely inside and outside school. A number of school staff members suggested that it would be helpful to include parents in the intervention, for instance by providing parents with a pamphlet outlining the content of the course and the coping skills being taught. Parents could then encourage students to apply similar skills outside of school and could even model the skills themselves. A number of teachers suggested that it would be beneficial to have a stress and coping course for school staff. Providing such a course, or at least some information concerning how teaching staff might apply cognitive behavioural skills in their lives could encourage teachers to also act as role models for the students. From the student's perspective, easy to read summaries of the

content and skills could be provided and these could be laminated and kept in a wallet or even made into refrigerator magnets. Such summaries could also be made into posters to be displayed around the school.

Another way to increase exposure to mental health prevention programs would be to develop a series of programs for implementation across the school years. As Donovan and Spence (2000) point out, "It also remains to be determined whether brief interventions are sufficient to produce long-term change over 5- to 10-year periods, or whether recurrent interventions are required. To date, the minimal evidence available cannot answer these questions." (p. 526). Booster programs could reinforce and build on the knowledge and skills taught in previous years. The researcher and her colleagues have already begun work on developing programs for older school students that address anxiety and depression and cover similar cognitive behavioural skills (Andrews, van Vliet & Wuthrich, 2006).

Importantly, while this project measured possible mediational outcomes, it did not attempt to relate these outcomes to changes in mental health indices. Such research would require a longitudinal study, spanning 10 or more years because it is likely that changes in mental health indices across a universal population would take at least this long to become apparent. Whether the program results in a change in disease prevalence and whether improvements in mental health are mediated by changes in coping strategies should be the subject of future longitudinal evaluation studies in line with the Intervention Mapping approach and World Health Organisation guidelines (Bartholomew et al., 2006; World Health Organisation, 1996). Such longitudinal research could shed light on the proposition by Smith and Prior (1995) that "life, it seems, is not just a matter of holding a good hand of cards, but of playing well the hand that is dealt by the wheel of fortune" (p. 178).

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APPENDIX A

Pre-test for the first draft of the program

Part 1

The statements below are about stress and coping.

For each statement select either 'True' OR 'False'.

All stress is bad for us.	T	F
Avoiding problems can be a helpful way to cope.	T	F
The way we think about things influences the way we feel about them.	T	F
It is healthy to let gloomy thoughts take over sometimes.	T	F
When we have a problem it is a waste of time to write down every possible solution.	T	F
When we are under lots of stress it can help to breathe quickly.	T	F
When we are feeling very stressed it can help to focus on the way our body is responding.	T	F
It is normal to feel stressed sometimes.	T	F
Stress is potentially harmful to our health- it may cause headaches, weight loss or an upset stomach.	T	F
We can't do much about our stress levels.	T	F
Sometimes there is just nothing that we can do to make things better.	T	F
Getting regular exercise and adequate sleep can help us to manage stress.	T	F

Part 2

Everyone feels stressed sometimes …

I'm sure that you know ***Effie***, world famous Australian comedian. She has written a book about stress and coping called ***effie's GUIDE TO BEING UPYOURSELF*** (Coustas, 2003).

Effie gives some good advice in her book … …this is from pages 13-15:

"My first day of high school was also my first day of major public humiliation. Call me vain, creative, over-enthusiastic or Effie, I didn't consider my love of fashion and free expression would ever be a major problem. Deciding what I was going to wear on my first day took up all my imagination in the days before.

I remember the day itself vividly. It was warm, the sun was shining and the wind factor was very gentle- almost still. Wind was something I spent a lot of time worrying about, with regards to maintaining the perfect hairs.

But the weather was my friend that day. Sadly, Bronwyn Clarke, the tough freckled chick with the red frizzy sharpie-slash-mullet hairdo, was not. And there was no way I could avoid the instant dislike she took to my genuine upmyselfness, or my matching pink striped taffeta skirt and boob tube and my freshly coiffed and large shiny mane.

The message was clear. It came in the form of an egg. Sorry- did I say egg? I think what I meant to say was the half dozen eggs she threw at me in front of the entire playground, five seconds into morning recess!

I know youse are wondering whether or not at this point humiliation took over my body. And whether a litre of tears welled into The answer is YES- bigtime. But something else came along with both those things: I was never going to let this happen again!

I thank God or myself or anyone-that's-ever-loved-me-in-a-healthy-and-empowering-way for blessing me with the courage and self-love to lift my head, walk right up to that bullying Bronwyn, look her in the eye and say loudly and calmly, "I'm not afraid of you, because I know who I am. Save your eggs for an omlette to feed your own insecurities. Oh yeah- and by the way, you've got toilet paper stuck to your runners."

(Extract reprinted with permission from *Effie's Guide to Being Upyourself* by Mary Coustas, Hodder Headline Australia, 2003.)

Now answer the following questions:

• What is the main problem that Effie is having the deal with?

• List some other problems or challenges that people your age might face.

• How does this event make Effie feel? You should be able to list more than one feeling or emotion.

• This event made Effie cry. What else might happen to our bodies when we are feeling stressed?

• What action did Effie decide to take? Do you think this was a helpful way to cope?

• How else might someone respond to this event? You should be able to list more than one way to respond. For each response, indicate whether you think it is a helpful or an unhelpful way to cope.

• Now write down any other comments or interesting information that you know about stress and coping. You might like to present your answer as a mind-map or as a labelled picture.

APPENDIX B

Lesson Outlines for the first draft of the program

Lesson 1: Recognising the signs of stress

Focus Question: What signs tell us that we are stressed?

Learning Outcomes

- recognise signs of stress
- recognise signs of acute stress (mild panic)
- identify personal signs stress
- identify personal signs of acute stress (mild panic)

- Introduction to the program- how to navigate through the program, topics covered, main characters. The aim: to learn how to cope in ways that solve problems effectively and stop us from feeling bad.
- Cartoon Part 1: how Mia and Ben respond when they are under more stress than usual
    - Click on following things in Ben's room to reveal Ben's signs of stress in [brackets]
        - Photo of friends- [don't feel like seeing friends]
        - Soccer trophy- [decreased energy]
        - Computer/school project- [headaches]
        - Clock- [sleep problems]
        - Books- [feeling down and hopeless]
        - Drink and chips- [eating junk food]

    - Click on following things in Mia's room to reveal Mia's signs of stress in [brackets]
        - TV- [feeling hopeless]
        - School- [excessive worry]
        - Lava lamp- [sleep problems]
        - Books- [tummy pain]
        - Photo of friends- [don't feel like seeing friends]
        - Art work- [difficulty concentrating]

- Reflective Task: identify signs of stress in Ben and Mia. Be awareness that bad feelings might be the first sign that there is something wrong and therefore it is important to practice the ability to recognize and monitor feelings and to ask why we might be feeling a particular way.
- Cartoon Part 2: ways people respond when they experience lots of stress all at once.
- Application Task: identifying personal responses to stress.

Lesson 2: How we usually deal with stress

- Focus Question: How do we usually deal with stress?
- Learning Outcomes
    - recognise ways of coping with stress
    - ways of coping with acute stress
    - ways of coping with stress that lasts days or weeks
    - identify personal ways of coping with acute stress
    - identify personal ways of coping with stress that lasts days or weeks
- Cartoon Part 1: how Mia and Ben usually deal with stress that lasts days or weeks
    - Click on following things in Ben's room to reveal how Ben usually deals with stress in [brackets]
        - Photo of friends- [distraction by using alcohol]
        - Soccer trophy- [avoidance]
        - Computer- [distraction using games]
        - Clock- [avoidance using wishful thinking]
        - Books- [distraction by going skateboarding]
        - Drink and chips- [helpful coping-sharing feelings with others]

    - Click on following things in Mia's room to reveal how Mia usually deals with stress in [brackets]
        - TV- [avoidance using wishful thinking]
        - School- [distraction using mobile phone]

    - Lava lamp- [overworking]
    - Books- [distraction watching TV]
    - Photo of friends- [avoidance]
    - Art work- [helpful coping-talking to others]

- Reflective Task: identify ways Mia and Ben deal with stress.
- Cartoon Part 2: ways people cope when they are under a lot of stress all at once (fight or flight response).
- Application Task: identify personal ways of dealing with stress

Lesson 3: Helpful ways to deal with stress

- Focus Question: What are some helpful ways to deal with stress?
- Learning Outcomes
    - distinguish between helpful and unhelpful coping strategies
    - become familiar with slow breathing
- Cartoon Part 1: introduce the concept of helpful and unhelpful ways of coping.
- Reflective Task: sort the ways Mia and Ben cope with stress into helpful or unhelpful categories
- Cartoon Part 2: show examples of Ben and Mia using slow breathing.
- Application Task: work out if personal ways of dealing with stress are helpful or unhelpful.

Lesson 4: Stress-less thinking

- Focus Question: How can the way we think affect how stressed we feel?
- Learning Outcomes
    - identify unhelpful thinking- thinking errors
    - use appropriate questions to challenge unhelpful thoughts
    - replace unhelpful thought with helpful thoughts
- Cartoon Part 1: instances of Mia and Ben thinking in unhelpful ways. Buddy's friend the thought challenging expert explains why their thoughts are unhelpful by pointing out the thinking errors.

- Reflective Task: identify thinking errors that Mia and Ben make and suggest appropriate questions to challenge these thoughts.
- Cartoon Part 2: Buddy's friend the thought challenging expert helps Mia and Ben to challenge their own unhelpful thoughts by using appropriate questions and then helps them to replace their unhelpful thoughts with more helpful thoughts.
- Application Task: identify personal thinking errors.

Common Thinking Errors

(Adapted from *Change Your Thinking*, Edelman, 2003)

❒ Playing down the positives

Positives just don't count

e.g. you are given an achievement award at school and you think 'I don't really deserve this'.

❒ Only seeing the negatives

Negatives are the only things that counts.

e.g. your day was okay but all you remember is that the canteen got your lunch order wrong.

❒ Blowing up problems

A small problem becomes huge

e.g. your best friend can't come over so you think 'that's the end of the friendship, there must be something wrong with me, no-one will ever like me again'.

❒ Black and white thinking

You see things as good or bad- there is no middle ground

e.g. your teacher suggests some ways to improve your essay and you think 'I just can't write essays'.

❒ Over-generalising

A problem in one part of your life becomes a problem that affects all of your life

e.g. you miss an easy goal on the sports field so you think 'I just mess up everything all the time'.

❒ Mind-reading

You think that you know what everyone else is thinking

e.g. at the school dance you think ‘everyone is staring at me because they think I look really bad’.

