Student and Teacher Stress in High-stakes Testing

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High-stakes testing is common to educational systems around the globe. The pressure to perform well in high-stakes tests is a source of pressure for teachers and for students. A systematic review was conducted to assess whether teachers perceived high-stakes testing to be stressful. The review found that teachers perceive high-stakes testing to be stressful due to perceived pressure to increase student results from school leaders, a lack of autonomy and control over what is taught, the impact they believe the tests have on students and the lack of control they have over external aspects that impact student results. The *Study without Stress* **(SWOS)** program is a manualized CBT group program designed to reduce stress in HSC (high-stakes test at the end of formal schooling in NSW, Australia) students. The SWOS program was found to significantly reduce stress and depression, and increase total self-efficacy, academic self-efficacy and emotional self-efficacy in students who completed the program from pre to post intervention as compared to students in the waitilist control group.

Statement of Candidate

I certify that the work in this thesis entitled "**Student and Teacher Stress in High-Stakes Testing"** has not been previously submitted for a degree nor has it been submitted as part of requirements for a degree to any other university or institution other than Macquarie University.

I also certify that the thesis is an original piece of research and it has been written by me. Any help and assistance that I have received in my research work and the preparation of the thesis itself have been appropriately acknowledged.

In addition, I certify that all information sources and literature used are indicated in the thesis.

The research presented in this thesis was approved by Macquarie University Ethics Review Committee, reference number, 5201400841 on 1st October, 2014.

Catherine Lowe

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Teacher's beliefs about the impact of high-stakes testing on teachers' stress levels: A systematic review

Abstract

Objectives: Schools and teachers are increasingly being held accountable for the results of the students in their care, specifically through state or nationally mandated tests. These tests have been called "high-stakes" since the test results have important ramifications for students, teachers and schools. Occupational stress models would suggest that teachers would find these high-stakes tests to be very stressful, which could lead to negative consequences for the teachers themselves and the students they teach.

Method: Database searches identified 85 studies, of which 9 addressed teacher stress in relation to high-stakes testing. The findings were categorised into four themes: pressure to increase scores from school leaders, negative impact on teaching and learning, effects of testing on students and being held accountable for things outside of their control.

Results: The literature indicates that teachers report high-stakes testing to be very stressful. Teachers report pressure from principals and administrators to increase student results in high-stakes tests, a lack of autonomy over their teaching practices with many reporting engaging in practices they feel are not in the best interests of their students. This is consistent with occupational stress models that suggest high-demands combined with lack of autonomy and social support result in high levels of job stress.

Conclusion: Teachers find high-stakes testing stressful and given the correlations between teacher stress and poor outcomes for themselves and the students they teach, it would seem an area worthy of further study and intervention.

Introduction

In the last twenty years, but most particularly the last ten years, the influence of accountability policies in education has been evident in schools throughout many countries in the world, particularly the USA, Great Britain, and to a lesser degree, Australia (Hill, 2003). The accountability movement stems from education being recast as being vital to the economic performance of a country in the global marketplace (Thompson & Harbaugh, 2013). As countries compete for positions within a competitive global marketplace, many governments have become increasingly interested in all aspects of their education systems (Anderson, The No Child Left Behind act and the legacy of federal aid to education, 2005). Schools and teachers are accountable for results of students in their care. The main way schools are accountable is through their students' results in state or nationally mandated tests. These tests have been described as "high-stakes tests" since the test results have significant impacts on students, teacher and schools. Student results are used to make decisions about student eligibility to progress to the next level of school, for administrator position and reward system and for resource allocation, which are all very "high-stakes". In these results-based accountability systems, students' learning failures are attributed to weaknesses in educational programs and practices, rather than characteristics or backgrounds of the students themselves (Anderson, 2005).

In the USA, accountability and high-stakes testing has been in force since the passing of the *No Child Left Behind (NCLB) Act* in 2002 (Kruger et el, 2007). The stated purpose of this Act was "to ensure that all children have a fair, equal and significant opportunity to obtain a high quality education and reach, at a minimum, proficiency on challenging state academic achievement standards and state academic assessments"(U.S. Department of Education, 2001). States were given until 2014 to bring all students to the required proficiency levels in Maths and Reading. As part of *No Child Left Behind*, schools are expected to make adequate yearly progress towards universal proficiency and those schools

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who fail to do so face punitive sanctions from the government, such as school administration being taken over, and even school closure (Smith & Kovacs, 2011; Cruz & Brown, 2010). In some states in the USA, teachers' pay is also linked to their students' performance, with bonuses being paid to teachers in high-performing schools and the threat of job loss in schools deemed to be failing (Kruger, Wandle, & Struzziero, 2007). In addition to the state and federal government sanctions, schools are under pressure by the mass media, who publish the results, often in league tables allowing for easy comparisons between schools (Kruger et al, 2007). In the USA, there is now the federal "Race to the Top" grant initiative, where funds are given to states achieving the required benchmarks in the Common Core State Standards. As part of the Race to the Top initiative, States are encouraged to use student performance in high-stakes assessment as an important factor in Teacher Evaluation programs (Saeki, Pendergast, Segool, & von der Embse, 2015). Whilst the evidence is somewhat mixed, there is some evidence that accountability policies such as *No Child Left Behind* in the USA have increased students' academic achievement (Dee & Jacob, 2011). An additional benefit of such policies is a more uniform curriculum across countries, with a National Curriculum having been developed in Australia and the Core Common Standards being enacted in the USA.

Australia has adopted these accountability policies, which are enacted through compulsory National Assessment Program – Literacy and Numeracy (NAPLAN) testing, where students in various grades are tested in reading, writing and maths. Schools results are published on the *MySchool* website, along with comparisons with local and "statistically similar" schools, based on the Index of Community Socio-Educational Advantage (ICESA) (Thompson & Harbaugh, 2013). NAPLAN is considered to be a high-stakes test because the results, and their subsequent publication on the *MySchool* website, has significant impacts of parental choice, teacher and principal job security and funding for the school (Polesel, Dulfer, & Turnbull, 2012). The New South Wales Board of Studies, Teaching and Educational Standards (BOSTES) recently announced new standards in literacy and numeracy to be rolled

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out over the next few years. A new minimum standard in literacy and numeracy will be established from the year 2020, meaning students will not be awarded an HSC unless they have achieved the minimum standard. Students in Year 9 from 2017, will be able to meet this standard by achieving a Band 8 in NAPLAN reading, writing and numeracy. From 2018, an online literacy and numeracy test will be available for students to demonstrate they have met the standard (BOSTES NSW, 2016).

In the state of New South Wales, Australia, students completing their final year of high school sit the Higher School Certificate (HSC). Assessments take place throughout the year and culminate in the trial examinations, a set of external exams. As well as school-based assessment tasks and the trial examinations, students sit external final exams, which are worth 50% of their final mark. The HSC can be classed a high-stakes test due to the importance of the students' results, not only for the students themselves, but for their schools. The HSC is high-stakes for students as their performance in them has important ramifications for gaining entry into university courses as well as gaining employment. The HSC is high-stakes for schools as HSC results are published in the state's newspapers and schools are ranked based on their performance in the HSC. This may be of particular consequence to private schools, where fees are moderate to high and parents expect their children to attain good results.

High-stakes tests have been described as a significant stressor for schools, teachers' and students (Kruger et al, 2007). What little research there is into the HSC and student stress levels have found that students find this year of high-stakes testing very stressful and over 40% experience a high level of distress (Smith & Sinclair, 2000; North, Smith & Gross, 2015). In fact, the Board of Studies, which is the governing body responsible for Education in New South Wales that sets the syllabus and the external HSC exams, recognises how stressful the HSC has become for students and has recently announced that it will be changing the format of the HSC, including capping the number of school-based assessments to reduce stress in HSC students (BOSTES NSW, 2016).

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The recently released Youth Mental Health Report (Ivanic, Perrens, Fildes, Perry & Christensen, 2014), which surveyed 14, 461 young Australians between the ages of 15-19, found that coping with stress and school and study problems are the two top issues of concern. Research from the USA has found that concerns about tests, grades and homework are some of the most prominent stressors in high school students (de Anda, Baroni, Boskin, Buchwald, Morgan, Ow, Gold & Weiss, 2000). Multiple stressors have been found to predict later psychological problems in adolescents (Grant, Compass, Thurm, McMahon & Gipson, 2004). In fact, adolescence is a time where there is a relatively high prevalence of mental health disorders. The most recent National Survey of Mental Health and Wellbeing (NSMHW)(ABS, 2009) found that more than a quarter (26%) of 16-24 year old Australians have experienced a mental disorder in the past 12 months. This is of great concern, especially in light of the fact that suicide is the leading cause of death for young Australians aged 15-24. The diathesis-stress model has been widely researched in the literature and suggests that in vulnerable people with a biological predisposition, heightened stress can lead to mental health symptoms (Zuckerman, 1999). Given that many mental health disorders begin to present in adolescence and teenagers find school to be a prominent stressor (Ivanic et al, 2014; de Anda et al, 2000) it seems that interventions that make school less stressful would have a positive impact on the lives of young people.

Stress has been described by social cognitive theorists (Lazarus & Folkman, 1984) as being a result of an individual's appraisal of a situation as being threatening relative to his personal and social resources. The definition of teacher stress that is commonly cited in the literature is the one proposed by Kyriacou (2001) which states that teacher stress may be defined as the experience by a teacher of unpleasant, negative emotions, such as anger, anxiety, tension, frustration or depression, resulting from some aspect of their work as a teacher.

