The effect of course integrated mindfulness and resilience training on students’ level of psychological well-being

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Declaration

This thesis contains no material which has been accepted for the award of any other degree or diploma in any university or other tertiary institution and, to the best of my knowledge and belief, contains no material previously published or written by another person, except where due reference has been made in the text. I give consent to this copy of my thesis, when deposited in the University Library, being made available for loan and photocopying subject to the provisions of the Copyright Act 1968.

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Structured Abstract

Scope: Previous research has found university students report elevated levels of psychological distress indicating potentially high rates of mental illness. The level of distress reported by students is above estimates of same aged peers in the general public. Evidence for the factors influencing students’ level of distress is inconsistent and one factor that has received limited research is personality. Research has also found university students to have lower rates of help seeking than estimates for the general public. Due to this finding, and the high levels of distress reported, there is a need to consider population level interventions, with interventions embedded within university teaching activities being a possibility. The curriculum of a first year psychology subject included teaching techniques related to mindfulness and counselling psychology. We hypothesised that this material could function as an embedded intervention and reduce the severity of psychological distress reported by the students.

Purpose: First, to replicate previous research on the levels of psychological distress in university students and to extend this research by also investigating psychological well-being and resilience. Second, to investigate the relationship between personality and psychological functioning in students. Third, to determine if the material presented in the subject functioned as an intervention.

Methodology: A pre-test post-test design was used with students from the above mentioned subject being compared against students from another first year psychology subject that did not include the teaching of such techniques. Students from both subjects were assessed on a battery of measures of psychological distress, resilience, psychological well-being and personality at two times during the semester.
Results: Students reported significantly higher rates of psychological distress than would be expected from relevant norms, the level of distress was also stable across the two sampling times. Psychological well-being and resilience were also lower than expected at pre-test from relevant norms, however resilience improved over time. The personality trait of resilience vs. emotional liability, related to the domain of neuroticism, was the only consistent predictor of positive and negative functioning. High trait resilience was related to low psychological distress, high psychological well-being and high resilience as measured as the ability to bounce back from adversity. There was no effect of the material taught.

Conclusions and Implications: University students as a population consistently report elevated levels of psychological distress and are likely to have higher rates of mental illness. A preliminary finding of the current research was that resilience as measured as ability to bounce back increased over time while psychological distress remained stable. This raises the possibility that aspects of positive psychological functioning can improve irrespective of stability in experience of distress. There is a continued need to develop and investigate population level interventions to support students with the current research suggesting that unintended but relevant course material is insufficient to function as an intervention. Investigation of the relationship between personality traits and student's experience at university is another avenue of research suggested by the current research as certain personality traits may be related to a vulnerability to experiencing psychological distress within the university context.
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Review of the Literature on University Students’ Levels of Psychological Distress

The current research was undertaken to determine if course material on counselling psychology taught in a first year psychology subject could also function as an embedded intervention for improving the students’ level of psychological distress. The rationale for the research was based on three main points. First, that there is a growing body of research demonstrating that university students report higher levels of psychological distress than the general public. Second, this elevated distress suggests an elevated rate of mental illness in students and is related to students experiencing significant disability. Lastly, that research suggests that university students have poorer rates of help seeking than the general public. Therefore, it was considered that there is a need to investigate population level interventions such as interventions embedded in normal university activities such as lectures and tutorials in an attempt to reach and hopefully assist students in need who would not normally seek help.

Psychological distress, what is it?

Psychological distress is the experience of a range of cognitive, behavioural, emotional and psychophysiological symptoms associated with various mental illnesses, however, not specific to any particular disorder (Kessler et al., 2002). It is often termed non-specific psychological distress and in some ways is a construction of psychometric research on screening tools for mental illness, as it was found that despite the heterogeneous nature of the symptoms used in screening measures there was a high loading on a single primary factor (Kessler et al). This primary factor is what we now term psychological distress and it has been found that high levels of psychological distress are common across people with a wide array of mental illness. In this way accurate and psychometrically rigorous tools that measure psychological distress have
been developed as screening measures for mental illness, such as the K10 (Kessler et al.) and General Health Questionnaire (GHQ-12; Goldberg et al., 1997). These measures have been widely used in large epidemiological studies with elevated distress on these measures being highly associated with 12 month prevalence of mental illness. For example Australian Bureau of Statistics (ABS) data suggests that 82-85% of people who report very high levels of distress on the K10 will have met criteria for a DSM-IV or ICD-10 mental illness in the last 12 months (Gavin Andrews & Slade, 2001). Therefore the elevated psychological distress reported by students is concerning as it is potentially indicative of elevated rates of mental illness.