❒ Fortune telling

You think that you know what will happen in the future

e.g. you think, ‘I’ll have a terrible time at school camp because the food will be horrible and the activities will be boring’.

❒ ‘should’ and ‘must’ thoughts

You regularly use ‘should’ or ‘must’ at the beginning of a thought.

e.g. I should be more reliable. I must get better grades.

I should be more organised. I must loose weight.

❒ Blaming ‘ME’

You blame yourself for everything that goes wrong.

e.g. your parents are arguing and you think ‘it’s my fault because I haven’t been getting my chores done’.

Lesson 5: Solving Problems

- Focus Question: Is there are good way to solve problems?
- Learning Outcomes
    - identify the steps for structured problem solving (SPS)
    - use SPS to find a solution to a common problem
- Cartoon Part 1: revise thought challenging by watching Mia and Ben challenge some more of their unhelpful thoughts.
- Reflective Task: identify positive thoughts about 'ME'.
- Cartoon Part 2: Buddy's friend who is the expert at SPS teaches Mia and Ben the steps of SPS and then helps them to use SPS to solve some problems.
- Application Task: choose a problem that has personal relevance from a list that is supplied. Work through the steps of SPS by choosing alternatives for each step. At the end of the task the student should be presented with a completed problem solving proforma that they can either print or save.

Lesson 6: Confronting Fears

- Focus Question: How can we deal with our fears?
- Learning Outcomes
    - break down a fearful task into a number of smaller more manageable steps
- Cartoon Part 1: revise SPS by working through some problems with Mia and Ben. Introduce the idea that not all problems have a solution.
- Reflective Task: identify situations where there are problems or challenges that cannot be addressed immediately and thus need to be accepted and lived with.
- Cartoon Part 2: Buddy friend who is the expert in stepping-it-out explains how to face fears by breaking them down into smaller more manageable steps using an example.

- Application Task: choose one example from a selection of fears. Break the fear down into more manageable steps by choosing from a list of possible alternatives. Easier steps need to appear first. Student should be able to print or save a copy.

Lesson 7: Stress-less Living

- Focus Question: How can we decrease stress in our lives?
- Learning Outcomes
    - identify lifestyle changes that are important for mental health and wellbeing (diet, exercise, relaxation/sleep, fun)
    - use a daily planner to organize activities
- Cartoon Part 1: revise what we know about Ben's and Mia's lifestyles concerning physical activity, diet, socializing and sleep by re-visiting slides from their bedroom scenes.
- Reflective Task: sort lifestyle choices into good and bad.
- Cartoon Part 2: Buddy's friend who is an expert at Activity Planning helps Mia and Ben to fill in a daily planner.
- Application Task: fill in a personal daily planner. Choose from a bank of pictures. Students should be able to print or save their own daily planner.

Lesson 8: Helping Others to Deal with Stress

- Focus Question: What can we do to help others deal with stress?
- Learning Outcomes
    - recognise stress in others and ways that they are coping
    - support others to use helpful coping strategies
- Cartoon Part 1: get acquainted with the people who live in Stress City.
- Reflective Task: for the characters of Stress City, identify signs of stress and ways they are coping.
- Cartoon Part 2: back to Stress City to find out the consequences of poor coping.

Application Task: students to suggest helpful coping strategies and replay events in Stress City to see if their suggestions improved outcomes for the characters. Once this task has been completed students should be able to print out a certificate stating that they have completed the program.

APPENDIX C

Student survey for the feasibility trial

The aim of the research

We want to make a computer program to help kids your age to learn skills they can use in life to feel less stressed. This is important because up to 1 in 5 young Australians report feeling stressed or depressed most days.

The aim of this phase

This part of the research is a feasibility study. We need to know if kids your age like the ideas we have for the computer program. There is a short preview of what we have been working on at the website www.climate.tv/school. We want to know if you like the characters, if you like the sound effects, if you like the action happening in outer space and other things like this.

Who are the researchers?

We are a group of researchers working at the University of New South Wales and at St Vincent's Hospital. We are teachers, doctors and psychologists.

Filling out this survey

The first section of the survey asks you to supply some information about yourself. Then there are some questions for you to answer. For most of the questions all you need to do is circle a number or tick a box. There are also some questions that ask you to write down some comments. These are really important questions because we really want to know what you think.

All the information you supply is confidential. You do not record your name anywhere. This means that no one will know how you answered any question.

We will take note of all of the information you provide so please be honest and try to answer every question.

If you are unsure about how to answer a question, just choose the response that is closest to what you think or how you feel.

Thank you!

Date: _____

Part A: Information about you

1. How old are you?

   ❍11 ❍12 ❍13 ❍14 ❍15

2. Are you

   ❍female

   ❍male

Part B

Below are five statements that you may agree or disagree with. Using the 1-7 scale, indicate your agreement by circling the appropriate number.

	Strongly Agree	Agree	Slightly Agree	Neither Agree nor Disagree	Slightly Disagree	Disagree	Strongly Disagree
In most ways my life is close to my ideal	**1**	**2**	**3**	**4**	**5**	**6**	**7**
The conditions of my life are excellent	**1**	**2**	**3**	**4**	**5**	**6**	**7**
I am satisfied with my life	**1**	**2**	**3**	**4**	**5**	**6**	**7**
So far I have gotten the important things I want in life	**1**	**2**	**3**	**4**	**5**	**6**	**7**
If I could live my life over, I would change almost nothing	**1**	**2**	**3**	**4**	**5**	**6**	**7**

Part C

The following questions ask about how you deal with your thoughts and feelings. For each question, please circle the number that best describes you.

1. I feel confident in my ability to manage when I get stressed or depressed.

1	2	3	4	5	6	7
not at all true		**somewhat true**				**very true**

2. I am capable of handling it when I get stressed or depressed.

1	2	3	4	5	6	7
not at all true		**somewhat true**				**very true**

3. I am able to use skills to help me to think and act in helpful ways when I get stressed or depressed.

1	2	3	4	5	6	7
not at all true		**somewhat true**				**very true**

4. I feel able to meet the challenge of controlling my thoughts, feelings and actions when I get stressed or depressed.

1	2	3	4	5	6	7
not at all true		**somewhat true**				**very true**

Part D: Questions about the program… … go to www.climate.tv/school

Start Time: _____ **Finish Time: _____**

Mark one box for each question

	Strongly Agree	Agree	Unsure	Disagree	Strongly Disagree
I liked the demo we saw today					
I like the look of the characters					
I like Buddy's voice					
I can relate to at least one of the characters					
I could understand the language that the characters were using					
Most students my age will be able to read and understand the writing in this program					
Most students my age will find it easy to use the computer to complete this program					
Most students my age will like using the computer to learn about this topic					
We use computers at my school for lessons at least once a week					
I would prefer to learn about this work from a computer rather than directly from a teacher					
I think it is important to learn about stress and ways to cope					

15. What did you like best about this program?

16. What would you change about this program, e.g. is there something missing?

17. What did you like least about this program?

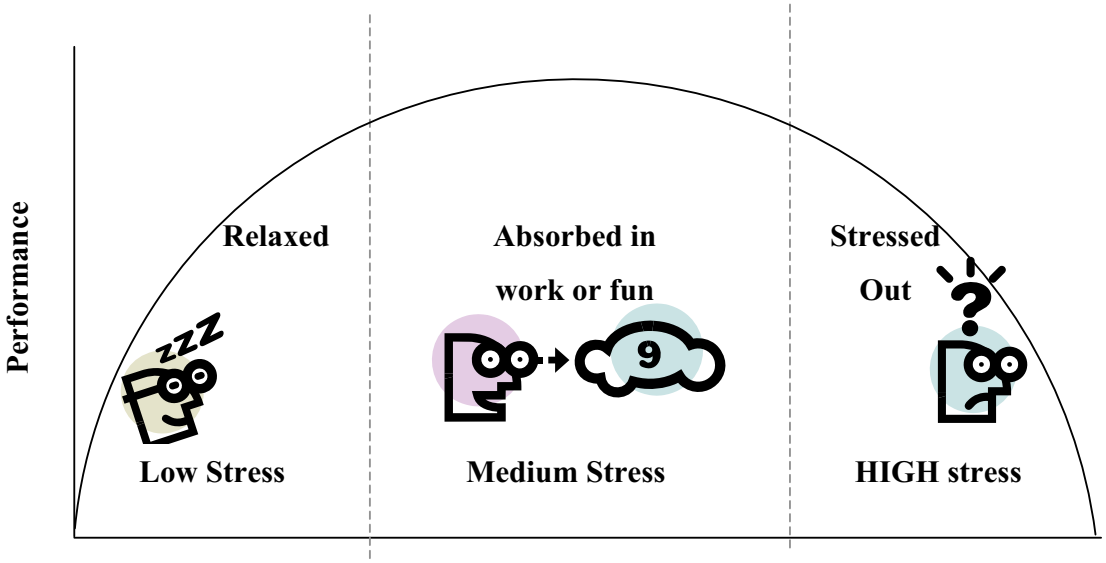
Finished?... If you have time check out **www.reachout.com.au.** If you get any more ideas for our program after viewing this site then write them on the back of this sheet.

Thanks for your time!!