There are competing theories in the field of occupational stress (Guglielmi & Tatrow, 1998). However the two frameworks that seem to be the most dominant are very similar, although they describe contstructs differently. The first theory is the Jobs-Demand-Control theory proposed by Karasek (1979, cited in Guglielmi & Tatrow, 1998). In this model, which is also called the job strain model, two factors, job demands (work load, deadlines etc) and decision latitude (autonomy and control) interact to predict the level of job strain. The highest level of strain or occupational stress, comes from jobs with high demands and low contol, and the lowest level of job strain coming from jobs with low demands and high control. The model would predict that "teachers who work with difficult student populations in crowded classrooms, with *little contol over the academic curriculum* (italics added) and limitied ability to affect decisions about resource allocations, would be at greater risk for stress-related illnesses than college professors who face high demands but can exert greater control over academic and nonacademic aspects of their job." (Guglielmi & Tatrow, 1998, p. 91). The job demand-control model predicts that teachers find high-stakes testing stressful because they have no control over the mandated tests. The job demand-control-support model (Karasek & Theorell, 1990) is a revision of this model that includes the social support available to the individual. Jobs with the highest strain would therefore be ones where the demands are not matched by adequate levels of decision making control and/or support from supervisors and colleagues.

The second theory that is influential in the literature is the Job-Demand-Resources theory (Hakanen, Bakker & Schaufeki, 2006) that states that occupational stress can be avoided if individuals have access to resources to meet the demands. This means that high demands alone, do not lead to negative outcomes from stress. Many possible resources have been researched in exploration of this theory, including social support and autonomy or control. In this way, it seems that both of the major theories of occupational stress, including

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teacher stress, would suggest that autonomy and control, as well as social support are important factors that decide whether the high demands of a job lead to stress and its negative effects.

In accordance with both influential theories of occupational stress, it is likely that teachers would find high-stakes testing to be stressful due to the perceived lack of control. Teaching is a demanding job (Kyriacou, 2001) and given that teachers are being judged on their students' results in these high-stakes tests, the demands of preparing students for these tests are high. Given that principals themselves have little control over how high-stakes assessments are used to judge schools, they too may be experiencing increased stress and therefore may not be able to be a source of social support to teachers. This may result in school leaders placing further pressure on teachers.

Given the spread of accountability policies throughout the world and the continued use of high-stakes testing as part of these policies, it seems important that we know how these policies are impacting of the perceived stress levels of teachers. A systematic review of the literature in this area is therefore an important first step that may provide direction as to possible areas of intervention that may be of benefit to both teachers and students.

Method

Electronic databases were searched for peer-reviewed published papers relating to accountability or high-stakes testing and teacher stress. Both psychological and education databases were searched (PsychInfo, ERIC, A+ Education). The search terms used were: Accountability OR (high stake* test* OR high stake* testing) AND (teacher* stress). Studies were included that (1) were published between 1990 and December 2015, (2) included research on the construct of teacher stress related to high-stakes testing, (3) had participants who were teachers and (4) were published in peer-reviewed journals in the English language. The methodological quality of the studies were evaluated based on the Critical Appraisal

Skills Program (CASP, 2014) criteria combined with the REPOSE guidelines (Newman & Elbourne, 2004). The studies were rated on a 6-point rating scale in which 1 represented poor quality and 6 represented the highest quality.

Results

The search strategy identified an initial 85 studies. Of these, six were excluded as they were dissertations, which left 79 scholarly journal articles. A further six were excluded as they were conducted prior to 1990. Abstracts were reviewed of all 73 articles and from this 15 were found to be related to teacher stress so were chosen for full text review. Of these 15 papers, two were position papers that did not add to the empirical knowledge base, but rather suggested the need to re-evaluate, or provide some intervention to help ameliorate the stress caused to teachers by high-stakes testing. Both of these papers included a literature review and a bibliographic examination of these papers was conducted. A further three studies were identified from this process, however as all w ere research reports, not published in scholarly journals, these papers were not added to the current review. A further four were excluded as they did not directly measure teacher stress in relation to high-stakes testing or accountability. Nine articles were chosen for the final review (see Table 1 for an overview).

The methodological quality of the studies is reported in Table 2. Given the small number of studies found in this area, inclusion criteria in terms of study design were not stringent and reporting occurred for all available studies. The quality of the studies varied from 4 to 6 with 55.6% of the studies obtaining a 4 (moderate), 22.2% obtaining a 5 and 22.2% obtaining a 6 (good).

All studies found that based on self-report teachers do perceive high-stakes testing to be stressful. The studies reviewed are discussed surrounding the following themes that emerged as to why teachers may find high-stakes teaching stressful; (1) pressure to increase scores from school leaders (principals and administrators), (2) negative impact on teaching

and learning, (3) effects of testing on students, and (4) being held accountable for things outside of their control. Some studies are reported under multiple themes as their findings related to more than one theme.

Table 1. Studies included in the literature review

Authors/Date	Sample	Sample Size	Study Design	Research Questions	Findings related to how accountability and high-stakes testing impacts of teachers' stress
Smith & Kovacs (2011)	All K-8 teachers from one school district in the USA.	488 teachers, 47.1% of entire K-8 teacher population in the district	Survey	Is NCLB (No Child Left Behind) affecting the district's curricular offerings? Is NCLB contributing to teacher attrition?	86% of teachers reported being under pressure to raise test scores. 71.7% of teachers surveyed believe preparing students for standardized testing is reducing the quality of the instruction they are able to provide students. 55% of teachers surveyed said they were either thinking about quitting or could not make a commitment to staying in the profession. In the coded responses to the open-ended question of what would they change about their profession, the most common code category was testing/NCLB, meaning more than anything else, they wished to change something about testing/NCLB.
Jones et al. (1999)	Elementary school teachers in North Carolina	236 teachers of 470 contacted	Survey	How do teachers perceive the accountability program? How the program affects instructional practices? How has the program influenced teachers' morale?	77% of teachers surveyed felt morale was lower as a result of the accountability program. 67% of respondents stated they believed the accountability program would not improve the quality of education in their schools. More than 76% of responding teachers felt that their jobs were more stressful than before the accountability program was implemented.
Barksdale-Ladd & Thomas (2000)	Teachers who were enrolled in Masters or Doctoral level studies. Parents	59 teachers who taught Grades 1-8. 20 Parents.	Focus groups and individual interviews	What perceptions do teachers hold about mandated standards and related tests? How do teachers make instructional decisions given these mandates?	Teachers feel constant stress and pressure to ensure high scores on state tests. Direct sources of pressure included; statements made and memos sent to teachers by administrators, conversations and meetings with other teachers, and the media.

Cormack & Comber (2013)	The Principal and teachers who taught NAPLAN years in a rural school in South Australia.	No number given. The Principal and all teachers in the school.	Focus groups and individual interview	How does the language and practices of NAPLAN position the principal and teachers? What are the effects of being classed as "failing" NAPLAN on their lived experience?	Whilst the principal was able to see the review as a result of performing poorly in NAPLAN as a opportunity for expanding his knowledge and experience, some teachers it was the stigmatisation of failure that stood out for its implied judgement of their skills as teachers. Teachers' experienced heightened anxiety, based on feeling publicly judged and questioned the validity of the tests for their students, who experienced high levels of poverty.
Von der Embse et al. (2015)	Teachers in a southeastern state in USA	8,084 education staff, including 6,788 teachers	Survey	To evaluate the reliability and construct-validity of a new assessment of educator stress, the *Educator Test Stress Inventory* (ETSI).	The newly developed ETSI was an important first step to examining stress related to high-stakes testing as opposed to more general occupational stress for teachers. Descriptive statistics indicated a number of respondents reporting a high degree of stress related to testing. 28% of participants experienced significantly "high" anxiety as measured on the STAI. Primary sources of stress came from administrator pressure (75% indicating agree or strongly agree) and parents (36% agree or strongly agree).
Richards (2012)	K-12 teachers in the USA	1201 K-12 teachers	Survey	What are the sources of teacher stress? What are the manifestations of that stress? What coping strategies are teachers using more often?	Teachers report feeling stressed with many reporting symptoms of burn-out. Accountability was mentioned as the fifth top source of stress for teachers. "Feeling the constant pressure of being "accountable" is stressful. "
Jones & Egley (2004)	3-5 grade teachers in Florida	708 teachers	Survey	To systematically categorise teachers' concerns about	After several years of accountability, teachers' views about accountability remain more negative than positive. Teachers had many concerns relating to

				testing. To see if teachers' mostly negative views about testing have improved after a decade of accountability.	accountability including 22.5% who were concerned about too much pressure and stress on teachers.
Cruz & Brown (2010)	South Texas Elementary Teachers	192 teachers	Survey	How do teachers perceive the demands to improve test results? How does state testing influence instructional practices? What do teachers perceive to be the effects of the accountability system on students and learning?	Most teachers reported high or extremely high pressure to improve test results. Many teachers shared that they felt they had a great deal of stress due to the pressures of accountability and that it changed the way they felt about their work.
Snow-Gerono & Franklin (2006)	Mentor teachers in Elementary Schools	91 Mentor Teachers	Survey and Focus Groups	What are Elementary mentor teachers considering of accountability structures on their stress levels, job satisfaction, and curriculum and instruction in their classrooms?	All the teachers surveyed indicated they felt increased pressure to improve their students' standardised test scores – with the greatest pressure being felt from the media, school boards and their principals. As pressure to improve students' scores increased, teachers' job satisfaction decreased.