*Psychological distress reported by university students*

Three recent studies with large samples by Stallman (2010), Nerdrum, Rustøen, & Rønnestad. (2006) and Adlaf, Gliskman, Demers, & Newton-Taylor (2001) give an idea of the general finding of high levels of psychological distress in university student populations. Adlaf et al. used data from the first national survey of undergraduate university students’ alcohol and drug use and mental health status in Canada. The sample was from 16 separate universities, with 1000 randomly selected students from each university being approached via mail to complete the survey. The usable sample was 7622 undergraduate students representing around 442000 Canadian university students. The survey included the GHQ-12 and 34% of the sample reported high levels of psychological distress, based on an internationally validated procedure for calculating a threshold based on sample properties (Goldberg, Oldehinkel, & Ormel, 1998). Although not able to compare their sample to a national estimate on the GHQ-12, Adlaf et al. were able to obtain estimates for a general population sample (n = 2436) from one region of Canada allowing for comparisons between university students from the same
region (n = 1251). It was reported that nearly three times as many university students reported high levels of distress than the general public sample.

Nerdrum et al. (2006) collected data from 1750 Norwegian students in their first year at university (the exact means of contacting them and whether the sample was from multiple universities was not reported). The GHQ-12 was used and the same threshold as Adlaf et al. (2001) was used to allow for direct comparison. Nerdrum et al. found that 21% of their total sample reported high psychological distress, significantly less than the 34% reported in the Canadian study. Nerdrum et al. commented that their research suggested that Norwegian students may experience lower levels of psychological distress than students from other nations. This comment is not supported however in the current author’s opinion because of two limitations in their study. Firstly, there was no comparison of Norwegian students to Norwegian general public allowing for a determination of proportion of students reporting a high level of distress relative to the general public. Secondly, Nerdrum et al. did not follow the procedure for selecting an accurate threshold suggested by Goldberg et al. (1998). This last point is critical as there is significant evidence of large national differences on GHQ-12 scores and hence the most accurate threshold to use. If the recommendations had been followed a lower threshold should have been selected based on the lower sample mean in the Norwegian sample and therefore a higher proportion of students would have been categorised as reporting high levels of psychological distress. Therefore it is hard to accurately interpret the results of this study.

Stallman (2008; 2010) and Stallman and Shochet (2009) have undertaken a series of studies on students at Australian Universities. The largest sample (Stallman, 2010) was from an email based survey open to all students at two separate universities and resulted in a sample of 6479 students. The survey included the K10 and allowed for
comparisons between the students and Australian general public data. This study was also supported by two earlier studies by Stallman (2008; n = 384) from a single university and Stallman and Shochet (n = 1168) from three universities with both studies sampling students accessing university health services and both using the K10. From these studies it was reported that between 10% and 19.2% of students report very high levels of psychological distress on the K10, compared to estimates of 4% for the Australian general population.

These three larger studies are supported by consistent findings from smaller studies of students. Firth (1986) in an earlier study demonstrated that approximately 30% of a sample of 318 British medical students reported high levels of distress on the GHQ-12, compared to approximately 10% of an aged match sample of non-students. Bayram and Bilgel (2008) collected a sample of 1617 Turkish university students and reported that 8.1% reported severe or very severe depression, 20.8% reported severe or very severe anxiety and 6.9% reported severe or very severe stress. For their study they used the Turkish translation of the Depression Anxiety Stress Scale (Lovibond & Lovibond, 1995) however they made no comparisons to Turkish general public rates for this measure nor did they report if the Turkish students’ mean scores were significantly different from norms making interpreting their results difficult. Bore, Ashley-Brown, Gallagher and Powis (2008) reported data for a sample of 100 first year psychology student and 73 first year medical students with the Brief Symptom Inventory (BSI; Derogatis & Melisaratos, 1983). They reported that both groups of students’ scores were significantly higher than adult non-patient norms and that 25% of the psychology students and 31% of the medical students scores were above that of the adult inpatient norms. Monk (2004) sampled 210 British students and found that 52% reported high levels of psychological distress on the GHQ-30 and compared this to estimates of 30%
for the British general population. Cooke et al. (2006) focused on measuring change in students' psychological well-being (a broader construct than psychological distress however their measure included depressive, anxiety and physical symptoms, meaning that is likely to be correlated with psychological distress) over their first year at university. Data was collected from a sample of 4699 students from a single university prior to commencing university and at three times during their first year. Their measure was negatively scored (low scores equal better well-being) and their reported profile was of an inverted U distribution with the students reporting the lowest well-being at the end of their first semester. Importantly, well-being was significantly lower across all three times during university than at baseline suggesting that attending university is related to an increase in the experience of depressive, anxiety and physical symptoms and therefore psychological distress.

While there are specific methodological issues with the past research (some of which have been highlighted above) a more general criticism has been made by Cooke et al. (2006). They argue that even though the larger studies such as that of Adlaf et al. (2001) and Stallman (2010) have samples in the thousands, their samples are taken across multiple sites meaning that the sample per university may only be in the hundreds and is therefore unrepresentative of the range of students' responses. This criticism goes in hand with the general methodological weakness in such survey studies that they rely upon volunteer participants, as the population of students who volunteer may not be representative of all students, in particular, those who do not volunteer. This criticism is of course valid and larger scale studies of students that include elements such as pre-university baselines and multiple sample times would add greater confidence to the findings of past research. However, the continued replication of similar findings across a variety of countries using a variety of measures would tend to
suggest that the above research is at least indicative of the experience of a meaningful proportion of university students. Secondly, epidemiological studies of general population generally rely upon volunteer participants, meaning that past research is comparing volunteer students to volunteer people in the general public, which would presumably limit differences in response styles.