APPENDIX D

Activity Pages for students

1. Stress – What is it?



This diagram reminds us that:

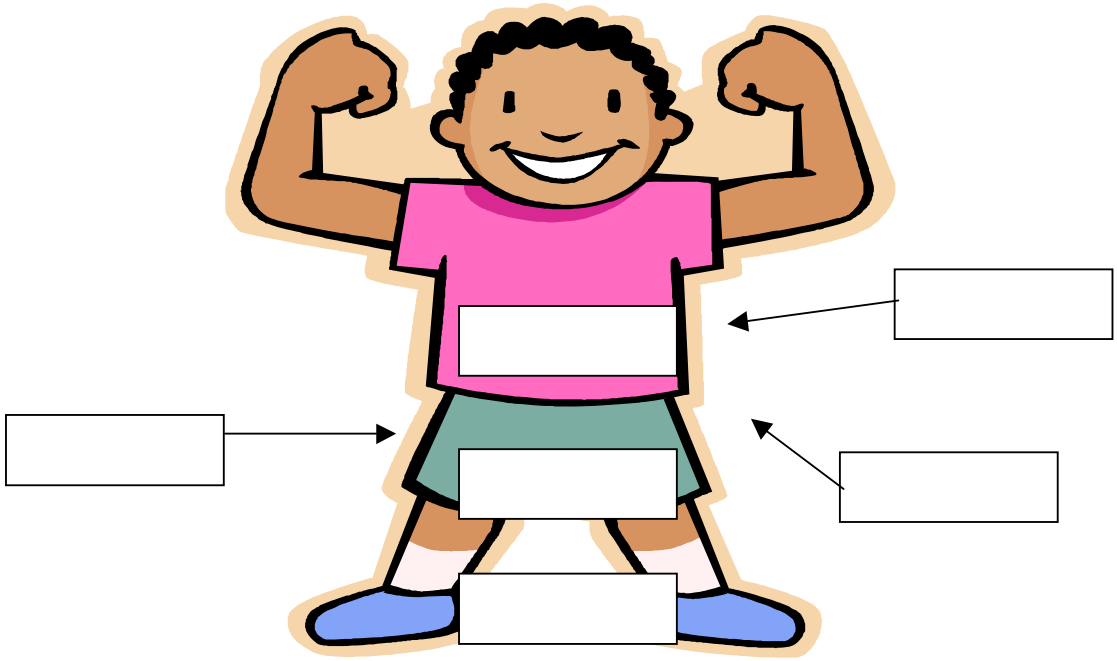
- Low stress is good. We need time to rest and relax.
- Medium stress is good. It allows us to get absorbed in work or fun. Work and fun make us feel good.
- HIGH stress is not good. When we are stressed out we can't get absorbed in work or fun. We feel overwhelmed, we can't concentrate and we feel bad. If we are under HIGH stress for a long time our minds and bodies suffer and we get sick.

2. What determines our stress levels?

There are 2 main groups of factors that determine our stress levels:

- Outside factors- these are things that happen around us that affect us
- Inside factors- these are things inside of us

Fill in 3 outside factors around the person and 3 inside factors within him.



3. Stress Warning Signs

People respond to stress in different ways.

Write down 10 stress signs that you might see in someone who is stressed out

1. _____
2. _____
3. _____
4. _____
5. _____
6. _____
7. _____
8. _____
9. _____
10. _____

4. My Stress Warning Signs

Fill in 3 of your stress warning signs in the spaces below.
Keep this chart handy. If you are scoring '4' or '5' for any of your stress warning signs then it is time to take action to de-stress.

1. _____	1	2	3	4	5
	not at all	rarely	sometimes	often	all the time
2. _____	1	2	3	4	5
	not at all	rarely	sometimes	often	all the time
3. _____	1	2	3	4	5
	not at all	rarely	sometimes	often	all the time

5. Coping styles

For each statement choose 'T' for true or 'F' for false

- Avoiding problems or getting distracted from finding solutions is unhelpful because problems just hang around and make us feel more stressed. T F
- Helpful coping is about facing our problems either on our own or with the help of someone else. T F
- When we get tired and stressed out we are more likely to use unhelpful ways of coping. T F

6. Helpful Coping

People cope with problems in different ways. Some ways of coping are more helpful than others. Read through the list below and check the statements that describe helpful coping.

☐ Tim was having trouble getting his geography project done so he skipped geography class and tried to avoid his teacher all week.

☐ Lisa's netball team lost 3 games in a row and this made her feel frustrated. She decided to talk to the coach about it.

☐ Robert felt like his friends were ignoring him so he spoke to his best pal about it and they came up with some solutions.

☐ Angie was being teased at school (other students were calling her 'teacher's pet') so she spent lunchtime in the library on her own.

7. Imagine This ...

There is a person at school about your age. This person feels worried about how they look because they have some pimples on their face and they think that they are fat. They avoid going out to social events because they just think that everyone else will talk about how ugly and boring they are.
Now imagine that this person is your friend. What advice could you give them about the ways that they are coping and ways to make things better? Record your answer in the box provided.

8. Ways I Cope

Think about the last time you were under more stress than usual. Maybe you were having some problems with friends. Maybe there was something difficult to deal with at home. Or maybe it was exam time at school. Often more than one stressful problem pops up at the same time. When things like this happen people do different things to help make their situation better, or to make themselves feel better.

Read through the list below and mark those things that you did last time you were stressed to make things better.

Tried to notice or think about the good things in life.	
Talked to someone I trust like a parent, teacher or a friend about how I was feeling.	
Tried to forget my problems.	
Tried to stay away from the problems.	
Thought about or planned ways to make things better.	
Wrote down my feelings or thoughts.	
Told myself to accept the situation the way it was.	
Ignored my problems by listening to music, reading, watching TV or using the computer.	
Thought about what I could learn from the problems.	
Told myself things would get better soon.	
Tried to stay away from things or people that made me feel upset.	
Thought about the best things to do to handle the problem.	
Went to my room to worry about things on my own.	
Imagined that things were just fine.	
Did something bad or caused trouble.	
Reminded myself that things could be worse.	
Wished that things were better.	
Got angry and lost my temper.	
Talked about my thoughts and feelings to my pet.	
Told myself that I could do something to make things better.	

Add up the number of ticks in the grey boxes and write the total here _____. These are helpful ways of coping.

Add up the number of ticks in the white boxes and write the total here _____. These ways of coping are not so helpful.

This activity gives you an idea of the ways you used to cope last time you felt more stressed than usual. Don't worry if you didn't use many helpful ways to cope - remember, we all use unhelpful coping sometimes, especially when we are stressed. In the next lessons we will find out some easy ways to improve our coping.

9. What Thoughts?

What thoughts do you think might be going through these people's minds in response to the problem? Write down 2 possible thoughts in the spaces provided.

Problem	Thoughts	Feelings
A friend was to meet me to go see a movie, and is 20 minutes late		Angry Worried

Problem	Thoughts	Feelings
I got my class test back and only got 58%		Down and Depressed Stupid Helpless

Now fill in a problem that you think someone your age might have to deal with.
Then write down the possible thoughts and feelings that might go along with this problem.

Problem	Thoughts	Feelings

10. Keeping a Thought Diary

Over the next few days take note of any negative thoughts that move through your mind about yourself or about the future.
Write down 2 of these negative thoughts in the spaces below and a question that you could ask yourself to challenge these negative thoughts. An example is given.

e.g. Thought: Nothing ever goes right for me.

Challenge: Where is the evidence for this?

Thought:_____

Challenge:_____

Thought:_____

Challenge:_____

11. Positive Thoughts About 'Me'

Over the next few days ask 3 people to tell you something that they like or admire about YOU. Write their comments in the spaces below. Next time you are feeling negative about things remind yourself of these comments. You might like to keep a copy of them in your wallet.

- _____
  _____
- _____
  _____
- _____
  _____

Now take some time to think about things that you like about yourself.
Write 2 of these positive thoughts down in the spaces below.

- _____
  _____
- _____
  _____

12. Thinking Errors

What thinking errors do you have a tendency to make? Answer the questions below to find out.

Exaggerating the negatives

- How often do you find yourself only seeing what has gone wrong in life?

☐ Never ☐ Sometimes ☐ Often ☐ All the time

- How often do you find yourself ignoring the positive things about life?

☐ Never ☐ Sometimes ☐ Often ☐ All the time

- How often do you find yourself down-playing positive things people say about you?

☐ Never ☐ Sometimes ☐ Often ☐ All the time

Expecting the worst

- How often do you find yourself expecting to fail?

☐ Never ☐ Sometimes ☐ Often ☐ All the time

- How often do you find yourself setting unrealistic goals like thinking that everything you do should be absolutely perfect?

☐ Never ☐ Sometimes ☐ Often ☐ All the time

- How often do you tell yourself that you'll never be able to do things like school work or sports?

☐ Never ☐ Sometimes ☐ Often ☐ All the time

Being Hard on Yourself

- How often do you find yourself believing that everything that goes wrong is your fault?

☐ Never ☐ Sometimes ☐ Often ☐ All the time

- How often do you find yourself thinking that you are no good or bad or a looser?

☐ Never ☐ Sometimes ☐ Often ☐ All the time

- How often do you find yourself thinking that you '**should**' or you '**must**' do something?

☐ Never ☐ Sometimes ☐ Often ☐ All the time

Remember, when these sorts of thoughts start moving through your mind you can take control and beat them by asking yourself 2 important questions:

1. **What evidence do I have?**
2. **What are the real facts here?**

13. Finding Solutions

Rob's mother got a promotion and she was going to work in a different office that was miles away. This meant that the family had to move house and Rob would have to start at a new school. He really didn't want to move or to start at a new school. Rob thought hard about why he was feeling bad about this move. He decided that the real problem was that he didn't want to leave his friends.

Your job is to help Rob come up with some solutions to his problem. Write your suggestions in the spaces below.

Step 1: The Problem

I don't want to leave my friends

Step 2: Possible Solutions

> _____
_____

> _____
_____

> _____

14. Which solution is best?

Now Rob needs help choosing a solution. He needs to decide which solution is most practical and which solution he could live with and feel good about. Your job is to help Rob come up with one good point and one bad point for each of the 3 possible solutions that you have listed above. Write your suggestions in the spaces below.