Table 2. Quality assessment of included studies

Quantitative Studies	Addressed focused issue	Acceptable recruitment	Satisfactory response rate	Acceptable sample size	Valid and reliable measures of stress used	Confounding factors/limitations considered	Number of criteria met
Smith & Kovacs (2011) * Mixed method	Yes	Yes	Yes (47.1%)	Yes	No	Yes	5
Jones et al. (1999)	Yes	Yes	Yes (50.2%)	Yes (236)	No info on measures used	No	4
Von der Embse (2015)	Yes	Yes	No (13%)	Yes (8050)	Yes	Yes	5
Richards (2012) * Mixed method	Yes	Yes	No (no info)	Yes (1201)	Yes	No	4
Cruz & Brown (2010) * Mixed method	Yes	Yes	Yes (53%)	No (192, whereas sample size computations indicated N=369 was desirable).	Yes	No	4
Qualitative Studies	**Addressed focused issue**	**Acceptable recruitment**	**Qualitative methodology is appropriate**	**Participants and research setting are adequately described**	**Analysis validated by an additional researcher**	**Researcher's own perspective adequately considered**	**Number of criteria met**
Snow-Gerono & Franklin (2006)	Yes	Yes	Yes	Yes	No	No	4
Barksdale-Ladd & Thomas (2000)	Yes	Yes	Yes	Yes	Yes	No	5
Cormack & Comber (2013)	Yes	Yes	Yes	Yes	No	No	4
Jones & Egley (2004) *Mixed method	Yes	Yes	Yes	Yes	Yes	No	5

Pressure to increase scores from School Leaders

Four studies reported that teachers felt pressured to increase test scores by School Leaders (i.e., Principals or Administrators). In one qualitative study of a high methodological standard, teachers and parents were interviewed about their experiences of high-stakes testing across two different states in the USA. For the purposes of this review, only the data from the teacher interviews was considered. Individual interviews and focus groups interviews were conducted, the data from both was collapsed and analysed, with eight themes emerging as commonalities. Only the ones relevant to this review are reported, which included (a) perceived pressures exerted on teachers for students to perform well, (b) instruction/curriculum changes due to test performance, and (c) teachers' accounts of children's responses to the tests. Teachers reported feeling constant stress and pressure to ensure high scores on the state tests. The sources of pressure included statements made and memos sent to teachers by administrators, conversations and meetings with other teachers where testing is a topic and the media (Barksdale-Ladd & Thomas, 2000).

Another study that found that teachers reported experienced pressure to raise test scores from school leaders was of high methodological quality. In their study that aimed to create a psychometrically defensible measure of stress specifically related to high-stakes testing, von der Embse et al. (2015) found that 28% of the 8, 084 public school employees surveyed reported significantly high anxiety as measured by the State-Trait Anxiety Inventory (STAI) (Spielberger & Vagg, 1984). The primary source of reported test stress came from administrator pressure, with 75% of respondents agreeing or strongly agreeing that they feel pressure from administrators to raise student test scores. In this study, the researchers created a brief scale that measures both the sources and manifestations of test stress for teachers (Educator Test Stress Inventory – ETSI), which has adequate internal consistency, as well as adequate factorial validity, face validity and convergent validity. It is a promising measure that can be used in future research to measure teacher stress throughout the school year in a longitudinal study design.

In their mixed methods, cross-sectional study of mentor teachers' views of the implementation of *No Child Left Behind* (NCLB), Snow-Gerono and Franklin (2006), found that

all mentor teachers (experienced teachers who act as supervisors to undergraduate teaching students engaging in school placements), surveyed felt increased pressure to improve their students' test scores, with the greatest pressure being felt from the media, school board and their principals. Ninety-five percent of the teachers indicated that testing creates a lot of stress for teachers and students. The narrative comments of the surveys triangulated this finding with the majority of comments focusing on the increased pressures teachers felt in their work lives due to high-stakes testing. Results from this study may not be generalizable due to the small sample size (106 mentor teachers) and the lack of information regarding the measures used. The researchers used focus group interviews to help triangulate the survey data, however, no information about the themes from the focus group interviews were reported.

Cruz and Brown (2010) used a mixed methods survey design to investigate the impact of accountability and high-stakes testing on teachers in South Texas. They found that teachers reported that high-stakes testing was stressful, with the most perceived pressure coming from their principals, followed by the central office and then from other teachers. Many of the narrative comments from the surveys related to feeling an overwhelming sense of pressure and stress due to the tests. This study, while descriptive in nature, has moderate methodological quality, using reliable and valid instruments and a response rate of 53%. The sample size of 192 was smaller than the 369 that they had determined to be necessary through sample size calculation.

Negative impact on Teaching and Learning

There has been a much larger body of research that centres on the perceived impact of high-stakes testing on the curriculum and pedagogical practices (Koretz, 2002; Thompson & Harbaugh, 2013) with most research agreeing that the high-stakes tests have led to a narrowing of the curriculum to focus on only the areas that are tested and of teachers' teaching to the test (Menken, 2006). Although this review was focused on the impact of high-stakes testing on teachers' stress levels, this was a theme that was clear in the papers that were reviewed. It could be expected in models of occupational stress, that being forced to teach only what is being tested

on the test may restrict autonomy, leading to higher job stress. Five of the nine studies reviewed referred to high-stakes tests having a perceived negative impact on teaching and learning practises.

In Barksdale-Ladd and Thomas' (2000) qualitative study, although no direct questions were asked about instructional practices, 75% of teachers indicated that the high-stakes tests had led to changes in their instructional practices, with many giving examples of instructional practices that have been discounted in favour of test prepartion. These include instructional practices that are pleasant for the children and the teacher, provide reinforcment of skills and promote in-depth understandings of content, involve collaboration and have goals that are not measured by tests (such as the development of attitudes). Generally teachers reported that their teaching was "worse instead of better" due to having to prepare children for testing.

In Snow-Gerono and Franklin's (2006) study of mentor teachers in which 95% of teachers indicated that testing creates a lot of tension for teachers and students, 82% of teachers made sure "to a thorough extent" that test objectives were covered in their teaching as well as adjusted instructional plans based on students' most recent test results. In addition to this, significant instructional time was spent throughout the year in test preparation activities in 68% of classrooms and curriculum changes had occurred to allocate time to improving test scores in 89% of the classrooms. These researchers found that overall, as pressure to increase test scores increased, job satisfaction decreased, with statistically significant relationships between job satisfaction and changes in teachers' control over classroom curriculum.

In their survey of 488 teachers, Smith and Kovacs (2011) found that 86% felt under pressure to improve test scores. They found that 74% of teachers believed students take too many tests and that 71.7% believed that preparing students for standardised testing was reducing the quality of instruction they are able to provide students. Due to the increased pressure to raise test scores and the narrowed focus on teaching only what would be tested, 72% of respondents disagreed with the statement that "NCLB is a positive step in education reform".

In their cross-sectional descriptive survey study of 236 elementary school teachers in North Carolina, Jones et al. (1999) found that 75% of the teachers surveyed felt their jobs were more stressful due to the high-stakes testing program. Seventy-seven percent felt the morale was

lower and sixty-six percent felt that the accountability program would not improve the quality of education in their schools.

Jones and Egley (2004) carried out a large qualitative study of 708 teachers across many schools and districts in the state of Florida. They used a grounded theory approach to generate codes to analyse the data, with mulitple researchers coding the data, with an inter-rater reliabilty rate of 92.2%. They reported ten themes coming from the data, of which two were related to negative impacts on teaching as a result of high-stakes tests. The first theme was that testing "narrows the curriculum", with 13.1% indicating that testing narrows the curriculum by forcing them to spend more time on subjects and topics that are tested, which concerned teachers as they felt it was at a cost of a well-rounded education.

The other theme that was found was negative effects on teaching and learning, with 35.2% of teacher responses in this category. The most common sub-category within this theme was that it forces "teaching to the test", with teachers saying that they teach skills and content to ensure students score well on the tests.

Effects of Testing on Students

Four of the studies found that teachers reported that high-stakes tests had negative effects on their students. In a qualitative study that used individual interviews and focus group interviews, Barksdale-Ladd and Thomas (2000) found that many teachers had concerns related to the consequences of tests for students. They found no evidence that teacher felt the test preparation and test taking had any positive effects on the students and many were concerned about the test-related stress impacting negatively on the students. As well as the impacts of the stress, teachers also felt that often, the test scores were not an accurate reflection of the student's knowledge and skills. Similarly, Cruz and Brown's (2010) mixed methods survey found that many of the narrative comments referenced the stress that is experienced by students due to high-stakes testing.

Jones et al. (1999) asked teachers to assess the impact of the state mandated high-stakes tests on their students. Although 28% thought that their students were more prepared for learning, 48.5% indicated that the testing program has a negative impact on students "love of

learning." Furthermore, although 15% indicated that their students had more confidence, 24% felt their students were less confident and 61% felt that their students felt more anxiety than they used to due to the testing program.

In Jones and Egley's large qualitative study, they found that 25.2% of teachers reported that testing had caused students to feel too much pressure and stress. These researchers suggest that given the evidence that high student anxiety impacts negatively on student performance (Everson, Smodlaka, & Tobias, 1994), this is something that should be taken seriously.

Lack of control

This was a theme that was mentioned in four of the studies and seemed to be a cause of a lot of stress to teachers. Across the studies it was reported that teachers felt that they were being held directly accountable for their students' results on high-stakes test, yet had no control over aspects of their students' lives that they felt have a big influence on student performance, such as socioeconomic status and emotional health. Teachers remarked that the public nature of the accountability systems increased their anxiety due to the possible embarrassment of being thought of as a poor teacher due to low student performance.

Jones et al. (1999) found that teachers found it particularly stressful to be judged on their students results, when they felt that their students' scores were often a reflection of other factors such as their socio-economic status. More than three-quarters (77.2%) of the North Carolina teachers surveyed felt that teachers should not be rewarded for student achievement in high-stakes tests and 89% indicated they felt "labeled" as a result of end-of-year grades. These researchers suggested that teachers felt embarrassed and guilty when their schools' scores were published in the newspaper and go to great lengths to ensure the scores will be topnotch.

Cormack and Comber (2013) conducted a qualitative study of a rural primary school in a very low socio-economic area outside Adelaide in South Australia. They conducted focus group interviews with teachers and an individual interview with the principal of a school that was deemed to be failing based on their results in Australia's national standardised tests (NAPLAN).