*University students compared to same age peers*

When considering the above research one immediate factor that must be considered is that such findings may be related to the general age cohort of university students. The majority of university students are in the 18-34 age range (ABS, 2007) and it is known that this age group report elevated rates of distress compared to other age cohorts (ABS, 2008). However, Stallman (2010, 2008) found that students across all age groups report higher level of distress compared to age matched data from an ABS sample. Stallman’s findings were such that two to six times as many students reported very high levels of distress, depending on the age group and gender, than same age peer data from the general public. Adlaf et al. (2001) were also able to split their general population sample into a subsample of young adults aged 19-25 years of age (n = 233) and reported that nearly twice as many students reported high levels of distress on the GHQ-12 compared to the young adult subsample. Firth (1986) reported his findings in terms of a comparison of students to aged matched non-students and reported twice as many students with high levels of distress than non-students. These findings, while not conclusive, suggest that the elevated psychological distress reported by students is not a cohort age effect.

*Psychological distress, diagnosed mental illness?*

As described above elevated psychological distress is associated with higher rates of mental illness and therefore university students would appear to be a population
at risk of higher rates of mental illness. Unfortunately there appears to be limited research which attempts to determine if the correspondence between high psychological distress and mental illness is similar in student populations as it is in the general population. Svanum and Zody (2001) investigated the relationship between mental illness as assessed by structured clinical interview for DSM-III disorders and academic performance. From their sample of 412 American university students they reported approximately 40% met criteria for at least one Diagnostic and Statistical Manual 3rd edition revised (DSM-III-R; American Psychiatric Association, 1987) mental illness (time frame not specified). Svanum and Zody did not analyse their findings in regards to general population data however Nerdrum et al. (2006) commented on their findings stating that it was elevated compared to estimates of 20% of the American general public using DSM-III-R criteria. This of course is weak evidence based mainly on inference to support the relationship of high psychological distress and high rates of mental illness in student populations. However it is still consistent.

It is of course possible that the elevated psychological distress reported by university students, either by a sampling bias in studies or response bias common to students as a cohort, is not indicative of increased occurrence of mental illness in student populations. It is the current author's opinion that this however is unlikely to be the case due to the fact that the difference in correspondence between psychological distress and mental illness in students and similar non-age peers would have to be quite large to not result in students having high rates of mental illness given that two to six times as many students report high levels of distress compared their same age peers. Also, it is not unreasonable to theorise that university with its competitive assessment focused environment could be a stressor above and beyond that experienced by similar aged peers not at university.
Positive functioning

Although there is a wealth of research into students’ experience of psychological distress, there is a noticeable lack of research into aspects of positive functioning such as well-being and resilience. Psychological well-being can be considered a persons’ affective and psychological functioning that promotes life satisfaction, pleasurable experiences and meaningful relationships (Stewart-Brown & Janmohamed, 2008). Research into psychological well-being has mainly been based on the two perspectives of hedonism and eudaimonism (Ryan & Deci, 2001). Hedonism is the perspective that well-being is related to the experience of positive affect and pleasurable experiences while eudaimonism is the perspective that well-being is related to the experience of realising ones potential. Current research tends to now focus on a combined model that measures both aspects of eudaimonism (e.g. self-realisation, good relationships, self-development and autonomy) and hedonism (e.g. positive affect and pleasure). There is a need to investigate psychological well-being in university students as it is considered to be more than the absences of psychological symptoms (Ryan & Deci) and it has been argued that psychological distress and psychological well-being are separate unipolar dimensions (Keyes, 2005). Therefore to gain a complete picture of student’s experience, both dimensions need to be investigated. Another concept of potential interest is that of resilience. Resilience is defined in several ways around ideas of coping or functioning during times of stress or returning to normal functioning after stress (Smith Dalen, Wiggins, Tooley, Christopher & Bernard, 2008). Therefore an understanding of students’ levels of resilience could give greater detail to an understanding of how students’ cope with the distress they report.
Risk and protective factors