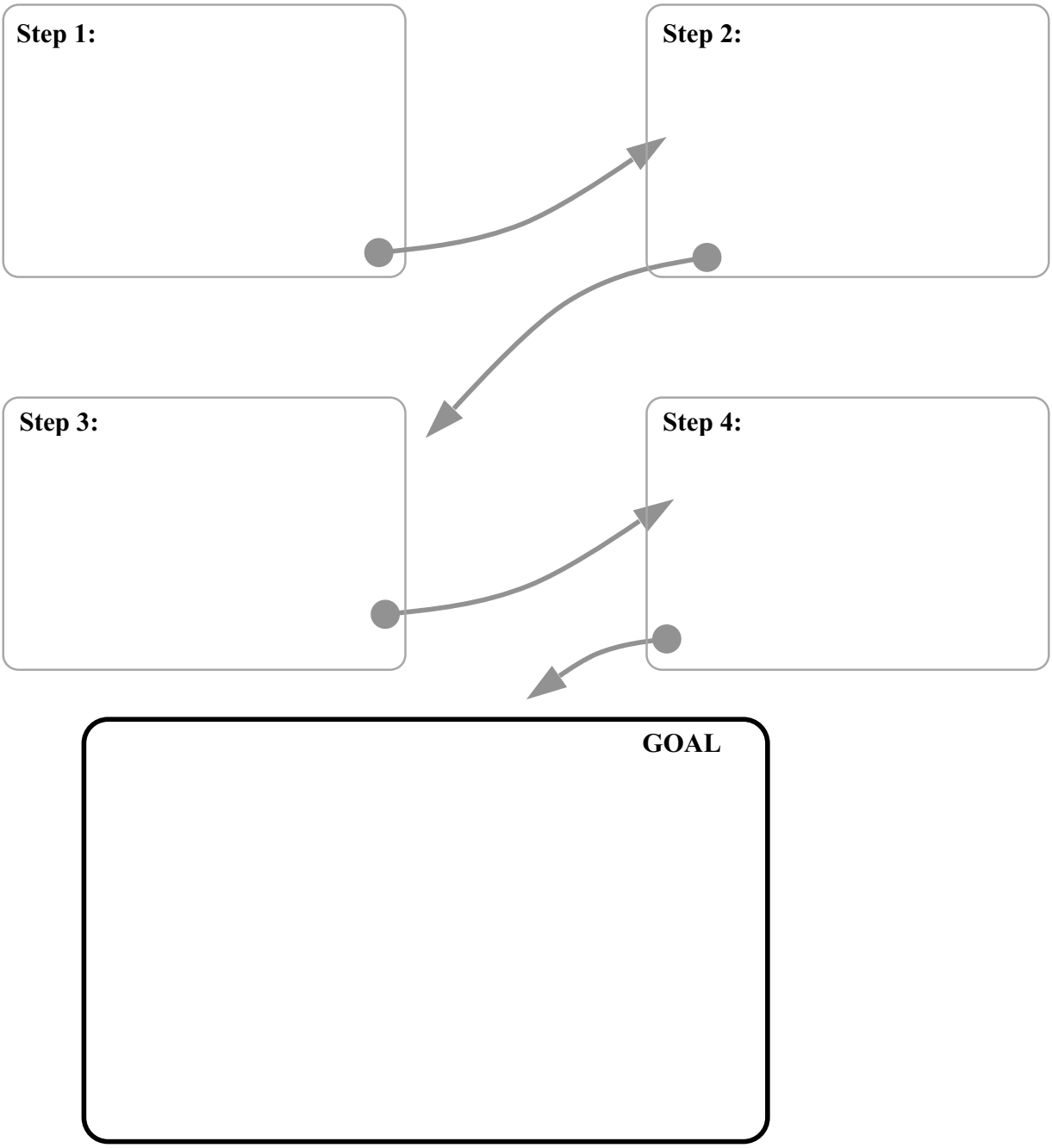
Possible Solutions	Good points	Bad points
1		
2		
3		

15. Making it Happen

Think about all of the things that you would like to do or to achieve.

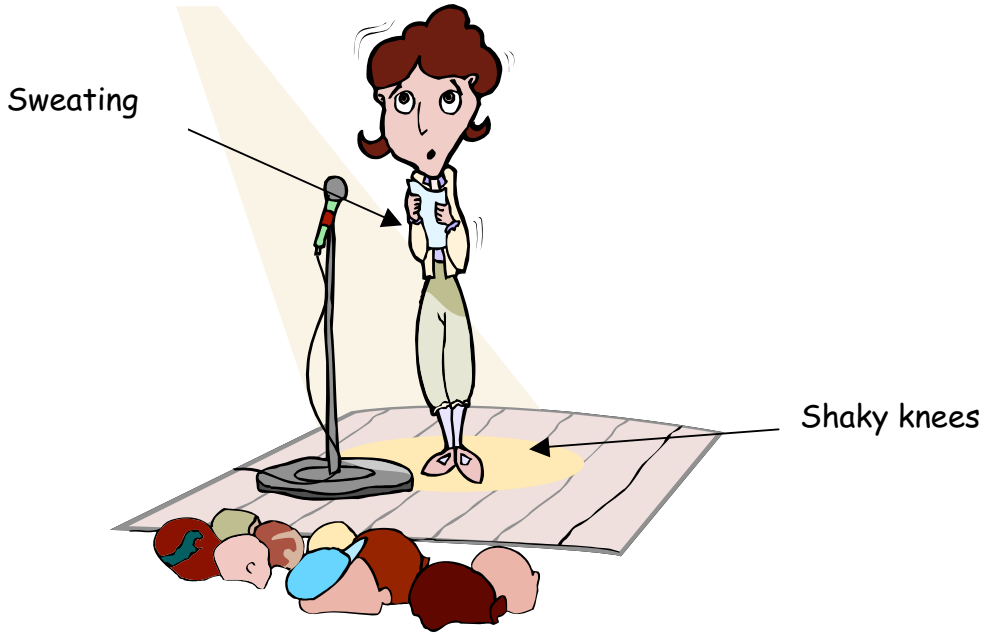
Now choose one thing that seems like quite a big challenge. Write this thing in the goal box below.

Then fill in some smaller steps that you can take that will help you to move towards this goal.



16. When lots of stress hits all at once...

Imagine that you have to give a talk in front of lots of people and that you are feeling very worried about it. How might your body react? Fill in at least 3 more signs on the diagram below.



17. Time for a good laugh...

Laughing is one of the best ways to relax. It makes our bodies release natural feel-good chemicals and helps us to feel less stressed.

Make a list of 3 movies that make you laugh. Ask around if you have trouble coming up with some titles.

- _____
- _____
- _____

Now write down a joke to share with your friends.

_____

_____

18. Listening to MY Body

Our bodies can tell us a lot about our stress level.

Over the next few days choose 3 different times to stop and to listen to what your body is saying to you. Take note of your breathing (is it fast or shallow), your heart (is it racing) and your muscles (do you feel tense or tight anywhere). Write about what you notice in the spaces below.

Time of Day	**What I was doing**	**My Body Talk**

19. Using 'Slow Breathing'

Over the next few days try using 'Slow Breathing' when your stress level rises. This could be when you feel angry or frustrated or when you feel worried or anxious. Record what you were doing and how you were feeling in the table below.

Breathe in to the count of 3 …

1 and 2 and 3 and …

Breathe out to the count of 3 …

1 and 2 and 3 and …

Breathe in to the count of 3 …

What I was doing	How I was Feeling

20. Using Progressive Muscle Relaxation (PMR)

PMR is a useful relaxation technique, especially for people who get tense muscles when they are stressed. Practice PMR in a quiet place where you won't be distracted.

PMR involves progressively tensing and relaxing muscles. You should firmly tense (without straining) each muscle group and then relax for a few seconds before tensing the next muscle group.

Tense and relax your muscles in the following order:

- **Hands** - curl your hands into fists, count to 5, relax.
- **Lower arms** - bend your hand down at the wrist, as if trying to touch the underside of your arm, count to 5, relax.
- **Upper arms** - bend your arm at the elbow (like you were lifting a weight), count to 5, relax.
- **Shoulders** - lift your shoulders up towards your ears, count to 5, relax.
- **Neck** - stretch your neck gently to the left, then forward, then to the right, then to the back in a slow rolling motion, repeat 3 times, relax.
- **Forehead and scalp** - raise your eyebrows, count to 5, relax.
- **Eyes** - screw up your eyes, count to 5, relax.
- **Jaw** - clench your teeth (just to tighten the muscles), count to 5, relax.

- **Tongue** - press your tongue against the roof of your mouth, count to 5, relax.
- **Chest** - breathe in deeply to inflate your lungs, then breathe out and relax.
- **Stomach** - push your tummy out to tighten the muscles, count to 5, relax.
- **Upper back** - pull your shoulders forward with your arms at your side, count to 5, relax.
- **Lower back** - bring your head and upper back forward, rolling your back into a smooth arc, count to 5, relax.
- **Buttocks** - tighten your buttocks, count to 5, relax.
- **Upper legs** – tense your thighs, count to 5, relax.
- **Lower legs** – bend your ankle to bring your toes up towards your shin, count to 5, relax.
- **Feet** - gently curl your toes down, count to 5, relax.

Sit or lie still for a few minutes after you finish and enjoy the feeling of relaxation.

During the day try a mini-relaxation- take some time to notice the muscles that feeling most tight. Then tense and relax just those muscles. It only takes a minute but it can help a lot to decrease stress and make us feel better.

21. How balanced is my life?

A balanced lifestyle can help us to keep stress in check.

Read the following statements. Select 'T' for true or 'F' for false in the last column.

Schoolwork	I feel good about the progress I am making at school.	**T / F**
	The demands of my schoolwork and homework are reasonable- I can manage.	**T / F**
Mind	I often have challenging discussions with others.	**T / F**
	I have hobbies/interests which I find mentally stimulating.	**T / F**
Family and Friends	I have enough people in my life with whom I can share my feelings.	**T / F**
	When I need company or support I don't hesitate to ask for it.	**T / F**
Exercise	I do some exercise at least 4 times a week (walking, swimming, skateboarding, dancing etc).	**T / F**
Diet	I eat a balanced diet- plenty of vegetables and fruit and not too much junk food.	**T / F**
Fun	I make sure that I do fun things on a regular basis	**T / F**
Rest and Sleep	I don't push myself too hard- I get enough rest	**T / F**
	I get enough sleep.	**T / F**

Choose a statement for which you selected **'F'**. Now write down something you could do to improve this area.

_____

_____

_____

22. Activity Planning

Think about what you will be doing next week. Is there anything important that you have to do, like hand in a school project or visit the dentist? Fill in the lists below, making sure to include anything important in the 'Things I need to do" list

Things I need to do:

- _____
- _____
- _____
- _____
- _____
- _____

Things I enjoy doing:

- _____
- _____
- _____
- _____
- _____
- _____

Now skip to the next page and fill in the Activity Planner for **next week**. You can write or draw.
Remember to include something fun to look forward to each day.

	Monday	Tuesday	Wednesday	Thursday	Friday	Saturday	Sunday
Morning							
Afternoon							
Evening							

23. Do they need help?

There are times when it is **very** important to get help from an adult that we can trust.

Read the following stories. Then write down why these people need help immediately.

Mark didn't seem to want to come to school. He was regularly late and he didn't join in any after-school activities like sport, art or debating. One day you notice that 2 other students are calling him names. They are pulling his clothes and then take his school bag and throw it over the fence.

Mark needs help immediately because:

_____

_____

Sally was feeling worried about everything. She had to check things over and over. Every time the teacher chose her to answer a question her mouth went dry, her face went red, her heart started to beat really fast and she felt like she would faint. This had been going on for more than 2 weeks.

Sally needs help immediately because:

_____

_____

Simon had been spending more and more time on his own. He didn't seem to find anything fun or interesting. He looked really tired like he wasn't getting enough sleep. This had been going on for more than 2 weeks.

Simon needs help immediately because:

_____

_____

24. Getting Help

Where could you get help or find reliable information if you or a friend was felling stressed or down?