They found that the teachers' responses showed heightened anxiety because of the judgements they faced based on their students' NAPLAN results. Teachers felt that NAPLAN results were more a measure of the social disadvantage facing their students than of their teaching practices, however, they understood that their school would be judged solely on the NAPLAN data and felt they had no choice but to try to improve results, even if that meant a narrowing of the curriculum and a loss of "variety."

Jones and Egley's (2004) study found that teachers had a major concern regarding schools being assigned grades based on their students' results in high-stakes tests, with 93.7% indicating they felt it was unfair to assign grades to schools based on student results. Teachers indicated they felt it was unfair to compare student results when student backgrounds were not the same. Teachers cited many factors beyond teachers' control that impact on test results such as students' socioeconomic status, their existing cognitive abilities, emotional stabilty and cultural values and norms. These researchers added that the problem of holding teachers accountable for these uncontrollable variables is exaccerbated by the public reporting through the media. They suggested that this type of public reporting suggests a cause-and-effect relationship between the quality of teachers and the school rating.

Richards (2012) conducted a survey of teachers asking about their sources of stress. Teachers in California indicated that they felt a lack of control over school decisions that affect their students and themselves. They also indicated that feeling the constant pressure of being accountable was stressful.

Discussion

Although there was only a small number of studies found that examined the impact of high-stakes testing on teachers' stress levels, all of the studies found that teachers perceived high-stakes tests to be stressful. Schools are accountable for student results and are expected to produce students that will be able to compete in a global marketplace. Governments have been advocating educational reforms in the last 20 years that have focused on (1) standards, benchmarks or goals, (2) a test designed to measure the degree to which these goals have been achieved and (3) high-stakes attached to the results which are intended to influence the

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behaviour of teachers and students in order to improve educational outcomes for students (Pendulla, et al., 2003).

Teaching has been described as one of the more stressful occupations (Kyriacou, 2001) and high-stakes testing has added to what is already a demanding job. The evidence reported in this review suggests that teachers feel a lack of autonomy over classroom practices due to high-stakes testing (Jones & Egley, 2004; Jones, et al., 1999; Cormack & Comber , 2013; Richards, 2012). Further, teachers reported that rather than being a social support, school principals and administrators were in fact a main source of pressure to increase students' test results (Barksdale-Ladd & Thomas, 2000; Cruz & Brown, 2010; Snow-Gerono & Franklin, 2006; von der Embse et al.,2015). These findings are in line with both the job demand-control-support model and the job demands-resources model which suggests that high demands with a lack of autonomy and social support, combine to create occupational stress.

Teacher stress has been associated with many poor outcomes for the teachers themselves, such as burnout, depression, poor performance, absenteesim and teacher attrition (Klassen, Usher, & Bong, 2010). In addition to the poor outcomes for teachers, it is likely that having teachers who are experiencing high levels of stress will impact negatively on students. One of the studies reviewed here indicated that teachers felt they transmitted their anxiety to the students (Barksdale & Ladd, 2000). Saeki et al. (2015) suggested another way that teacher stress may impact on student stress is through the increased use of fear appeals. Fear appeals are messages that teachers use about the consequences of failing upcoming exams and tests. These fear appeals may be well-intentioned by teachers, as they hope to motivate their students to prepare themselves for high-stakes tests, but there is evidence that the use of fear appeals increases studetns' anxiety about testing (Putwain & Roberts, 2009; Connor, 2003). As well as heightened anxiety, fear appeals have been associated with lower acadmeic acheivement (Putwain & Symes, 2011). In summary, there is preliminary evidence that teacher stress, may be associated with student stress (Denscombe, 2000) but this hasn't yet been examined in the literature, and is an important area of future study.

Limitations

Several limitations exist within the current, small evidence base, meaning that only limited conclusions can be drawn about perceived teacher stress in relation to high-stakes testing. All but one of the studies were descriptive in nature and used a cross-sectional, survey design. Although this is a design that is commonly used in educational research, it means that causal direction cannot be determined. Perhaps teachers who are stressed due to other factors (overcrowded classrooms, difficult student population, personal circumstances) may be likely to report that high-stakes tests are stressful. Most of the surveys were mixed methods, meaning that they gave some rich qualitative data, which helped to triangulate the quantitative data. Given that high-stakes testing is being used frequently around the world, some more robust designs that would allow for a closer examination of how high-stakes testing impacts on teacher stress would be beneficial.

In addition, all studies except for the one by von der Embse et al. (2015) used general measures of stress or instruments that were developed by the researchers for the study, meaning that the results are limited as the job stress that was measured may have corresponded to multiple stressors, in the case of general measures, or may not have sufficient validity and reliability (Guglielmi & Tatrow, 1998). The von der Embse (2015) study developed a psychometrically sound new measure to assess perceived stress related to high-stakes testing is a very promising one. If future research used the ETSI (von der Embse et al, 2015) to measure teacher stress, at multiple times throughout the year, as high-stakes tests drew closer, we would have a valuable source of information about how strongly teacher's perceive that these high-stakes tests impact on their stress levels. In addition, a quasi-experimental design could be used to assess teachers stress levels by comparing those who teach in years that have high-stakes assessments, as compared to those who teach in years that do not have high-stakes assessments, or following teachers across years as they switch from teaching grades with high stakes testing or not.

A further limitation of the current literature is the dominance of USA-based data. Although this review sought to review international research, given the spread of accountability throughout many countries in the developed world, such as England, Ireland, Australia, Europe (Anderson, 2005), only one Australian study was found using the search strategy of this review.

That study had limited generalisability as it was an in-depth qualitative study which focused on the experience of teachers in one school that had experienced failure in a set of high-stakes tests (NAPLAN).

Conclusion

Despite the limitations of the current evidence base, there is evidence that teachers perceive high-stakes testing to be stressful due to lack of control over the testing curriculum, lack of teaching variety, pressure to achieve educational targets and lack of social support. However, the studies in this area have been mostly qualitative and cross-sectional, and so more research is needed to better understand the direction of causality. Although it is likely that the increase in accountability of schools to achieve educational standards has also lead to increased teacher stress, this has not been systematically evaluated and more robust studies are needed.

Some limited research also suggests that teachers' stress might be related to students' stress levels in relation to high stakes testing. This is a particularly important area that needs to be evaluated with robust studies. Overall, there is evidence that teachers' report heightened stress levels in high stakes testing, however, more research using appropriate methodologies is needed to clearly understand the causal factors, and the impact it may or may not have on student stress levels and educational performance.

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30654376, Lowe, Catherine MRES – Empirical Paper

Randomised controlled trial of the *Study Without Stress* program: a

pilot study

Objectives: Year 12 students in their final year of schooling in New South Wales, Australia, sit the Higher School Certificate, which are high-stakes assessments that determine their future tertiary and employment prospects. Previous research has found approximately forty percent of Year 12 students experience high levels of psychological distress. This paper describes the results of a small randomised controlled trial of the *Study without Stress* program, a group manualised cognitive behavioural program that aims to reduce stress in senior students.

Method: Forty-two Year 12 students across four Sydney schools were randomly allocated to an 8 week program, which was run by trained school staff, or to an 8 week waitlist. Effects on self-reported psychological distress and self-efficacy measures as well as teacher reported emotional problems were assessed at pre-treatment, post-treatment and follow up.

Results: Using a mixed model analyses, at post-treatment, adolescents in the *Study with Stress* condition compared with those on a waitlist, were found to have significant reductions in the self-reported stress and depression and the benefits were maintained at three month follow-up. In addition, all measures of self-efficacy significantly improved, with improvements being maintained at three month follow-up. There were no significant differences in teacher reported emotional problems between the two groups over time.

Conclusion: The *Study without Stress* program is effective in reducing stress and improving self-efficacy in Year 12 students in a school setting.

Introduction

Adolescence can be a difficult period as young people face a range of academic, social, physical and personal challenges. The most recent National Survey of the Mental Health of Children and Adolescents (Lawrence et al., 2015) found that in Australia almost one in seven (13.9%) of 4-17 year olds were assessed as having mental disorders in the previous 12 months. This same survey found that one fifth of adolescents (19.9%) had very high or high levels of distress. These findings are comparable with those of the recently released Youth Mental Health Report, a joint project by Mission Australia and the Black Dog Institute (Ivancic, Perrens, Fildes, Perry, & Christensen, 2014) which found that over one fifth (21.2%) of young Australians experienced high levels of distress, as measured by high scores on the Kessler Psychological Distress Scale (K6; Kessler, et al., 2003). In this large survey, 14, 461 young Australians aged 15-19 answered questions about their issues of concern, their help-seeking behaviours and their level of distress. The report also found that the top two issues of concern for young Australians were coping with stress, and school and study problems (Ivancic, Perrens, Fildes, Perry, & Christensen, 2014). This reflects research from across the globe, with research from the USA finding that concerns about academics such as tests, homework and grades are some of the biggest stressors for high school students (de Anda, et al., 2000), and adolescents in England (West, Willis, & Sharp, 1982) and Singapore (Isralowitz & Hong, 1990) reporting school-related problems as their primary source of stress.

In many countries around the globe, high school students have a of final examination period as part of their final year of high school that forms part of their matriculation, which is entry into university. Examples of these high-stakes assessments include the General Certificate of Education – Advanced level (A-Levels) in the United Kingdom, the SAT exam in the United States of America and the Victorian Certificate of Education and the Higher School Certificate, both in Australia. These examinations have been described as "high-stakes" because they have important ramifications for the students' future education and employment opportunites, for the teachers, as they are increasingly being used to judge teacher performance, and for schools themselves as their students' results in these exams are often used to judge the quality of education provided.