Previous research has identified several potential factors that may influence students’ level of psychological distress, however the findings are inconsistent. General population trends of females reporting higher distress than males have consistently been reported (Adlaf et al., 2001; Nerdrum et al., 2006; Stallman, 2010). The trend of older students reporting lower distress, as would be expected from general population data, has been reported by some (Stallman) but not by others (Nerdrum et al.). Difficulties coping with academic load (Cooke et al. 2006; Monk, 2004), orientation towards wanting to succeed academically (Adlaf et al.) and lower academic performance (Stallman) have been associated with higher psychological distress, suggesting that the academic pressure of university may be a factor. The direction of relationship is currently ambiguous as poor academic performance could be the result of psychological distress or the cause of it. Some research has found students in later years of study report lower distress (Adlaf et al.; Bayram & Bilgel, 2008; Bore et al., 2008) while others have not found this relationship (Stallman). Even if there is a decrease in distress as students progress through their studies it is unclear if it represents an improvement in ability to cope with the demands of university or is caused by attrition of those experiencing the most distress (Bore et al.). Full time students have been reported to present higher levels of distress than part time students (Stallman, 2010). Financial stress is perhaps the most consistent factor and has been reported to be associated with greater psychological distress (Cooke et al., ; Roberts, Golding, & Towell, 1998; Stallman; Stewart-Brown et al., 2000) and may be an important factor as estimates are that the majority of students report some level of financial stress (Roberts et al., 1998; Stallman; Stewart-Brown, et al.).
A protective factor that has been identified in some studies is social support or connectedness. Students living in more supportive situations such as with family and University residencies report less distress than those living alone or in share housing (Stallman, 2010). Being in a committed relationship has also been found to be a protective factor as has level of social engagement (Adlaf et al., 2001; Nerdrum et al., 2006). However the results are not consistent for these factors as Adlaf et al. did not find living situation to be an influence of level of distress reported and Stallman did not find marital status to be a factor after controlling for age.

**Personality as a factor**

One possible factor that may influence students' reported psychological distress that has received limited investigation is personality. There is a well-documented association between the personality profile of high neuroticism, low extraversion, low contentiousness and low agreeableness with the experience of mental illness symptoms (Malouff, Thorsteinsson, & Schutte, 2002). Previous research by Bore et al. (2008) demonstrated a similar personality profile of high neuroticism, low extraversion, low contentiousness and low self-control (related to conscientiousness), in students reporting elevated psychological distress. Related research by Munro, Bore and Powis (2011) suggests that the personality profile of high self-control, high resilience (low neuroticism) and high involvement with others (related to agreeableness) is related to better performance in medical students from which it may be inferred that this profile would be associated with lower psychological distress. Therefore there is relevant research to suggest that personality plays a part in student’s experience of psychological distress. Investigation of the influence of personality on students' levels of psychological distress is important as students with particular personality traits may be more vulnerable to experiencing psychological distress within the university context.
Impact on students

There is evidence that the high levels of psychological distress experienced by university students is causing disability as measured by a negative impact on their ability to work, study, perform day to day activities (Stallman, 2008, 2010; Stallman & Shochet, 2009) and decreased academic achievement (Cotton, Dollard, & de Jonge, 2002; Vaez & Lafortune, 2008). Stallman (2010) reported that students experiencing very high levels of distress on the K10 reported an average of 3.78 days out of role and 6.54 days of reduced activity in the last four weeks due to their psychological distress, compared to .16 days out of role and .67 of reduced activities for students reporting low distress. Stallman also reported students as a group experiencing greater disability than ABS samples of the general population, as measured as days out of role.

Although Stallman (2010) did not investigate the impact of this experience of disability on academic performance, her reported results did demonstrate that higher psychological distress was associated with lower Grade Point Average (GPA). Cotton et al. (2002) did investigate students’ academic performance using theories from paid worker occupational performance, and found that psychological distress was a significant factor in academic performance. They reported however that the relationship between students’ psychological distress as measured with the GHQ-12 and academic performance (GPA) was fully mediated by students’ reported satisfaction. This suggests that the elevated level of distress reported by students may be negatively affecting their satisfaction with university, with low satisfaction being associated with lower academic performance. This research is still developing and there are issues of lack of consistency in what and how variables are measured, however the current research is consistent in suggesting that students experience a noticeable negative impact that they attribute to their experience of psychological distress.
Help seeking

In spite of the high levels of distress they experience and the disability this distress causes them, research suggests that university students have lower rates of help seeking behaviour than the general public. Research on the general population has led to estimates that around 35-38% of people experiencing a mental illness seek formal assistance in a 12 month period (ABS, 2008; Andrews, Hall, Teesson, & Henderson, 1999). Estimates for University students’ help-seeking rates are lower ranging with around 12-35% (Eisenberg et al.; Stallman, 2010) of students identified as likely to have a mental illness (i.e. Very High level of distress on the K10) reporting using a service in the last 12 months. There is also some evidence of help-negation in young adults where those that are in the most distressed report lower willingness to seek help (Deane, Wilson, & Ciarrochi, 2001). This trend of poor help-seeking in university students is in spite of the fact that students generally have better access to services due to free university health services.

Interventions for Students

Therefore the overall picture is that university students experience high levels of psychological distress and associated negative impacts while being less likely to seek assistance. This leads to the need to consider alternative interventions, particularly population level interventions. The argument for a population level approach is strong giving the high proportion of students that could benefit and the need to reach those who would not normally seek assistance. Stallman (2011) piloted a resilience based intervention that conformed to a university lecture format and found positive preliminary evidence supporting acceptability to students of the format and students’ self-reported usefulness of the intervention; however no pre-post measure of psychological distress was used to determine efficacy of the intervention. In another
preliminary study Ryan, Schochet and Stallman (2010) investigate if an internet based intervention for University students could be used to reach students that would not normally seek formal help. They found that students reporting higher levels of psychological distress reported being more willing to use an online intervention than students reporting lower distress. Therefore these two studies suggest that alternate population based interventions for students could be acceptable to students and may reach those who would not normally seek help, however they did not investigate the efficacy of such interventions.