List 6 sources - you might include people, places, books, internet sites.

- _____
- _____
- _____
- _____
- _____
- _____

My 'Stress' Warning Signs

What happens when you get stressed? Select from the list below.

- ❒ feeling really tired
- ❒ having no energy
- ❒ sleeping less then usual
- ❒ sleeping more than usual
- ❒ having trouble getting to sleep
- ❒ waking up early in the morning
- ❒ eating more than usual
- ❒ craving junk food
- ❒ having no appetite and eating less than usual
- ❒ stomachaches
- ❒ headaches
- ❒ pain or tightness across the shoulders
- ❒ pain or tightness in the neck
- ❒ pain or tightness in the back
- ❒ skin problems, like pimples or rashes
- ❒ getting sick (sore throat, cough, worsening asthma)
- ❒ loosing weight
- ❒ gaining weight
- ❒ feeling restless, like you can't sit still
- ❒ finding it hard to concentrate
- ❒ finding it hard to think clearly
- ❒ finding it hard to get work done
- ❒ having trouble remembering things
- ❒ having trouble making decisions
- ❒ spending more time with friends
- ❒ spending less time with friends
- ❒ spending lots of time alone
- ❒ feeling down or hopeless
- ❒ worrying all the time
- ❒ getting angry all the time
- ❒ having lots of arguments
- ❒ crying a lot
- ❒ feeling nervous
- ❒ feeling lots of pressure
- ❒ feeling really lonely
- ❒ feeling unhappy for no real reason
- ❒ feeling afraid for no real reason
- ❒ having shaky or trembling hands or knees
- ❒ having dizzy spells or feeling lightheaded
- ❒ feeling your heart beat fast or hard

MY 'Stress' Warning Signs

Keep this chart handy. You can stick it on your wall or keep it in your diary or desk draw. Check it regularly to see if you need to make some changes to decrease stress in your life.

How stressed are you now?

Read through your stress warning signs and rate them from 1 (not at all) to 5 (all the time). If you select '3' or more for any of the signs then it is time to take action to de-stress.

❒ difficulty thinking clearly	1	2	3	4	5
	not at all	rarely	sometimes	often	all the time
❒ having no energy	1	2	3	4	5
	not at all	rarely	sometimes	often	all the time
❒ worrying all the time	1	2	3	4	5
	not at all	rarely	sometimes	often	all the time
❒ spending lots of time on my own	1	2	3	4	5
	not at all	rarely	sometimes	often	all the time
❒ shoulder or neck pain	1	2	3	4	5
	not at all	rarely	sometimes	often	all the time
❒ getting angry all the time	1	2	3	4	5
	not at all	rarely	sometimes	often	all the time

Ways I Cope

(Adapted from the Children's Coping Strategies Checklist, Ayers & Sandler, 1999)

For each of the statements below, select the best answer for you.

When I have a problem I:

- think about or plan ways to solve the problem.

Never Sometimes Often All the time

- make an effort to change something to make things better e.g. catch up on sleep or use a timetable to organize my time better.

Never Sometimes Often All the time

- try to understand what is going on and/or try to see what I can learn from it.

Never Sometimes Often All the time

When I have a problem I:

- remind myself about the good things in life.

Never Sometimes Often All the time

- remind myself that things will get better soon.

Never Sometimes Often All the time

- tell myself that I can cope.

Never Sometimes Often All the time

When I have a problem I:

- distract myself by doing physical activity that really tires me out like going for a run or a swim.

Never Sometimes Often All the time

- distract myself by playing computer games, watching TV, listening to music, reading etc.

Never Sometimes Often All the time

When I have a problem I:

- avoid people or places that make me feel stressed.

Never Sometimes Often All the time

- try to put it out of my mind.

Never Sometimes Often All the time

- imagine in my head that things are just fine.

Never Sometimes Often All the time

When I have a problem I:

- find other people who can give me advice or help me to solve it.

Never Sometimes Often All the time

- find other people who will listen to my feelings and be understanding.

Never Sometimes Often All the time

What Happens to ME ... When Lots of Stress Hits all at Once

Make your own chart to show what happens to you when lots of stress hits all at once.

Read through the list and tick the box for the signs that warn you that you are being hit with lots of stress all at once.

- ❒ My hands feel sweaty
- ❒ My face goes red
- ❒ My face goes really pale
- ❒ I get the shakes
- ❒ I feel like I can't breathe
- ❒ I breathe really quickly
- ❒ My heart races
- ❒ My mouth goes dry
- ❒ I sweat a lot
- ❒ My knees feel weak
- ❒ I feel like I might be sick
- ❒ My fingers tingle
- ❒ My toes tingle
- ❒ It feels like I have butterflies in my tummy
- ❒ I can't think clearly
- ❒ I get tongue-tied, find it hard to speak
- ❒ I feel like I might faint
- ❒ I see spots or flashes of light

APPENDIX F

Feedback for students concerning coping strategies

Problem solving is about (a) thinking about ways to solve problems, (b) taking action to solve problems, (c) trying to understand problems better. People who do these sorts of things to cope with problems tend to be less stressed than other people. They face their problems and then move on with life

Helpful Thinking is about (a) noticing the good things about life even when you have problems, (b) reminding yourself that you have the power to do something about problems, (c) being optimistic about the future. People who cope by thinking in these ways tend to be less stressed than other people. They do not get bogged down by negative or worrying thoughts about life.

Getting Distracted is about doing things like listening to music, watching TV or reading a book instead of facing up to problems. It is important to do enjoyable activities like watching TV or reading sometimes. It is not good to do these activities just as a way of getting out of facing a problem. People who continually put off facing problems by getting distracted by other things tend to feel more stressed than other people. Their problems hang around and continue to worry them for a long time.

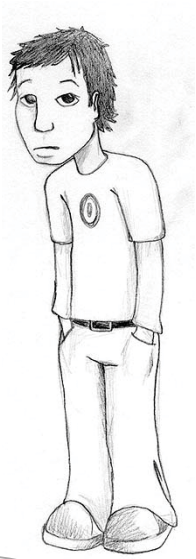
Avoiding Problems is about (a) staying away from people and places that make you feel bad, (b) trying to forget or ignore problems, (c) wishing that problems would just magically disappear. People who try to cope by avoid problems tend to feel more stressed than other people. Their problems hang around and continue to worry them for a long time.

Finding Help is about (a) talking to someone about what you can do regarding your problems, (b) finding someone who can offer you advice or do something to help you to solve a problem, (c) talking to someone about how you feel about your problems. People who cope with problems by searching out others who can offer them support and advice tend to feel less stressed than other people. They get their bad feelings and thoughts out in the open and then tend to take action to solve their problems. They do not get bogged down by negative or worrying thoughts about life.

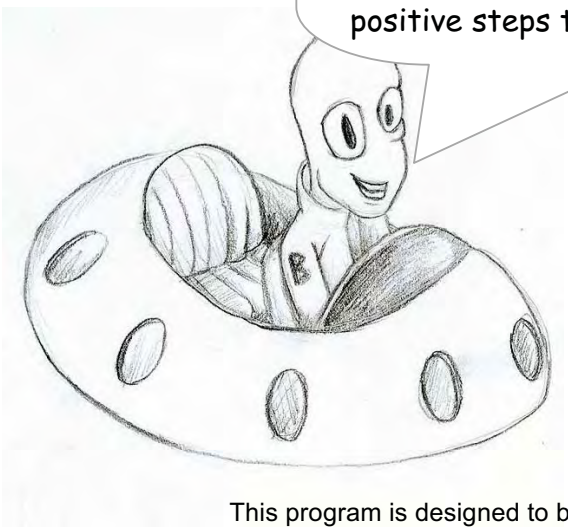
APPENDIX G

TEACHER HANDBOOK

www.climateschools.tv



Everyone feels stressed or depressed sometimes. The way we cope at these times makes a big difference to how we feel: we can avoid problems and continue to feel bad or take action to sort things out. This program is about taking action. People who know how to take positive steps to cope with stress are resilient.



This program is designed to be user friendly for teachers and students.
If you have any queries contact us at: helen@climate.tv

This booklet contains the following information:

1. **Instructions for Use**

2. **Outcomes and Indicators from the Board of Studies NSW PDHPE 7-10 Syllabus (Board of Studies 2001: Sydney Australia)**

3. **Lesson Outlines**

4. **Assessment and Reporting Information**

5. **Ideas for Enrichment and Extension**

6. **Feedback Sheets**

Instructions for Use

To use CLIMATE Schools *Beating Stress* teachers need only follow these simple steps:

1. Read about the program

Go to **www.climateschools.tv**

2. Put aside 8 lessons

Students will require 8 lessons of 30-40 minutes to complete the entire *Beating Stress* program. It is fine to run 2 lessons over a double period.

3. Ensure that you have a teacher login ID.

If you do not have a teacher login ID then email helen@climateschools.tv or call 8382 1733.

4. Ensure that you have login IDs for each of your students.

If you do not have student login IDs then email helen@climateschools.tv or call 8382 1733.

5. Make sure that the computers at your school have Macromedia Flash Player

Most school computers will have this software. Open the homepage at www.climateschools.tv and click 'System Check'. If you need to download the Flash Player you will be directed to a site where you can download the software free of charge.

6. Use your login code to view the lessons.

Go to www.climateschools.tv and click 'Teacher Login'. Have a brief look through the lessons. You will see that there are 6 lessons each made up of 4 parts:

- **questions**- reviewing the previous lesson and measuring stress level
- **narrative**- students learn about stress and coping
- **activities**- students apply their new knowledge and skills
- **game**- students consolidate their learning

You will also notice that there are 'Start Questions' and 'Finish Questions'. These sections contain research questionnaires. Once the program has been trialed most of these questions will be removed.

7. Make copies of the Activity pages for each student.

It is possible for students to save or print these pages themselves but if there are limited printing facilities then it might be easier for you to supply these pages before or during the lesson. After the students have completed these activity pages, you might like to collect them as a record of their work.

8. Distribute student login IDs and begin.

Make sure that students keep their login IDs in a safe place (they could stick them into their diaries or workbooks). You will be able to match student names and login IDs by going to the Teacher's Club and looking up your class.

9. Monitor Student Progress

Go to www.climateschools.tv and click 'Teacher Login' at the top of the screen. Enter your Teacher Login ID and password. You will be able to track progress for each student in your class here. You will be supplied with results from the assessment tasks (see below for information).