The Higher School Certificate (HSC) occurs during the final stage of secondary school in New South Wales, a state in Australia, and can be perceived as a stressful life event by adolescents. Assessments take place throughout the year, culminating in the externally- set trial examinations. As well as assessments and trial exams, students sit externally-set final exams which are worth 50% of their final mark. HSC results are used to determine entry into university as well as employment opportunities, thus putting additional pressure on adolescents during what is arguably a stressful time anyway.

There is very little research into the impact of the HSC on students, but what research there is, indicates that students find this final year to be very stressful and over 40% experience high levels of distress (Smith & Sinclair, 2000), which is twice the rate of distress found in adolescent population (Ivancic, Perrens, Fildes, Perry, & Christensen, 2014; Lawrence et al, 2005). Since these studies were conducted, it is likely that the pressure placed on Year 12 students has increased due to the introduction of accountability practices. The current educational climate in Australia, as in other Western countires such as the UK and the USA, is one of accountability with teachers and schools being accountable for the results of the students in their care (Anderson, The No Child Left Behind act and the legacy of federal aid to education., 2005). Schools and teachers are expected to produce good results in external exams such as National Assessment Program- Literacy and Numeracy (NAPLAN) and the HSC (Kleinhenz & Ingvarson, 2004). Governments around the globe are encouraging schools to increase student results in high-stakes tests by using student results to measure teacher effectiveness (von der Embse, Perdergast, Segool, Saeki, & Ryan, 2016), and linking it to school funding (Kruger, Wandle & Struzzerio, 2007). In addition, schools are under scrutiny from the mass media with results being published in forums such as the *MySchool* website (in the case of NAPLAN) in the state's newspapers (in the case of the HSC) in league tables that allows for easy comparsions between schools.

In the private school system, where fees are moderate to high, schools are expected to achieve high HSC results and this may result in perceived pressure on schools, teachers and students. Students' HSC results have a direct impact on their ability to enter university courses and may also be used by prospective employers, meaning they are very high stakes for students.

In support of this, a recent survey of 722 Year 12 students during their HSC year conducted by the University of NSW, found that 42% registered high-level anxiety symptoms that were high enough to be of clinical concern (North, Gross & Smith, 2015). Despite many good treatment options available for adolescents in Australia, many studies have found that young people do not access the treatment that is available to them (Rickwood, Deane, & Wilson, 2007; Ivancic, Perrens, Fildes, Perry, & Christensen, 2014; Stallard, 2013). As adolescents in Australia are required to be in formal education until age 17, schools seem an ideal place to provide interventions to increase the mental heatlh of adolescents (Stallard, 2013; Neil & Christensen, 2007; Corrieri, et al., 2013).Various studies of school-based cognitive behavioural therapy (CBT) programs have found significant reductions in stress, anxiety and depression in randomised controlled trials (Neil & Christensen, 2007; Stallard, 2013; Corrieri, Heider, Conrad, Blume, Konig, & Reidel-Heller, 2013).

CBT has been widely researched and has been found in meta-analyses and systematic reviews to be effective in reducing anxiety and depression in children and adolescents with moderate to large effect sizes (Chorpita, et al., 2011; Reynolds, Wilson, Austin, & Hooper, 2012). Little research has examined the impact of CBT for reducing stress in children and adolescents. There is some evidence that it is effective in adolescent populations (Hains, 1992), although more research is needed in this area. Programs that target stress at school may be particularly beneficial for students in the final years of school when stress levels are exacerbated.

The "Study Without Stress" program (SWOS) is a CBT based intervention program that aims to help students cope with the stress of the HSC. It has been designed to be run either in school settings or in out of school settings. The specific aim of this study was to conduct a randomised controlled trial to evaluate the effectiveness of SWOS, a group CBT-based program against a waitlist control in reducing stress, in HSC students within a school setting run by school personnel. On the basis of the existent literature, it was expected that the SWOS program would result in reduced stress in HSC students compared with the waitlist control at post-treatment (Primary Hypothesis). As the program targetted skills to change thinking about the HSC as well as behaviours to reduce stress and increase a sense of control, it was also expected

that the SWOS would increase self-efficacy, particularly emotional self-efficacy, as well as anxiety and depression (Secondary Hypothesis). We also predicted the benefits of the SWOS program would be maintained at follow up.

Method

Participants

Schools were invited to participate in the study via the Australian Independent Schools email distribution list as well as through professional development courses and presentations to school staff and students on the SWOS program. Four schools in Sydney participated in the current study: School 1 was an independent Catholic school for girls catering for students from Years 7-12. School 2 was a public co-educational high school with students from Years 7-12. School 3 was an independent Catholic school catering for boys from year 7-12 and girls from Years 11-12 only. School 4 was an independent co-educational Anglican school with students from K-12. In each of the four schools, Year 12 students were made aware of the study via a general information email or at a Year assembly and invited to participate. In addition to this, students felt to be at-risk of experiencing high levels of distress were personally invited by members of the schools' pastoral care team. Fifty-six students across the four schools initially expressed interest in participating in the program, however a total of 42 students completed the program. Although the SWOS program is designed for students that experience high levels of stress related to study, no students were excluded, i.e. anyone wishing to participate could do so regardless of current levels of stress. The flow of participants through the study is presented in Figure 1. Students were all in Year 12 so would be aged 17-18. As all students attended schools with an above average score of community socio-educational advantage, it can be assumed that the socio-economic status of the majority of students would be average.

Figure 1: Flow Chart of Participants Through the Study

```
                    ┌──────────────────────────┐
                    │  Elected to participate  │
                    │       (n = 56)           │
                    └──────────────────────────┘
                              │        ┌──────────────────────┐
                              │────────│  Excluded (n = 0)    │
                              │        │                      │
                              │        └──────────────────────┘
                    ┌──────────────────────────┐
                    │  Randomized (n = 56)     │
                    └──────────────────────────┘
                         ╱              ╲
```

Allocation

Randomised into Treatment (n=28)	Randomised into waitlist control (n=28)
School 1 (n=10)	School 1 (n=11)
School 2 (n=8)	School 2 (n=7)
School 3 (n=4)	School 3 (n=4
School 4 (n=6)	School 4 (n=6)
Discontinued (n =11)	Discontinued (n =3)
School 1 (n =8)	School 1 (n=2)
- Removed due to low dosage (n=2)	-timetabling clashes (n=2)
- Left school (n = 1)	School 2 (n=1)
- Didn't like the group (n= 2)	-timetabling clashes (n=1)
- Timetable clash (n=3)	School 3 (n=1)
School 2 (n=0)	-timetabling clashes (n=1)
School 3 (n=1)	School 4 (n=0)
- removed due to low dosage (n=1)	
School 4 (n=2)	
-removed due to low dosage (n=1)	

Post

Completed Post (n=17)
-School 1 (n=2)
-School 2 (n=2)
-School 3 (n=8)
-School 4 (n=5)

Completed Post (n= 24)
-School 1 (n=9)
-School 2 (n=6)
-School 3 (n=3)
-School 4 (n=6)

Completed Follow-up (n =16)
-School 1 (n=2)
-School 2 (n=6)
-School 3 (n=3)
-School 4 (n=5)

Waitlist control did not complete follow-up measures

Measures

Interventions.

   1) Study Without Stress Program

The SWOS program consists of eight by one hour sessions conducted weekly in groups of 3-10 students over eight weeks. The sessions were conducted by a trained school counsellor (schools 3 and 4) or teacher (schools 1 and 2) from within the school staff who participated in a full day's training provided by Catherine Lowe prior to the study. The *Study Without Stress* (Wuthrich & Lowe, 2015) manualized group program utilises CBT techniques to help participants identify unhelpful thoughts and behaviours and replace them with healthier skills and habits. Using the CBT approach, SWOS focuses on students' thoughts and expectations of the HSC year as well as grades and assessments more generally, and behaviours, such as procrastination and study habits. The skills were taught in modules according to a manualised program and students had a handbook which outlined all of the skills and contains the homework exercises. Participants were taught the following skills: psychoeducation, goal setting, timetabling, cognitive restructuring, problem-solving, sleep hygiene, relaxation and exam preparation. The skills were specifically applied to topics associated with stress during the HSC year such as dealing with assessment tasks, not having enough time and getting the necessary results in the HSC. Skills were taught through a mixture of didactic teaching, group discussion and exercises and there

was a large emphasis on home practice of the skills taught in session. Any students who missed a session participated in catch-up sessions.

2) *Waitlist Control*

Participants were allocated randomly to the SWOS group or waitlist group within schools. Therefore waitlist groups for each school were between 3-10 participants. The waitlist control did not receive the SWOS program during the 8 week wait period. They otherwise received any usual support from their school or externally during this period.

Self-Report Measures

Depression Anxiety and Stress Scale 21 (DASS-21: Lovibond & Lovibond, 1995)

The DASS 21 is a 21 item self-report measure of experience of the three negative emotional states of depression, anxiety and stress as individual subscales. Participants are asked to rate how severely they have experienced each item over the past week on a Likert scale from 0 (never) to 4 (almost always). The measure is commonly used with adolescents and has been shown to have adequate reliability and validity in this population (Tully, Zajac, & Venning, 2009). In the current study, all subscales had good reliability with Cronbach's alphas of .92 for depression, .87 for anxiety and .88 for stress subscale.

Self-Efficacy Questionnaire for Children (SEQ-C) (Muris, 2001)

The SEQ-C is a 24 item self-report measure of perceived competence in academic and social settings. Participants are asked to rate how much a statement applies to them on a Likert scale ranging from 1 (Not at all) to 5 (Very well). The measure has been found to have adequate reliability and validity (Suldo & Shaffer, 2007). In the current study the SEQ-C was found to have good reliability with a Cronbach's alpha of .87 for the total scale, .83 for the Academic subscale and .86 for the Emotional subscale.