Implications

There is a body of evidence demonstrating university students to be a population reporting elevated levels of psychological distress with estimates that two to six times as many students report high levels of distress than same aged peers in the general public. These high rates suggest that university student populations may have higher rates of mental illness than non-student populations. University students’ also report experiencing high levels of disability due to their distress and low rates of help seeking implying that there is a significant unmet need in the population. Lastly, preliminary research suggests that interventions embedded within university lectures and tutorials could be a potential mode of intervention given the above points.

*Can course material function as an intervention to help students?*

As part of the curriculum of a particular first year psychology subject, enrolled students are taught mindfulness skills along with other techniques fundamental to counselling psychology. This material is presented due to its educational relevance to the subjects’ academic purpose however the current research, reported in the next section of this thesis, was undertaken to determine if the material also functioned as an embedded intervention for improving the students’ psychological well-being. The
reason it was considered that the material could function as an intervention was based primarily on two points. First, mindfulness techniques are currently a focus in various evidence supported clinical interventions such as Acceptance and Commitment Therapy and Dialectical Behaviour Therapy. A recent review by Davis and Hayes (2011) reported that mindfulness techniques are related to increased emotional regulation, increased positive affect and decreased negative affect. Davis and Hayes also described how there is some evidence that even brief interventions of 8 weeks can alter emotional regulation. Therefore it was considered that as mindfulness can increase emotional regulation and positive affect it could be related to a decrease in psychological distress or an increase in psychological well-being. Second, the activities that were selected to demonstrate counselling psychology techniques were all adapted to assist university students and all were taught experientially. The activities related to improving resilience and developing various self-management skills and the students in the subject were guided through each activity in regards to their own experience of commencing university studies. It was therefore considered that the activities could be related to an increased ability to manage the demands of university and hence a decrease in psychological distress or an increase in psychological well-being.
The effect of course integrated mindfulness and resilience training on students’ level of psychological well-being

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Abstract

Previous research has found university students to report elevated levels of psychological distress indicating potentially high rates of mental illness. The current research investigated if material presented in a typical university teaching format could function as an intervention. The curriculum of a first year psychology subject included teaching techniques related to counselling psychology and mindfulness techniques. We hypothesised that engaging in this material would reduce the severity of psychological distress. First year students from this subject and another first year psychology subject completed measures of psychological distress, resilience, psychological well-being and selected personality traits at two separate times during semester. The results were consistent with previous research in finding that students reported high levels of psychological distress and low levels of psychological well-being and resilience. While an increase in resilience over the semester was found the mindfulness material was found to not function as an intervention. The personality trait of resilience vs. emotional liability, related to the domain of neuroticism, was the only consistent predictor of positive and negative functioning. High trait resilience was related to low psychological distress, high psychological well-being and high resilience as measured as ability to bounce back from adversity. The implications of the current research are that there is still a need to develop population level interventions to decrease students' level of psychological and that personality may be an important factor in understanding students psychological functioning.

Key words: Embedded intervention, psychological distress, university students
Studying at University is a common and important part of many people’s lives. For most it presents challenges and a growing body of research suggests that for many students university may be related to significant psychological distress. Research internationally (Adlaf, Gliskman, Demers, & Newton-Taylor, 2001; Bayram & Bilgel, 2008; Cooke, Bewick, Barkham, Bradley, & Audin, 2006; Eisenberg, Gollust, Golberstein, & Hefner, 2007; Monk, 2004; Nerdrum, Rustøen, & Rønnestad, 2006) and from Australia (Bore, Ashley-Brown, Gallagher, & Powis, 2008; Stallman, 2008, 2010; Stallman & Shochet, 2009) demonstrates that university students report elevated levels of psychological distress compared to the general population. The levels of distress are such that it raises concerns that university students are a population at a high risk of mental illness and that some aspect of the university experience may be contributing to this increased risk.

Two recent studies with large samples give an idea of the scope of the situation. Adlaf et al. (2001) found in a sample of 7622 undergraduate students from various Canadian Universities that 34% reported High levels of psychological distress which was three times greater than the rate reported in a sample of the general public. In a series of studies (Stallman, 2008, 2010; Stallman & Shochet, 2009) on students from a group of Australian universities (largest sample 2010, n = 6479) it has been reported that between 10% and 19.2% of students report Very High levels of psychological distress compared to estimates of 4% for the Australian general population. In this way research suggests that two to five times as many students are experiencing elevated psychological distress compared to people in the general population.