Outcomes and Indicators from the Board of Studies NSW PDHPE 7-10 Syllabus

(Board of Studies NSW, 2001: Sydney Australia)

The Beating Stress course covers the following outcomes and indicators from the NSW PDHPE 7-10 syllabus. It also aligns well with Student Welfare and Pastoral Care goals.

Strand 1: Self and relationships	
Outcome 4.2	A student identifies and selects strategies that enhance their ability to cope and feel supported
Indicators	Students learn about: ▪ sources of change and challenge, e.g. school, family, friendships ▪ identifying fears and feelings ▪ dealing with conflicting demands ▪ predicting and preparing for future challenges Students learn to: ▪ develop a realistic sense of their ability to respond to and cope with challenges ▪ describe the current challenges that may face young people and predict future challenges ▪ accept that grief reactions can result from a range of experiences ▪ identify strategies for coping with loss and ways of giving support to others

Strand 3: Individual and Community Health	
Outcome 4.6	A student describes the nature of health and analyses how health issues may impact on young people
Indicators	Students learn about: ▪ the interaction of cognitive, physical, social, emotional and spiritual components ▪ the benefits of a healthy lifestyle ▪ factors that support mental health Students learn to: ▪ examine the relationship between the cognitive, physical, social, emotional and spiritual components of health ▪ examine their behaviour and language and recognize the potential impact of these on their own and others' mental health
Outcome 4.7	A student identifies the consequences of risk behaviours and identifies strategies to minimize harm
Indicators	Students learn about: ▪ developing personal skills, e.g. conflict resolution, assertive behaviour, problem-solving, refusal skills Students learn to: ▪ describe strategies to minimize harm in each of the following real life situations: when feeling depressed
Outcome 4.8	A student describes how to access and assess health information, products and services
Indicators	Students learn about: ▪ sources of health information, e.g. family, peers, school, internet, media, GP ▪ range of products, services and personnel available Students learn to: ▪ identify health information, products and services designed to address the health needs of young people, e.g. mental health, youth health services

Strand 4: Life-long Physical Activity	
Outcome 4.9	A student describes the benefits of a balanced lifestyle and participation in physical activity
Indicators	Students learn about: ▪ components of a balanced lifestyle, i.e. rest, sleep, school/work, physical activity, leisure/recreation ▪ personal benefits of participation in physical activity, i.e. physical, social, emotional, mental, spiritual Students learn to: ▪ value the contribution of regular physical activity to health ▪ analyse their lifestyle over a typical week to plan and implement increased opportunities for physical activity

Lesson Outlines (NSW PDHPE Syllabus outcomes are recorded in brackets.)

Lesson 1 | STRESS: WHAT IS IT? (4.2)

Students learn about stress: how to define stress, what causes stress and factors that help us to cope with stress. They learn that not all stress is bad. They learn how to recognise stress in themselves and others.

Students will:

- know that stress is not always bad
- list common signs of stress
- identify stress warning signs in self
- identify factors that influence stress levels in young people
- know that people can take action to manage their emotions

Lesson 2 | COPING: TAKING CONTROL (4.2, 4.8)

Students learn about helpful and unhelpful ways of coping. They learn that is it unhelpful to avoid or get distracted from problems because then the problems just hang around and make us feel stressed. It is helpful to recognize problems and to do something about them. Talking about problems with someone we trust is often a helpful strategy.

Students will:

- classify attempts at coping as ‘helpful’ or ‘unhelpful’
- identify coping strategies commonly used by self

Lesson 3 | THE POWER OF THINKING (4.2, 4.6, 4.7)

Students learn that our thoughts influence our feelings and our actions. They learn that unhelpful thoughts can make us feel bad and can lead us to do unhelpful things. They learn how we can readjust the way that we think and replace unhelpful thoughts with helpful thoughts. Helpful thoughts stop us from feeling bad and help us to take positive and helpful action.

Students will:

- know that the way we think influences the way we feel and how we act
- show the relationship between thoughts and feelings
- know that it is possible to change thoughts that are getting us down
- identify own common thinking errors

Lesson 4 | PROBLEM SOLVING AND ACTION PLANS (4.2, 4.6, 4.7)

Students learn about a good way to face up to and solve problems. They also learn that not all problems are easily solved but that there is always something that we can do to make things better and to move on with life.

Students will:

- know that it is unhelpful to avoid problems
- list possible solutions to problems commonly faced by young people
- evaluate possible solutions by noting 'good' points and 'bad' points
- know that some problems are not easily solved but that there is always something a person can do to move on
- analyse a goal by breaking it down into smaller, more manageable steps

Lesson 5 │ CALMING DOWN AND STAYING COOL (4.2, 4.6, 4.7)

Students learn about ways to cope in times of high stress, for instance during an exam or when giving a presentation in class. They learn ways to calm down and focus on the task at hand.

Students will:

- identify signs of acute stress in self and others
- know that slowing the breathing can be a helpful way to manage in times of high stress
- know that focusing on what is happening to our bodies when we are feeling highly stressed is usually unhelpful
- know that there are times when we need to accept stress and remind ourselves that it will pass
- know the benefits of humour and laughter for reducing stress

Lesson 6 │ KEEPING WELL (4.2, 4.6, 4.8, 4.9)

Students learn about the connection between mental wellbeing and lifestyle factors such as regular exercise, spending time with friends, getting enough rest and making time for fun. They also learn about getting help: when it is crucial to seek help for themselves or others and where to find reliable help.

Students will:

- recognise when adult help should be sought for self and others- bullying, anxiety, feeling down
- assess their lifestyle balance (school, mind, family/friends, exercise, diet, fun, rest/sleep)
- suggest how they might create a better balance in their lives
- list possible sources of reliable help for young people who are stressed, anxious or feeling down
- know that getting regular exercise and adequate rest and sleep is a good way to manage stress
- plan activities that can protect and promote mental health including regular physical activity

Assessment and Reporting Information

The following areas are assessed during the Beating Stress course:

Knowledge- ability to recall factual information

- A brief knowledge test made up of 12 true/false questions delivered before and after the program
- Activities and activity reviews throughout each lesson.

Knowledge test allows assessment of the following indicators:

- know that stress is not always bad
- know that people can take action to manage their emotions, including stress
- know that the way we think influences the way that we feel and how we act
- know that it is possible to change thoughts that are getting us down
- know that it is unhelpful to avoid problems
- know that some problems are not easily solved but that there is always something a person can do to move on
- know that slowing our breathing can be a helpful way to control stress
- know that focusing on what is happening to our bodies when we are feeling highly stressed is usually unhelpful
- know that there are times when we need to accept stress and remind ourselves that it will pass
- know the benefits of humour and laughter for reducing stress
- know that getting regular exercise and adequate rest and sleep is a good way to manage stress

Application- ability to apply knowledge and skills

- Coping checklist delivered before and after the program. A coping profile is generated for each student so that teachers and students are able to track any changes in coping strategies used. (Note: This checklist has been included for research purposes. A shortened version will be retained as part of the program post research.)
- Activities and activity reviews throughout each lesson.

Activities allow for the assessment of the following indicators:

Lesson 1 Activities	– list common signs of stress – identify stress warning signs in self – identify factors that influence stress levels in young people
Lesson 2 Activities	– classify attempts at coping as 'helpful' or 'unhelpful' – identify coping strategies commonly used by self
Lesson 3 Activities	– show the relationship between thoughts and feelings – identify own common thinking errors
Lesson 4 Activities	– list possible solutions to problems commonly faced by young people – evaluate possible solutions by noting 'good' points and 'bad' points – analyse a goal by breaking it down into smaller, more manageable steps
Lesson 5 Activities	– identify signs of acute stress in self and others

Lesson 6 Activities	– recognise when adult help should be sought for self and others- bullying, anxiety, feeling down – assess lifestyle (school, mind, family/friends, exercise, diet, fun, rest/sleep) and suggest how they might create a better balance – list possible sources of reliable help for young people who are stressed, anxious or feeling down – plan activities that can protect and promote mental health including regular physical activity

Psychological Wellbeing- indication of emotional health

- Psychological state scale comprising 7 questions filled in each lesson to give an indication of stress level and satisfaction with life. A graph provides feedback to students and teachers and allows monitoring throughout the program.
- Behaviour checklist delivered before and after the program. Feedback to teachers gives an indication of strengths and difficulties related to social interactions, attention focusing and regulation of emotions. (Note: This checklist has been included for research purposes.)

Teachers will be notified of any student scoring in the 'risk' range on these measures via their secure teacher login. A short explanation of the result will be provided along with the score. Please note, these instruments are not diagnostic tools; results can suggest that a student may require help but cannot be used to diagnose disorders. If teachers are concerned about any particular student then the school counselor should be consulted. Please contact the CLIMATE/Schools team with any questions.

Teachers can access results of assessments for their class via the secure teacher login on the homepage at www.climateschools.tv . The CLIMATE Schools website is a very secure site and teachers can only access results for the students in their class. Results will be listed against student login ID. The class teacher will be the only person able to match these student login IDs and assessment results with student names.

Ideas for Enrichment and Extension

It might be helpful to put aside some class time for discussion when all students have finished the program. This would allow students to reflect on their learning. Students could give personal opinions about the usefulness of particular coping strategies.

The following activities could be used for enrichment or extension:

1. Have students assess a website that claims to help teenagers with their mental health and wellbeing. This might be www.climateschools.tv or www.reachout.com.au. They can then come up with a plan for a new website. Their plan might include the name of the site, the material to be included and how the material will be presented (eg text, cartoons, video). Students can share their ideas with the people at CLIMATE/schools or ReachOut via email (see contact emails on the homepages) or via snail mail.

2. Have students carry out a ‘stress’ assessment at school. They can note down any policies, practices and environmental elements that they believe either increase or decrease stress in students. They could then make some suggestions about how the school might be changed to help students to cope better, eg planting more trees, implementing yoga or tai chi classes, playing music rather than having a bell to signal the end of class, walking to the left in corridors, implementing study skills programs, having a student suggestion/comments box etc. Groups of students or individual students could be assigned particular locations (eg the library, around the canteen, corridors and stairwells, classrooms, playground) or particular times in the school calendar (e.g. exam time, beginning or end of year, parent interviews).

3. Ask students to come up with a way to help younger students cope better with stress. They might design a poster, write a short story, organize a relaxation class or create a powerpoint presentation or skit to perform at junior school assembly. Students can trial their ideas if there is a primary school close by.

4. Have students research a person who coped under difficult circumstances, eg. Anne Frank, Nelson Mandela, Mum Shirl, Ang San Suu Kyi. Students can report in written or verbal form about the ways that this person coped. They can report any things that they learnt from this person about stress and coping. They could answer the question: Do you think this person is resilient? Discuss.