Teacher-reported measure

Strengths and Difficulties Questionnaire (SDQ)- Teacher Version (Goodman, Ford, Simmons, Gatward & Meltzer, 2000)

2

The SDQ is a 25 item questionnaire that measures positive and negative characteristics of students. Teachers are asked to rate how much a statement applies to a students' past behaviour over the past six months on a Likert scale ranging from 0 (Not at all) to 2 (Certainly true). It has been found to have adequate reliability and validity (Goodman, 2001). It provides a Total Difficulties score as well as an Emotional problems scale, a Conduct Problems scale, a Hyperactivity scale, a Peer problems scale and a Prosocial scale. For the purposes of the current study, only the Emotional Problems subscale was used, which had a Cronbach's alpha of .73.

Procedure

Ethics approval from the Macquarie University Human Ethics Committee and the relevant school authorities was obtained. Students were recruited through via the individual schools through student email, Year group assemblies and/or were personally invited to participate by school pastoral care staff. After providing written informed consent, students completed the self-report baseline measures via an online survey prior to randomisation. For each participant, a teacher or other pastoral care staff member completed the teacher baseline measure via an online survey prior to randomisation. Students in each school were randomly allocated to the treatment or waitlist condition. At the end of the intervention or wait period, all participants recompleted the self-report measures, and for each participant, the same teacher as had previously completed the teacher measure, again completed the measure via an online survey. After post-intervention measures had been completed, the participants allocated to waitlist then received the program. Participants in the treatment group recompleted the self-report measures for a third time at 3 month follow-up via an online survey, as well as their teacher (same informer) for the teacher measures.

Randomisation

After suitable participants had been identified, consented to the study, and questionnaires completed, in each school half the participants were randomly allocated to receive the SWOS program, and the other half to wait list. Students were allocated to condition based on a randomization sequence generated using a computerized randomizer (www.randomisation.org).

Randomisation was conducted by Lowe. The groups varied in sizes across the different schools from 3 – 8 students per group. Groups were split evenly within the schools.

Data Analysis

Self-reported changes in stress scores, and changes in teacher reported emotional subscale of the SDQ at post-treatment were the primary outcome measures. Secondary outcome measures included: change in anxiety, depression, total self-efficacy, academic self-efficacy and emotional self-efficacy. It was expected that there could be differences between the schools and so a cluster variable (i.e. school) was included in the analyses. Differences between groups on continuous measures (pre and post) were examined using hierarchical mixed models containing random intercept and random slope terms as well as fixed effects for treatment received. Differences between groups on stress, anxiety, depression, total self-efficacy, academic self-efficacy, emotional self-efficacy, and teacher-reported emotional subscale were examined.

Results

Demographic Measures

The groups did not differ significantly on baseline demographic measures such as age, or baseline self-reported measures (all p-values >.05). See Table 1 for more details. Although the schools varied in terms of offering private or public education and religious or non-religious, the schools were not found to vary significantly on the index of community socio-educational advantage (ICSEA). The ICSEA score is a score is calculated by looking at parents' education and occupation, the geographic location of the school and the proportion of indigenous students. On this index all the schools received a score above the national average of 1000 and within 1 standard deviation of each other (see Table 2). As the interventions were evaluated across four different schools, individual variance in the schools (such as variance related to: single sex or co-educational differences, size of the school, the teacher administrating the program, time of day the program was run, support for the program from school administration, group cohesion

difference etc) was accounted for in the analysis by including a cluster variable of school in the mixed model analysis.

Treatment Adherence and Integrity

Schools 1 and 3 experienced the most difficulty with implementation due to timetable constraints. Schools 2 and 4 were able to fit the program into their existing pastoral period and assembly period respectively and this resulted in no major challenges to implementation. All schools had students miss group sessions and attend catch-up sessions. In School 1, six students who had signed up for the study dropped out prior to completing questionnaires due to timetabling constraints. In addition to this, two participants had only attended two sessions when the post-measures were taken due to timetabling issues and hence did not receive an adequate dose of treatment. Schools 3 and 4 each had one participant that only attend one session. Intent-to-treat analysis was carried out (see below for results) using all students who had completed baseline measures regardless of whether they discontinued the program. Due to the pilot nature of this program, no formal treatment adherence or integrity checks were available through the intervention.

Table 1: Descriptive statistics of baseline measures

	Variable	Range	Mean	Standard Deviation
	Depression	1-15	8.14	5.91
	Anxiety	0-19	9.21	6.03

	Stress	2-8	9.57	4.91
School 1	Total S.E.	48-94	68.29	13.50
	Academic S.E.	17-34	24.50	5.37
	Emotional S.E.	13-27	19.50	4.93
	SDQ Emotional	1-5	3.29	1.33
	Depression	1-14	6.79	5.09
	Anxiety	1-16	8.36	4.94
	Stress	0-19	9.93	6.32
School 2	Total S.E.	60-108	74.71	13.25
	Academic S.E.	17-39	24.93	6.57
	Emotional S.E.	11-39	21.71	7.10
	SDQ Emotional	1-3	2.14	0.53
	Depression	2-19	9.50	6.66
	Anxiety	3-20	13.83	7.44
	Stress	1-19	11.50	5.86
School 3	Total S.E.	58-80	74.17	8.59
	Academic S.E.	19-27	22.00	3.46
	Emotional S.E.	16-27	22.83	4.26
	SDQ Emotional	1-4	2.00	1.41
	Depression	4-18	10.33	5.25
	Anxiety	3-20	10.67	6.31
	Stress	3-19	12.08	5.85
School 4	Total S.E.	54-85	70.50	10.18
	Academic S.E.	15-33	23.08	5.66
	Emotional S.E.	13-27	19.00	3.91
	SDQ Emotional	0-4	2.64	1.36

Note: Depression, Anxiety and Stress = the Depression, Anxiety and Stress subscales from the

Depression, Anxiety and Stress Scale 21 (DASS 21)(respectively); Total S.E. = total self-efficacy

subscale, Emotional S.E. = emotional self-efficacy subscale and Academic S.E.= academic self-

efficacy subscale from the Self-Efficacy Scale for Children scale (SEQ-C)(respectively); SDQ

Emo = Emotional Difficulties subscale from the Strengths and Difficulties Questionnaire –

teacher version (SDQ-T).

Table 2: School Demographics

School	Enrolments	Years	ICSEA	Non-English Speaking Background	Indigenous	No. Students completing HSC 2014
1	Total = 693 Girls = 693 Boys = 0	7-12	1037	22%	5%	105
2	Total = 767 Girls = 353 Boys = 414	7-12	1063	25%	1%	141
3	Total = 1639 Girls = 204 Boys = 1435	7-12	1116	24%	1%	342
4	Total = 761 Girls = 345 Boys = 416	K-12	1131	24%	0%	65

Intention to Treat Analyses

Psychological Distress Measures across time and condition (Intention to Treat)

Mixed-model analysis showed that there was a significant group by time by school interaction for stress ($F_{(3,35)}$ = 3.00, p<0.05), meaning that there was a cluster effect of school on this measure. There were; however, no significant group by time by school interactions on depression ($F_{(3,35)}$ = 0.34, p=0.80) or anxiety $(F_{(3,35)}$=0.72, p=0.55) scores meaning there were no cluster effects of school on these measures. Looking at group by time interactions only, there was a significant group by time interaction from pre to post intervention for the group that received the intervention with significantly greater reductions in stress over time when compared with the waitlist group $(F_{(1,35)}$=4.39, p<0.05). There were also no significant group by time interactions from pre to post intervention for the group that received the intervention meaning there were no significant reductions in depression ($F_{(1,31)}$ = 1.88, p = 0.18), or anxiety ($F_{(1,35)}$ = 1.13, p= 0.30).

Self-Efficacy Measures across time and condition (Intention to Treat)

There were no significant group by time by school interactions for the self-efficacy measures, meaning there was no cluster effect of school for any of the self-efficacy measures. There was a significant group by time interaction for all the self-efficacy measures from pre to post intervention, with significantly greater improvements in total self-efficacy ($F(1,33) = 8.08$, p<0.01), academic self-efficacy ($F(1,33) = 8.63$, p<0.01) and emotional self-efficacy ($F(1,33) = 7.55$, p<0.05) for the treatment group compared to the waitlist.

Teacher reported difficulties across time and condition (Intent to Treat)

There were no significant group by time by school interaction for the teacher reported measure of emotional problems, meaning there were no cluster effects for school. There was no significant interactions for the group by time interaction for the pre to post intervention for the group that received the intervention, meaning there were no significant differences in teacher reported emotional problems between the two groups ($F(1,35)=3475$, p=0.07).

Post-Hoc Analyses of Cluster Effect

Post hoc analyses following up the school cluster effect on the stress measure, found that School 1 had unusual results, with stress scores increasing in the treatment group over time. A close look at the data for this school, found that this was likely due to the scores of two outliers. These outliers were the two students who only attended two sessions, as their measures of psychological distress increased over time, whilst all other students in the treatment group for School 1 had decreases in depression, anxiety and stress measures. School 3 and School 4 each had one student who only attended one session and completed the surveys only at pre-treatment. Due to the low dosage these four students all received, a decision was made to remove them listwise from the data. A treatment completer analyses was conducted and the results are reported below.

Psychological Distress Measures across time and condition (Treatment Completer)

3

Mixed-model analyses showed that there was a non-significant group by time by school interaction for depression, anxiety and stress scores meaning there were no cluster effects of school (all p-values >.05). However, there were significant group by time interactions with significantly greater reductions in stress ($F(1, 33) = 12.23$, p <0.01) and depression $(F(1,33) = 5.30$, p<0.03) from the pre to post intervention for the group that received the SWOS intervention compared to the waitlist. Whilst there were also reductions in anxiety $(F(1,34)= 3.96$, p=0.06) from the pre to post intervention for the group that received the SWOS intervention, they were not significantly different from the waitlist group.