The above research used the K10 (Kessler et al., 2002) or General Health Questionnaire (GHQ-12; Goldberg et al., 1997) both of which are psychometrically sound screening measures of mental illness. These measures have been widely used in
large epidemiological studies with elevated distress on these measures being highly associated with 12 month prevalence of mental illness. For example, Australian Bureau of Statistics (ABS) data suggests that 82-85% of people who report Very High levels of distress on the K10 will have met criteria for a DSM-IV or ICD-10 mental illness in the last 12 months (Andrews & Slade, 2001). Therefore the elevated psychological distress reported by students is potentially indicative of very high rates of mental illness.

The level of psychological distress reported by students cannot be accounted for by the general age cohort of university students. The majority of university students are in the 18-34 age range (ABS, 2007) and it is known that this age group report elevated rates of distress compared to other age cohorts (ABS, 2008). However, Stallman (2010, 2008; Stallman & Shochet, 2009) found that students across all age groups report higher level of distress compared to age matched data from an ABS sample. Similarly, Adlaf et al. (2001) reported that students aged 19-25 years from their sample reported significantly higher psychological distress than a matched sample of same aged peers in the general public. These findings suggest that the elevated psychological distress reported by students is not a cohort age effect.

Previous research has identified several potential factors that may influence students’ level of psychological distress, however, the findings are inconsistent. General population trends of females reporting higher distress than males have consistently been reported (Adlaf et al., 2001; Nerdrum et al., 2006; Stallman, 2010). The trend of older students reporting lower distress, as would be expected from general population data, has been reported by some (Stallman) but not by others (Nerdrum et al.). Difficulties coping with academic load (Cooke et al.; Monk, 2004), orientation towards wanting to succeed academically (Adlaf et al.) and lower academic performance (Stallman) have been associated with higher psychological distress, suggesting that the academic nature
of university may be a factor. The direction of relationship is currently ambiguous, however, as poor academic performance could be the result of psychological distress or the cause of it. Some research has found students in later years of study report lower distress (Adlaf et al.; Bayram & Bilgel, 2008; Bore et al., 2008) while others have not found this relationship (Stallman). Even if there is a decrease in distress as students progress through their studies it is unclear if it represents an improvement in ability to cope with the demands of university or is caused by attrition of those experiencing the most distress (Bore et al.). Full time students have been reported to present higher levels of distress than part time students (Stallman). Financial stress is perhaps the most consistent factor and has been reported to be associated with greater psychological distress (Cooke et al., 2006; Roberts, Golding & Towell, 1998; Stallman; Stewart-Brown, Evans, Patterson, Petersen, Doll, Balding, & Regis, 2000) and may be an important factor as estimates are that the majority of students report some level of financial stress (Roberts et al.; Stallman; Stewart-Brown et al., 2000).

The main protective factor that has been identified in studies is social support or connectedness. Students living in more supportive situations such as with family and university residencies report less distress than those living alone or in share housing (Stallman, 2010). Being in a committed relationship has also been found to be a protective factor (Nerdrum et al., 2006) as has level of social engagement (Adlaf et al., 2001). However, these results are also not consistent as Adlaf et al. did not find living situation to be an influence of level of distress reported and Stallman did not find marital status to have an effect after controlling for age.

One possible factor that may influence students' reported psychological distress that has received limited investigation is personality. There is a well-documented associated between the personality profile of high neuroticism, low extraversion, low
contentiousness and low agreeableness with the experience of mental illness symptoms (Malouff, Thorsteinsson, & Schutte, 2002). Previous research by Bore et al. (2008) demonstrated a similar personality profile of high neuroticism, low extraversion, low contentiousness and low self-control in students reporting elevated psychological distress. Related research by Munro, Bore and Powis (2008) suggests that the personality profile of self-control (related to conscientiousness), resilience (low neuroticism) and involvement with others (related to agreeableness) is related to better performance in medical students and it may be inferred that this profile may also be associated with lower psychological distress. Investigation of the influence of personality on students' levels of psychological distress is therefore still needed.

There is evidence of an association between the high levels of psychological distress experienced by university students and high levels of disability in terms of self-reported ability to work, study, perform day to day activities (Stallman, 2008, 2010; Stallman & Shocet, 2009; Stewart-Brown et al., 2000). There is also evidence of an association between high psychological distress and decreased academic achievement (Cotton, Dollard, & de Jonge, 2002; Vaez & Laflamme, 2008). Stallman (2010) reported that students experiencing elevated distress were up to 18 times more likely to experience two days in the last month out of role compared to students not experiencing elevated distress. Stallman also found that students were experiencing greater disability than the general population. These findings support the research on level of distress by demonstrating its impact while also highlighting university students’ need for support.

In spite of the high levels of distress they experience and the disability this distress causes them, research suggests that university students have low rates of help seeking behaviour. Research on the general population has led to estimates that around 35 – 45% of people experiencing a mental illness seek formal assistance in a 12 month
period (ABS, 2008; Andrews, Hall, Teesson, & Henderson, 1999). Estimates for University students’ help-seeking rates are lower ranging around 12 – 39% (Eisenberg Golberstein, & Gollust, 2007; Stallman, 2010). There is also some evidence of help-negation in young adults where those that are the most distressed report lower willingness to seek help (Deane Wilson, & Ciarrochi, 2001). This trend of poor help-seeking in University students is in spite of the fact that students generally have better access to services due to free university health services.