5. Have students compile a reading list of books that are about people who use helpful ways to cope. They can then choose their favourite book or character and write a report. They could also compare and contrast characters and then come up with a list of attributes possessed by people who cope well. They could write their own story about stress and coping.

6. Have students compile a scrap book of pictures showing people who are coping well or who have coped well and people who are not coping well or who are stressed out. Students can then compare and contrast the facial expressions and body language of these people. They could also record the emotions that they think are linked with coping well and those that are linked with being stressed out.

7. Have students interview a local hero. There are many people in our communities who have coped with problems and challenges or help others to cope. Students might have a relative who experienced war or a friend who suffers poor health. They might know of an author who writes books with important messages or a teacher who is able to brighten up a classroom or a local politician who has made brave decisions.

After interviewing this person, have students write a letter to them explaining what it is that they admire about the person and why they are grateful to know this person.

8. Have students make a booklet outlining their ‘5 top tips to decrease stress’ for people their age or for teachers at their school or for parents. Students could be asked to justify their choices. They could come up with tips for 2 different groups of people and then compare and contrast the best ways to de-stress for different groups. This could lead to a debate about the best ways to decrease stress for certain age groups.

APPENDIX H

Examples of posters

CLIMATE SCHOOLS

MINI STRESS BUSTERS

When lots of stress hits you all at once try Slow

Breathe in to the count of 3 …

1 and 2 and 3 and …

Breathe out to the count of 3 …

1 and 2 and 3 and …

Breathe in to the count of 3 …

1 and 2 and 3 and …

Stop what you are doing **RIGHT NOW** and check your body for tension.

Take a **deep breath in** and as you **breathe out relax** any muscles that feel tense. Breathe in slowly and with your next out breath **let your shoulders drop and loosen your hands**.

Take another couple of slow breaths before moving on with your day.

Reward yourself REGULARLY!

Hang with friends or spend the afternoon doing something that makes you happy.

Go do some EXERCISE!

Hundreds of studies conducted over the past 50 years demonstrate that exercise helps you **feel better** and **live longer**.

Take regular breaks

Get up and move around every hour. You'll feel better and learn better.

LAUGH to FEEL GOOD!

Laughter IS one of the best medicines for a blue mood.

It decreases the stress chemicals in our body and increases the 'feel-good' chemicals

CLIMATE SCHOOLS

PROBLEM SOLVING

Have you got a problem?

Follow these steps and

TAKE ACTION NOW.

1. Write down the Problem

Be clear and specific.

2. List Solutions

List all the possible solutions you can think of even if they sound silly.

3. Think and Discuss

Think about the good and bad points for each of the solutions. It can help to discuss things with someone else.

4. Choose a Solution

Choose the solution that you think is best.

5. Plan how to make it happen

Write down the steps to make your solution happen. Be clear, specific and realistic.

NOW DO IT!

6. Review

Did things work out? How do you feel? Do you need to try another solution?

What to Do When Lots of Stress Hits all at Once

When you become aware of any of these signs then you can take action to de-stress immediately by using 'slow breathing'.

When lots of stress hits all at once:

My face goes red

I get the shakes

I breathe really quickly

Slow Breathing

1. Breathe in through your nose as you count to 3

Breathe in: 1 and 2 and 3 and

Hold your breath as you say 'pause'

Pause

3. Breathe out through either your nose or mouth as you count to 3

Breathe out: 1 and 2 and 3 and

Continue this breathing until your stress signs decrease. Aim to continue for at least 10 cycles.

APPENDIX I

Measures used in the effectiveness trial

Knowledge Test
The statements below are about stress and coping.
For each statement select either 'True' OR 'False'.

All stress is bad for us.	T	F
Avoiding problems can be a helpful way to cope.	T	F
The way we think about things influences the way we feel about them.	T	F
It is healthy to let gloomy thoughts take over sometimes.	T	F
When we have a problem it is a waste of time to write down every possible solution.	T	F
When we are under lots of stress it can help to breathe quickly.	T	F
When we are feeling very stressed it can help to focus on the way our body is responding.	T	F
It is normal to feel stressed sometimes.	T	F
Stress is potentially harmful to our health- it may cause headaches, weight loss or an upset stomach.	T	F
We can't do much about our stress levels.	T	F
Sometimes there is just nothing that we can do to make things better.	T	F
Getting regular exercise and adequate sleep can help us to manage stress.	T	F

Children's Coping Strategies Checklist

The following is a list of things kids may do when faced with a problem. For each item select the response that best describes how often you usually **did** the behaviour when you **had** a problem **during the past month**. There are no right or wrong answers, just indicate how often you usually **did** each thing in order to solve **your problems** or to make yourself feel better **during the past month**.

When you had a problem in the past month,

1. you thought about what you could do before you did something.

Never	Sometimes	Often	Most of the time
1	2	3	4

2. you tried to notice or think about only the good things in your life.

Never	Sometimes	Often	Most of the time
1	2	3	4

3. you tried to ignore it.

Never	Sometimes	Often	Most of the time
1	2	3	4

4. you told people how you felt about the problem.

Never	Sometimes	Often	Most of the time
1	2	3	4

5. you tried to stay away from the problem.

Never	Sometimes	Often	Most of the time
1	2	3	4

6. you did something to make things better.

Never	Sometimes	Often	Most of the time
1	2	3	4

When you had a problem in the past month,

7. you talked to someone who could help you figure out what to do.

Never	Sometimes	Often	Most of the time
1	2	3	4

8. you told yourself that things would get better.

Never	Sometimes	Often	Most of the time
1	2	3	4

9. you listened to music.

Never	Sometimes	Often	Most of the time
1	2	3	4

10. you reminded yourself that you are better off than a lot of other kids.

Never	Sometimes	Often	Most of the time
1	2	3	4

11. you daydreamed that everything was okay.

Never	Sometimes	Often	Most of the time
1	2	3	4

12. you went bicycle riding.

Never	Sometimes	Often	Most of the time
1	2	3	4

When you had a problem in the past month,

13. you talked about your feelings to someone who really understood.

Never	Sometimes	Often	Most of the time
1	2	3	4

14. you told other people what you wanted them to do.

Never	Sometimes	Often	Most of the time
1	2	3	4

15. you tried to put it out of your mind.

Never	Sometimes	Often	Most of the time
1	2	3	4

16. you thought about what would happen before you decided what to do.

Never	Sometimes	Often	Most of the time
1	2	3	4

17. you told yourself that it would be OK.

Never	Sometimes	Often	Most of the time
1	2	3	4

18. you told other people what made you feel the way you did.

Never	Sometimes	Often	Most of the time
1	2	3	4

When you had a problem in the past month,

19. you told yourself that you could handle this problem.

Never	Sometimes	Often	Most of the time
1	2	3	4

20. you went for a walk.

Never	Sometimes	Often	Most of the time
1	2	3	4

21. you tried to stay away from things that made you feel upset.

Never	Sometimes	Often	Most of the time
1	2	3	4

22. you told others how you would like to solve the problem.

Never	Sometimes	Often	Most of the time
1	2	3	4

23. you tried to make things better by changing what you did.

Never	Sometimes	Often	Most of the time
1	2	3	4

24. you told yourself you have taken care of things like this before.

Never	Sometimes	Often	Most of the time
1	2	3	4

When you had a problem in the past month,

25. you played sports.

Never	Sometimes	Often	Most of the time
1	2	3	4

26. you thought about why it happened.

Never	Sometimes	Often	Most of the time
1	2	3	4

27. you didn't think about it.

Never	Sometimes	Often	Most of the time
1	2	3	4

28. you let other people know how you felt.

Never	Sometimes	Often	Most of the time
1	2	3	4

29. you told yourself you could handle what ever happens.

Never	Sometimes	Often	Most of the time
1	2	3	4

30. you told other people what you would like to happen.

Never	Sometimes	Often	Most of the time
1	2	3	4

When you had a problem in the past month,

31. you told yourself that in the long run, things would work out for the best.

Never	Sometimes	Often	Most of the time
1	2	3	4

32. you read a book or magazine.

Never	Sometimes	Often	Most of the time
1	2	3	4

33. you imagined how you'd like things to be.

Never	Sometimes	Often	Most of the time
1	2	3	4

34. you reminded yourself that you knew what to do.

Never	Sometimes	Often	Most of the time
1	2	3	4

35. you thought about which things are best to do to handle the problem.

Never	Sometimes	Often	Most of the time
1	2	3	4

When you had a problem in the past month,

36. you just forgot about it.

Never	Sometimes	Often	Most of the time
1	2	3	4

37. you told yourself that it would work itself out.

Never	Sometimes	Often	Most of the time
1	2	3	4

38. you talked to someone who could help you solve the problem.

Never	Sometimes	Often	Most of the time
1	2	3	4

39. you went skateboard riding or roller-blading.

Never	Sometimes	Often	Most of the time
1	2	3	4

40. you avoided the people who made you feel bad.

Never	Sometimes	Often	Most of the time
1	2	3	4

41. you reminded yourself that overall things are pretty good for you.

Never	Sometimes	Often	Most of the time
1	2	3	4

When you had a problem in the past month,

42. you did something like computer games or a hobby.

Never	Sometimes	Often	Most of the time
1	2	3	4

43. you did something to solve the problem.

Never	Sometimes	Often	Most of the time
1	2	3	4

44. you tried to understand it better by thinking more about it.

Never	Sometimes	Often	Most of the time
1	2	3	4

45. you reminded yourself about all the things you have going for you.

Never	Sometimes	Often	Most of the time
1	2	3	4

46. you wished that bad things wouldn't happen.

Never	Sometimes	Often	Most of the time
1	2	3	4

47. you thought about what you needed to know so you could solve the problem.

Never	Sometimes	Often	Most of the time
1	2	3	4

When you had a problem in the past month,

48. you avoided it by going to your room.

Never	Sometimes	Often	Most of the time
1	2	3	4

49. you did something in order to get the most you could out of the situation.

Never	Sometimes	Often	Most of the time
1	2	3	4

50. you thought about what you could learn from the problem.

Never	Sometimes	Often	Most of the time
1	2	3	4

51. you wished that things were better.

Never	Sometimes	Often	Most of the time
1	2	3	4

52. you watched TV.

Never	Sometimes	Often	Most of the time
1	2	3	4

53. you did some exercise.

Never	Sometimes	Often	Most of the time
1	2	3	4

54. you tried to figure out why things like this happen.