Self-Efficacy Measures across time and condition (Completer Analysis)

Mixed-model analyses showed there were no significant group by time by school interactions on any self-efficacy measures meaning there were no cluster effects of school (all p-values >.05). However, there were significant group by time interactions for all self-efficacy measures with significantly greater increases in total self-efficacy from pre to post intervention for the treatment group compared to the waitlist ($F(1,32) = 9.09$, p<0.01), academic self-efficacy $(F(1,32) = 8.37$, p<0.01), and emotional self-efficacy ($F(1,31) = 7.78$, p<0.01).

Teacher reported Difficulties across time and condition (Completer Analysis)

Mixed-model analyses showed no significant group by time by school interaction for the teacher reported measure of emotional problems, meaning there were no cluster effects for school (all p-values >.05). There were also no significant interactions for the group by time interactions for the pre to post intervention for the group that received the intervention, meaning there were no significant differences in teacher reported emotional problems between the two groups ($F(1,33)=3.36$, p=0.076).

Table 3. Estimated marginal means and standard errors for outcome measures over time

Outcome	Group	School	Pre	Post	Follow-up
			Estimated Marginal Means (Standard Error)		
Depression	Treatment	1	9.00 (3.15)	5.49 (4.97)	3.12 (3.66)
	Control	1	7.22 (1.82)	4.40 (2.00)	
	Treatment	2	7.78 (1.82)	5.11 (1.82)	6.64 (2.22)
	Control	2	5.00 (2.44)	5.40 (2.44)	
	Treatment	3	10.00 (3.15)	5.92 (3.70)	8.00 (3.14)
	Control	3	9.00 (3.86)	14.47 (5.10)	
	Treatment	4	10.80 (2.44)	9.20 (2.44)	11.40 (2.44)
	Control	4	9.50 (2.23)	12.26 (2.39)	
Anxiety	Treatment	1	9.67 (3.15)	7.39 (4.80)	5.90 (3.39)
	Control	1	8.44 (1.82)	7.80 (1.98)	
	Treatment	2	9.67 (1.82)	7.44 (1.82)	5.63 (1.95)
	Control	2	6.00 (2.44)	7.80 (2.44)	
	Treatment	3	14.00 (3.15)	12.09 (3.63)	9.33 (3.09)
	Control	3	11.50 (3.86)	13.03 (5.00)	
	Treatment	4	13.80 (2.50)	6.67 (2.28)	12.00 (2.39)
	Control	4	10.60 (2.44)	9.69 (2.37)	
Stress	Treatment	1	10.00 (3.02)	7.00 (4.32)	4.35 (3.32)
	Control	1	9.78 (1.74)	7.23 (1.87)	
	Treatment	2	10.67 (1.74)	9.67 (1.74)	9.81 (2.01)
	Control	2	8.60 (2.34)	9.40 (2.34)	
	Treatment	3	14.33 (3.02)	6.85 (3.39)	10.67 (3.00)
	Control	3	6.50 (3.69)	11.21 (4.56)	
	Treatment	4	14.40 (2.34)	11.20 (2.34)	12.40 (2.31)
	Control	4	9.00 (2.13)	8.77 (2.24)	
Total S.E.	Treatment	1	62.67 (7.05)	67.45 (9.07)	79.17 (8.92)
	Control	1	73.33 (4.07)	72.46 (4.26)	
	Treatment	2	73.44 (4.07)	72.47 (4.15)	75.77 (5.44)
	Control	2	77.00 (5.46)	72.00 (5.46)	
	Treatment	3	76.33 (7.05)	84.50 (7.61)	82.00 (7.97)
	Control	3	68.00 (8.63)	66.19 (9.95)	
	Treatment	4	71.00 (5.46)	77.84 (5.68)	68.20 (6.18)
	Control	4	68.50 (4.98)	65.48 (5.16)	
Emotional S.E	Treatment	1	18.33 (3.14)	21.98 (4.70)	27.92 (3.88)
	Control	1	21.22 (1.81)	20.74 (1.97)	
	Treatment	2	21.22 (1.81)	22.59 (1.88)	23.84 (2.38)
	Control	2	22.60 (2.43)	19.20 (2.43)	
	Treatment	3	23.67 (3.17)	28.02 (3.60)	27.00 (3.43)
	Control	3	19.50 (3.84)	15.15 (4.89)	
	Treatment	4	18.80 (2.43)	21.76 (2.61)	21.60 (2.65)
	Control	4	20.00 (2.22)	17.65 (2.35)	

Table 3 continued.

Estimated marginal means (S.E.)

Outcome	Group	School	Pre	Post	Follow-up
Academic S.E.	Treatment	1	22.33 (3.31)	27.64 (4.27)	26.15 (3.50)
	Control	1	26.56 (1.91)	24.57 (2.00)	
	Treatment	2	24.11 (1.91)	22.59 (1.95)	24.13 (2.11)
	Control	2	26.40 (2.56)	25.60 (2.56)	
	Treatment	3	20.67 (3.31)	25.82 (3.57)	24.33 (3.23)
	Control	3	25.50 (4.05)	25.23 (4.67)	
	Treatment	4	22.20 (2.56)	22.17 (2.34)	21.60 (2.50)
	Control	4	22.17 (2.34)	22.12 (2.42)	
SDQ Emo..	Treatment	1	3.67 (0.76)	2.80 (0.90)	no follow-up data
	Control	1	3.11 (0.44)	3.21 (0.49)	
	Treatment	2	2.33 (0.44)	1.44 (0.44)	1.46 (0.47)
	Control	2	1.80 (0.59)	2.00 (0.59)	
	Treatment	3	1.67 (0.76)	2.00 (0.76)	0.75 (.086)
	Control	3	2.50 (0.93)	4.68 (1.25)	
	Treatment	4	2.40 (0.59)	2.40 (0.59)	2.80 (0.57)
	Control	4	2.83 (0.54)	2.93 (0.58)	

Note: Depression, Anxiety and Stress = the Depression, Anxiety and Stress subscales from the Depression, Anxiety and Stress Scale 21 (DASS 21)(respectively); Total S.E. = total self-efficacy subscale, Emotional S.E. = emotional self-efficacy subscale and Academic S.E.= academic self-efficacy subscale from the Self-Efficacy Scale for Children scale (SEQ-C)(respectively); SDQ Emo = Emotional Difficulties subscale from the Strengths and Difficulties Questionnaire – teacher version (SDQ-T).

Evaluation of Treatment Maintenance (Completer Sample)

Mixed-model analyses for changes over time were used to examine changes from pre to post to follow-up in the completer sample. Analyses were conducted on the treatment group only as the waitlist group received treatment at the end of the post-treatment assessment and therefore did not complete follow-up assessments. There were no significant interactions for time by school for any of the measures meaning there were no cluster effects. There was a main effect of time for anxiety ($F_{(2,27)}$ = 7.47, p<0.01); stress ($F_{(2,25)}$ = 6.84, p<0.01); academic self-efficacy ($F_{(2,24)}$ =3.70, p<0.05); and emotional self-efficacy ($F_{(2,24)}$ = 6.34, p<0.01). The significant effects were accounted for by the pre to post effects reported above. Post-hoc contrasts indicated that there were no significant differences between post-treatment and follow-up for any

measures meaning that all gains made at post-treatment were maintained at the follow up (see Table 4). No significant main effects of time were found for depression, total self-efficacy or teacher reported emotional problems.

Table 4: Paired t-tests for post and follow-up

Variable	t-value	Degrees of Freedom	P-Values
Depression	-.798	13	.439
Anxiety	.867	13	.401
Stress	-.319	12	.755
Total self-efficacy	.309	11	.763
Academic self-efficacy	.829	11	.425
Emotional self-efficacy	-.931	11	.372
SDQ - Emotional	.758	15	.460

Note: Depression = post-follow-up for Depression subscale, Anxiety = post-follow-up for Anxiety subscale, Stress = post-follow-up for Stress subscale of Depression Anxiety and Stress Scale (DASS 21), respectively; Total self-efficacy = post-follow-up of total score of Self-Efficacy Questionnaire for Children (SEQ-C); Academic self-efficacy = post-follow-up of academic subscale, Emotional self-efficacy = post-follow-up of emotional subscale of Self-Efficacy Questionnaire for Children (SEQ-C); SDQ-Emotional = post-follow-up of emotional subscale of the Strengths and Difficulties Questionnaire, teacher version (SDQ-T).

Discussion

This study evaluated the efficacy of the SWOS program in reducing psychological distress and improving self-efficacy in high school students by comparing treatment groups to waitlist control groups across four schools. The SWOS program was found to lead to significantly greater reductions in stress and depression from pre to post treatment when compared to the waitlist control. These improvements were maintained at the three month

follow up. It was also found that students who participated in the SWOS program improved significantly in total self-efficacy, emotional self-efficacy, and academic self-efficacy from pre to post treatment as compared to the waitlist control and that these improvements were maintained at three month follow up. The teacher reported emotional difficulty scores did not change between groups over time, and the reductions in anxiety between groups was not significant. These results show that the SWOS program is effective in reducing stress and depression as well as improving self-efficacy in Year 12 students but not in teacher reported emotional problems.

There is a real need for such an intervention, with previous research suggesting approximately forty percent of HSC students experience psychological distress, which is twice that of the normal adolescent population (Smith & Sinclair, 2000; North, 2015). The fact that in the completer analysis there were no cluster effects for school, with all schools showing similar reductions in stress and improvements in self-efficacy suggests that these results may be generalisable to other Year 12 students, however, further study with larger sample sizes would be of benefit to confirm this.