As described above there is a wealth of research into students’ experience of psychological distress but there is a noticeable lack on research into their aspects of positive functioning such as psychological well-being and resilience. Although related Ryan and Deci (2001) argue that psychological well-being is more than the absences of psychological distress, while Keyes (2005) views them not as opposite ends of a continuum but as separate unipolar dimensions. This suggests that there is a need to investigate aspects of positive functioning in order to gain a more complete understanding of university students’ experience.

Therefore there is a body of evidence demonstrating university students to be a population reporting high levels of psychological distress, experiencing disability due to their distress, who also have poor help seeking behaviours. However, there has been limited investigation into how to tailor population based interventions for students. Stallman (2011) piloted a resilience based intervention that conformed to a university lecture format and found positive preliminary evidence supporting acceptability to students of the format and students’ self-reported usefulness of the intervention; however, no pre-post measure of psychological distress was used to determine efficacy of the intervention. The current study sought to build on these ideas by further
investigating the possibility of embedded interventions into a university teaching format.

**The current study**

As part of the curriculum of a particular first year psychology subject, enrolled students are taught mindfulness skills along with other techniques fundamental to counselling psychology. This material was presented due to its educational relevance to the subjects’ academic purpose. The current research was undertaken to determine if the material also functioned as an embedded intervention for improving the students’ psychological well-being. The material was considered to potentially act as an intervention due to previous research showing mindfulness to be effective at increasing emotional regulation and positive affect (Davis & Hayes, 2011) and as the techniques taught are related to several supported interventions, such as Dialectical Behaviour Therapy. In order to address this question students from a separate first year psychology subject, that did not involve such activities, were used as a comparison group. A pre and post-test design was used, with students from both subjects completing a battery of measures of psychological distress and well-being at two times to determine if there was any effect caused by the material taught.

The aims of the current study were three fold. First, to replicate previous research on the level of psychological distress reported by students and to extend this research to include measures of positive psychological functioning. Second, to investigate the relationship between personality, psychological distress and positive psychological functioning in a sample of students; and lastly, to examine if material presented as part of an academic subject can function as an intervention to reduce the level of psychological distress and increase psychological well-being in a cohort of students.
It is predicted that there will be no difference at time one between the students from the two subjects with both groups reporting elevated psychological distress scores and decreased levels of psychological well-being and resilience compared to appropriate norms. It is also predicted that there will be a difference between the groups overtime with students exposed to the embedded intervention reporting lower levels of psychological distress and higher levels of psychological well-being and resilience compared to the students in the other course at time two. Lastly, it is predicted that low psychological distress will be associated with the personality traits of high resilience, high connectedness to others and high self-control.

Method

Participants

Participants at Time 1 (T1) were 150 first year students from two introductory psychology subjects. Their mean age was 23.24 (8.01) years and 117 were female. Participants at Time 2 (T2) were 53 participants from T1 who responded again and their mean age was 24.68 (9.43) years. The participants were grouped based on subject studied. One subject included the teaching of mindfulness and resilience techniques and these students were termed the Exposed to Mindfulness Techniques (EMT) group while those in the other subject were termed the Not Exposed to Mindfulness (NEM) group and were used as the comparison group. At T2 there were 26 participants in the NEM group (18 female) and there were 27 participants in the EMT group (21 female). Table 1 presents the breakdown of participants by age groups, enrolment and living arrangement at both times.

Measures

Demographics and simple measures. Participants provided their age, enrolment (full time or part time) and sex. They selected which of the two subjects they were
enrolled in. They were also asked to provide their subjective level of financial stress (none, occasional, frequent or constant). At T2 participants from the EMT group were asked to report how regularly they had used the mindfulness techniques (not at all, not very often, sometimes, regularly or very regularly) and how useful they had found the techniques (very not useful, not useful, neutral, useful or very useful).

*Psychological distress.* The K10 (Kessler, et al., 2002) measures non-specific psychological distress over the previous 28 days in order to indicate likely cases of affective and anxiety disorders. It consists of 10 items asking for the frequency of symptoms (e.g. about how often did you feel tired for no good reason?) on a five point likert scales. The K10 has acceptable internal consistency ($\alpha = .93$; Kessler et al.), and analysis of Receiver Operating Characteristic (ROC) curves has demonstrated it to have good to excellent accuracy at determining cases of mental illness (Andrews & Slade, 2001; Furukawa, Kessler, Slade, & Andrews, 2003; Kessler, et al.). Scores range from 10 to 50 with the current study using the Australian Bureau of Statistics (2012b) cut offs of 10-15 = normal, 16-21 = moderate, 22-29 = high and 30-50 = very high.