Never	Sometimes	Often	Most of the time
1	2	3	4

(Ayers, 1989;
http://www.asu.edu/clas/asuprc/pdf/CCSC-HICUPS%20%20Manual2.pdf)

Perceived Competence Scale

The following questions ask about how you deal with your thoughts and feelings. For each question, please circle the number that best describes you.

I feel confident in my ability to manage when I get stressed.

1	2	3	4	5	6	7
not at all true			somewhat true			very true

I am capable of handling it when I get stressed.

1	2	3	4	5	6	7
not at all true			somewhat true			very true

I am able to use skills to help me to think and act in helpful ways when I get stressed.

1	2	3	4	5	6	7
not at all true			somewhat true			very true

I feel able to meet the challenge of controlling my thoughts, feelings and actions when I get stressed.

1	2	3	4	5	6	7
not at all true			somewhat true			very true

(Deci & Ryan, 2002;
http://www.psych.rochester.edu/SDT/measures/comp.html)

Strengths and Difficulties Questionnaire

For each item, please mark the box for Not True, Somewhat True or Certainly True. It would help us if you answered all items as best you can even if you are not absolutely certain.
Please give your answers on the basis of how things have been for you **over the last six weeks**.

	Not True	Somewhat True	Certainly True
I try to be nice to other people. I care about their feelings			
I am restless, I cannot stay still for long			
I get a lot of headaches, stomach-aches, or sickness			
I usually share with others, for example CDs, games, food			
I get very angry and often lose my temper			
I would rather be alone than with people of my age			
I usually do as I am told			
I worry a lot			
I am helpful if someone is hurt, upset or feeling ill			
I am constantly fidgeting or squirming			
I have one good friend or more			
I fight a lot. I can make other people do what I want			
I am often unhappy, depressed or tearful			
Other people my age generally like me			
I am easily distracted, I find it difficult to concentrate			
I am nervous in new situations. I easily lose confidence			
I am kind to younger children			
I am often accused of lying or cheating			
Other children or young people pick on me or bully me			
I often volunteer to help others (parents, teachers, children)			

I think before I do things			
I take things that are not mine from home, school or elsewhere			
I get along better with adults than with people my own age			
I have many fears, I am easily scared			
I finish the work I'm doing. My attention is good			

(Goodman 1999; www.sdqinfo.com)

K6 Psychological Distress Scale

During the past 30 days, about how often did you feel …

1. … nervous?

All of the time	Most of the time	Some of the time	A little of the time	None of the time
☐	☐	☐	☐	☐

2. … hopeless?

All of the time	Most of the time	Some of the time	A little of the time	None of the time
☐	☐	☐	☐	☐

3. … restless or fidgety?

All of the time	Most of the time	Some of the time	A little of the time	None of the time
☐	☐	☐	☐	☐

4. … so depressed that nothing could cheer you up?

All of the time	Most of the time	Some of the time	A little of the time	None of the time
☐	☐	☐	☐	☐

5. … that everything was an effort?

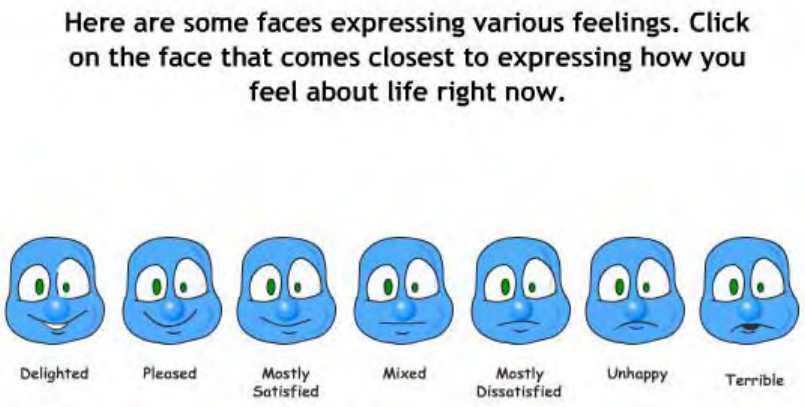
All of the time	Most of the time	Some of the time	A little of the time	None of the time
☐	☐	☐	☐	☐

6. … worthless?

All of the time	Most of the time	Some of the time	A little of the time	None of the time
☐	☐	☐	☐	☐

(Kessler, et al., 2002;
http://www.hcp.med.harvard.edu/ncs/ftpdir/k6/K6+self%20admin-3-05
%20FINAL.pdf)

Delighted/Terrible Scale



(Andrews & Withey, 1976)

APPENDIX J

Excerpt from running sheets for the second draft of the program.

Lesson 1: Recognising the signs of stress

Intro 2/4
Combine intro 2 and 4
Get rid of brain man icon
Get rid of planets and just have:

- Lesson 1: Recognising the signs of stress
- Lesson 2: How we usually deal with stress
- Lesson 3: Stress-less thinking
- Lesson 4: Solving problems
- Lesson 5: Confronting fears
- Lesson 6: Stress-less living

'next'

New Slide
Title reads: Meet the Characters
Pictures of Buddy, Mia, Ben, Buddy's friends
Names of characters next to pictures

Click on Mia and text comes up: Mia is a typical teenager. Lately she has been under a lot of stress and has started to worry about everything

Click on Ben and text comes up: Ben is a typical teenager. Lately he ash been under a lot of stress and this has made him feel down and depressed.

Click on Buddy and text comes up: Buddy helps Mia and Ben to cope better with the stress in their lives.

Click on Buddy's friends and text comes up: Buddy's friends are experts at beating stress. They teach Mia and Ben some important coping skills.
'next'

Intro 6

Get rid of Mia and Ben
Buddy is standing just as he is in the first intro slide
Text to read 'Lesson 1: Recognising the signs of stress'
Buddy says: "In this lesson we will work out the signs that warn us that we are stressed. First we'll help Mia and Ben to work out signs that warn them that they are stressed."
'next'

CARTOON PART1

Slide 1
Get rid of text
Get rid of hand. Have ‘click’ appear over the characters instead
Add names of characters to slide

Slide 6
Add green lamp from slide 1
Replace music player with computer
Move clock to be on Ben’s right
Move drink and chips so that they are together and can be clicked on together

Slide 7
Change Ben so that he is standing a little away from friends and does not look drunk
Make Ben’s friends look like they are having fun
Delete speech bubbles for the friends
Have Ben’s speech bubble say: I really don’t feel like seeing my friends at the moment.
‘back’ arrow to be pointing backwards and positioned in the left lower corner

Slide 8
Delete coach and add Ben in his place
Ben’s speech bubble to say: I might have won a trophy but I just don’t have the energy to play soccer anymore.
‘back’

Slide 65.2
Ben’s speech bubble says: Doing this school project is giving me a headache
‘back’

Slide 10
Table needs to be same colour as in other slides
‘back’
Get rid of one speech bubble.
Other speech bubble to read: I’ve had so much sleep and I still feel like I need more. I’ll just stay in bed a little longer.

Slide 11
Ben’s thought bubble to read: I can’t do all this work and it’s so boring anyway. It just makes me feel down and hopeless.

New Slide
Ben is eating chips.
Ben’s thought bubble says: I’m living on junk food at the moment… it’s the only thing I feel like eating
‘back’

Slide 1b
Get rid of text

[BRUCE- to program so that student can only click on the character they have not already clicked]

Slide 17

Slide 19
Change speech bubble to read: Just thinking about giving that talk makes my tummy pain worse.

Slide 18
Text in thought bubble to read: The first day back at school. I'll never keep up with the work. None of my friends will be in my classes. I'm just worried about everything at the moment.
'back'

Slide 20
Get rid of speech bubble saying: She told us she'd come…
Enlarge Mia and shrink friends
Change Mia's thought bubble to read: I have nothing to wear… I just don't feel like going out with friends right now.
'back'

Slide 21
Add text to Mia 's thought bubble: A sweet dream… but nothing will ever go right for me. It's all hopeless.

Slide 22
Change teacher speech to: You haven't even made a start
Change Mia's thought bubble to read: I just can't concentrate. I can't think clearly.
'back'

New Slide
Mia lying in bed staring at the lava lamp
Thought bubble for Mia reading: I just can't seem to get to sleep!
'back'

Slide 23
Stop animation as soon as Buddy gets to the middle of the screen
Take the speech bubble from slide 25 and transplant it here
'next'

Slide 26

Slide 27
Take Buddy's speech bubble from slide 28 and transplant it here
'next'

Slide 28
Cut Ben's speech bubble
Change Buddy's speech bubble to read: "I'm Buddy and I'm here to help. We are on our way to learn more about ***COPING WITH CHALLENGE***.
'next'

Slide 31
Shorten slide by cutting out beginning
Get rid of 'Mind Machine'
Change sign on planet to a picture of the Mind Machine
'next'

Slide 35
Get rid of sign saying Mind Machine
Change sign to read: Are you stressed? Come on in to find out more

Slide 38
Delete text in Buddy's speech bubble and replace with: Come on let's go in.

Slide 39
Change writing as in slide 35
Buddy doesn't fly away but leaves spaceship outside

Slide 40
Buddy enters with Mia and Ben

Slide 41
Buddy to be seated on scaffolding to left of screen
Get rid of stress meter
Get rid of small screen directly under larger screen. In all slides Mind Machine needs to have only three bits- a large screen for the action, a smaller screen under this for some text and a small bit under this with the 'start' 'done' and 'next' buttons.
Text on screen below large screen to read: How do you know when you are stressed? Click 'start' to find out more
'start'

Slide 43
Mind machine to appear with 3 screens as above
Text under big screen to read: Common signs of stress
Text on screen to fade in reading:
- I feel really tired and/or I have no energy
- I can't sleep
- I sleep more than usual

'next'

Slide 43a
Same as above but text on screen to read:
- I don't feel like eating

- I eat more than usual
- I eat lots of junk food

‘next’

Slide 43b

Same as above but text to read:

- I get pains in my tummy, my shoulders or my back
- I get headaches
- I get sick (eg sore throat, cough, asthma gets worse)

‘next’

Slide 43c

Same as above but text to read:

- I can’t concentrate
- I can’t get my work done
- I’m late for everything

‘next’

Slide 43d

‘Same as above but text on screen to read:

- I don’t feel like seeing friends
- I spend more time with my friends
- I spend lots of time on my own

‘next’

Slide 43e

Same as above but text to read:

- I feel down or hopeless, like nothing will ever go right
- I worry all the time about everything
- I get angry and loose my temper

‘next’