A positive finding of this study was the increases in self-efficacy measures over the course of treatment that were maintained at follow-up. Total self-efficacy, academic self-efficacy and emotional self-efficacy all increased from pre to post intervention for the students who participated in the SWOS program as compared with the waitlist control. Bandura (1977) proposed that self-efficacy refers to one's beliefs about his or her ability to perform specific tasks in specific situations. These beliefs are hypothesised to influence behaviour such as choice of activites, effort expenditure and persistence in the face of obstacles, all of which influence learning. There has been a wealth of research exploring the relationship between self-efficacy and academic achievement. In a meta-analysis (Multon, Brown, & Lent, 1991), self-efficacy was found to be positively related to academic performance (r=.38). More recent research have reported a direct positive relationship between academic self-efficacy and academic achievement (Chemers, Hu, & Garcia, 2001; Greene, Miller, Crowson, Duke, & Akey, 2004; Zimmerman & Bandura, 1994; Carroll et al., 2009) such that students who believed that they are able to achieve academically were likely to engage in behaviours such as studying, which in

turn, leads to better academic results. The current study did not measure academic achievement, so cannot ascertain whether the increase in self-efficacy shown by the treatment group led to any increase in academic achievement. The cognitive restructuring that is part of the SWOS program specifically challenges thoughts such as "I will fail", which may lead to an increase in efficacy, which in turn may lead to goal-directed behaviour such as studying. It would be beneficial in future research to include measures of academic achievement in evaluating the SWOS program.

Emotional self-efficacy (sometimes referred to in the literature as self-regulatory efficacy) is an individual's perceived confidence in his or her ability to regulate negative emotions when activated by stressful or adverse events. (Muris, 2001). Self-regulatory self-efficacy has been found to be related to the ability to effectively manage one's academic development (Bandura, Caprara, Barbaranelli, Gerbino, & Pastorelli, 2003). In a study of elemenatry school aged children, it was found that whilst anxiety was negatively associated with performance on maths assessments, this was only true for students with low levels of emotional self-efficacy. Those students with high anxiety who also had high emotional self-efficacy, did not experience decrements in test performance (Galla & Wood, 2012). Athough more research is needed to confirm these findings, this suggests that high emotional self-efficacy may help protect against the negative effects of anxiety on academic performance. In the SWOS program, students not only learn how to manage acute anxiety through slowed breathing, they also challenge commonly occuring thoughts such as "I will go blank in the exam".

All schools involved in this study experienced difficulty fitting the program into the school timetable as students were unable to be withdrawn from academic classes. Since the students were individually randomised into treatment or control groups, there was no way of matching up study periods so that students could attend during a study period or gaps in their timetables. The difficulties in timetableing was resolved better in two of the schools in which students were able to come out of non-essential tasks (such as assembly time and pastoral care). Implementation difficulties in schools have been reported in the literature (Durlak, Weissberg, Dymnicki, Taylor, & Schellinger, 2011) and include over-crowded timetables, competing demands on student time and lack of leadership support. In addition to this, there is a particular difficulty in getting access to senior students due to the perceived importance of the HSC and

the need for study and revision time to be maximised and priorirised. Therefore although the evaluation of this program is not without its limitation (see below), the results indicate that the program is effective despite the implementation problems and thus is very promising. Potentially with more research in this area, if the stress reduction and benefits to students from this program can be better established there may be more willingness from students, teachers, administrators and parents to allow more time in the school curriculum or timetable for interventions to reduce study stress as least within the final years.

In this study, SWOS was applied as a targeted program with stressed students recruited. It would be of benefit for future research to evaluate the effectiveness of SWOS as a universal prevention program, to see if it may have preventative effects. Although universal prevention programs have been shown to have mixed effects, often with small effects when they do occur, these prevention programs are not usually delivered during the final year of school when they may be more relevant due to the increased stress during this period. It would also be interesting to assess whether such a program would be effective if taught in Year 11, prior to the increased academic pressure of the final year of school, although like in other universal programs, if delivered too early may not have the same effects. Future research should centre on running the SWOS program in a way that will eliminate the barriers to implementation in a school setting. One such way would be to run the program within Year 12 study periods, which all schools in NSW have. Treatment and control groups could be randomised across study classes, rather than individual students, in a quasi-experimental design. This would allow for much greater numbers of particpants and eliminate the major barrier to implementation experienced by all schools.

There were some limitations to the current study that are important to consider. It was the intention of the study design that the follow-up meaures were filled out prior to the trial HSC examinations in order to maximally test the benefits in stress reduction, however only two participants did so, with the majority of the follow up data being filled out after the trial examinations as students had to be reminded to fill out the surveys (this was the case for students in both treatment conditions and so it not a confounding factor). It would be interesting to assess the program prior to the trial examinations and indeed the final HSC examinations to assess whether effects are maintained. Although the results seem promising, the sample size was

small. This has been found to be a common limitation in assessing school-based treatment programs, due to the difficulty in running RCTs in a school setting (Stallard, 2013). Further, the SWOS program was compared to a waitlist control only and not to an active control. Therefore it is not known whether it is the skills taught in the program that resulted in the improvements, or if it was non-specific treatment outcomes such as meeting regularly in a supportive environment with other students and a supportive teacher/counsellor. However, given the vast evidence for the effeectiveness of CBT strategies in reducing anxiety and distress it is likely that the program skills themselves drove the effects. In addition, there were no formal measure of treatment adherence or credibility so it is not clear whether the facilitators delivered the manualised program in the way it was intended. Finally, gender effects were not assessed in the current study.

In summary, despite the limitations of this study, the SWOS program was found to be effective in reducing stress and increasing self-efficacy in Year 12 students. A strength of the current study is that the benefits were found across different schools, public and private, and when delivered by teachers and school counsellors, which is promising that that results are generalisable. Further study with larger sample sizes should confirm this.

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1 October 2014

Dr Viviana Wuthrich
Centre for Emotional Health
Department of Psychology
Faculty of Human Sciences
MACQUARIE UNIVERSITY NSW 2109

Dear Dr Wuthrich

Reference No: 5201400841

Title: *Evaluating the Study Without Stress Program in Schools*

Thank you for submitting the above application for ethical and scientific review. Your application was considered by the Macquarie University Human Research Ethics Committee (HREC (Medical Sciences)) at its meeting on 28 August 2014 at which further information was requested to be reviewed by the Ethics Secretariat.

The requested information was received with correspondence on 19 September 2014.

I am pleased to advise that ethical and scientific approval has been granted for this project to be conducted at:

- Macquarie University

This research meets the requirements set out in the *National Statement on Ethical Conduct in Human Research* (2007 – Updated March 2014) (the *National Statement*).

Details of this approval are as follows:

Approval Date: 19 September 2014

The following documentation has been reviewed and approved by the HREC (Medical Sciences):

Documents reviewed	Version no.	Date
Macquarie University Ethics Application Form	2.3	July 2013
Correspondence from Dr Viviana Wuthrich responding to the issues raised by the HREC (Medical Sciences)		Received 19/9/2014
Protocol	2	17/9/2014

This letter constitutes ethical and scientific approval only.

Standard Conditions of Approval:

1. Continuing compliance with the requirements of the *National Statement,* which is available at the following website:

http://www.nhmrc.gov.au/book/national-statement-ethical-conduct-human-research

2. This approval is valid for five (5) years, subject to the submission of annual reports. Please submit your reports on the anniversary of the approval for this protocol.

3. All adverse events, including events which might affect the continued ethical and scientific acceptability of the project, must be reported to the HREC within 72 hours.

4. Proposed changes to the protocol must be submitted to the Committee for approval before implementation.

It is the responsibility of the Chief investigator to retain a copy of all documentation related to this project and to forward a copy of this approval letter to all personnel listed on the project.

Should you have any queries regarding your project, please contact the Ethics Secretariat on 9850 4194 or by email ethics.secretariat@mq.edu.au

The HREC (Medical Sciences) Terms of Reference and Standard Operating Procedures are available from the Research Office website at:

http://www.research.mq.edu.au/for/researchers/how_to_obtain_ethics_approval/human_research_ethics

The HREC (Medical Sciences) wishes you every success in your research.

Yours sincerely

Professor Tony Eyers

Chair, Macquarie University Human Research Ethics Committee (Medical Sciences)

This HREC is constituted and operates in accordance with the National Health and Medical Research Council's (NHMRC) *National Statement on Ethical Conduct in Human Research* (2007) and the *CPMP/ICH Note for Guidance on Good Clinical Practice*.

NSW | **Education**
GOVERNMENT | Public Schools

Ms Catherine Lowe   CORP15/26104
21 Clovelly Road   DOC15/907716

Dear Ms Lowe

I refer to your application to conduct a research project in NSW government schools entitled *Evaluating the Study Without Stress Program in schools*. I am pleased to inform you that your application has been approved.

You may contact principals of the nominated schools to seek their participation. **You should include a copy of this letter with the documents you send to principals.**

This approval will remain valid until 08-Dec-2016.

As this research does not involve face-to-face contact with children, no researchers or research assistants have been screened to interact with or observe children.

I draw your attention to the following requirements for all researchers in NSW government schools:
  • The privacy of participants is to be protected as per the NSW Privacy and Personal Information Protection Act 1998.
  • School principals have the right to withdraw the school from the study at any time. The approval of the principal for the specific method of gathering information must also be sought.
  • The privacy of the school and the students is to be protected.
  • The participation of teachers and students must be voluntary and must be at the school's convenience.
  • Any proposal to publish the outcomes of the study should be discussed with the research approvals officer before publication proceeds.
  • All conditions attached to the approval must be complied with.

When your study is completed please email your report to:
██████████████████ **You may also be asked to present on the findings of your research.**

I wish you every success with your

research. Yours sincerely

██████████████

Dr Robert
Stevens
**Manager,
Research** 8
December
2015