The GHQ-12 (Goldberg, et al., 1997) is similar to the K10 and measures non-specific psychological distress to determine likely cases of mental illness. It consists of 12 items asking about recent general health and medical complaints (e.g. recently have you lost much sleep over worry?) on a four point likert scale tailored to the item’s wording. The GHQ-12 has acceptable internal consistency ($\alpha = .82 – .86$; Goldberg et al.) and has been determined to have good accuracy from analysis of ROC curves (Donath, 2001; Goldberg, et al.). For the current study the binary scoring format (0,0,1,1) was used yielding scores between 0 and 12. The cut-off of 4 or higher was selected for determining elevated distress based on the work of Goldberg, Oldehinkel, & Ormel, 1998).
The Brief Symptom Inventory (BSI: Derogatis & Melisaratos, 1983) measures symptom prevalence and intensity across nine symptom dimensions in the previous seven days. It consists of 53 items describing symptoms (e.g. the idea that someone else can control your thoughts), responses are given on a five point likert scale of how distressed they have been about that symptom. The Global Severity Index (GSI), which is the average item response, gives a measure of the number and severity of symptoms endorsed and is considered the best single indicator of current level of distress (Derogatis & Melisaratos). The BSI has acceptable internal consistency (μ = .71 – .85 for symptom dimensions) and there is evidence supporting its construct validity.

*Measures of positive psychological well-being.* The Brief Resilience Scale (BRS; Smith, Dalen, Wiggins, Tooley, Christopher, & Bernard, 2008) measures resilience defined as a person’s ability to bounce back from adverse situations. It consists of six statements (e.g. I tend to bounce back quickly after hard times), responses are given on a five point likert scale of level of agreement. The BRS has acceptable internal consistency (μ = .80 – .91) and there is evidence supporting its construct validity (Smith, et al.). Scores represent the average item response and range from 1 – 5 with higher scores being associated with greater resilience. Research suggest that the BRS is negatively correlated with measures of anxiety, depression and negative effect.

The Warwick Edinburgh Mental Well Being Scale (WEMWBS; Tennat et al., 2007) measures the positive aspects of mental well-being. Items cover experience of positive affect and life satisfaction along with positive psychological functioning, strong relationships and self-realisation. It consists of 14 statements about feelings and thoughts (e.g. I’ve been feeling useful), responses are given on a five point likert scale of frequency over the last two weeks. It has been demonstrated to have acceptable
reliability ($\alpha = .89 - .91$) and there is evidence supporting its construct validity (Stewart-Brown & Janmohamed, 2008). Scores range from 14-70 with higher scores associated with greater well-being and have been demonstrated to be negatively correlated with GHQ-12 scores.

**Personality.** The Health Professions Values Survey (Bore, Munro, & Powis, 2011) is a newly developed measure that assesses three personality constructs: resilience vs. emotional lability, self-control vs. impulsivity and involvement (with others) vs. detachment (from others). For this measure resilience can be considered the inverse of neuroticism, self-control is related to conscientiousness and involvement is related to agreeableness (Bore, Munro, & Powis). Initial research suggests it has adequate psychometric properties with Alpha reliabilities > .80 and significant and strong correlations with the Big 5 traits of the NEO-PI-R (Costa & McCrae, 1992).

**Procedure**

An online survey consisting of the above measures was constructed using an online system for recruiting research participants at the university. T1 was Week 3 of semester 1 when students from both of the relevant subjects were asked to volunteer to complete the survey. T2 was week 10 of semester one when the students were again asked to complete the survey. Students received course credit for participating. Initially the survey was open for one week at both times however due to lower than expected response (n=122 at T1 and n = 35 at T2) it remained open for two weeks at both times.

Between T1 and T2 the EMT students completed a lecture and tutorial program that included one lecture and one tutorial on the topic of counselling psychology. The lecture component was presented by staff from the University’s Counselling Service of which one hour was allocated for explanation and students’ experiential practice of mindfulness techniques. The tutorial component was presented by post-graduate
students working as tutors and consisted of one two hour tutorial involving working through several activities put together by the counselling service on topics of building resilience, maintaining work-study-life balance, time management, stress management, positive self-talk, problem solving and further mindfulness practice. Several of the activities were supported by further resources including the *My Journey* (Scevak, Dluzewska, & Kirby, 2012) resource supplied by the university. Students in the EMT group were encouraged to continue using the mindfulness techniques over the following weeks with ten minutes in each of the remaining six tutorials being allocated for discussion and revision of the techniques.

**Results**

Once collected, data was checked and no unusual patterns of responding or missing critical data were found. Each of the measures was found to have adequate internal reliability (α > .85). The means for the outcome measures at T1 were compared across gender and to norms as presented in Table 2. Effect sizes were calculated using effect size calculator by Nicholas (2008) except for single sample t-test where the formula \( d = \frac{t}{\sqrt{N}} \) was used. Males and females were found to differ on the mean scores on the BRS, \( t(147) = -3.26, p = .001, d = .63 \), with males reporting higher scores, and on the mean GHQ12 scores, \( t(147) = 2.13, p = .035, d = .44 \) with males reporting lower scores. On the HPVS there were two gender differences on the traits of involved, \( t(39) = 3.32, p = .003 \) (equal variance not assumed) \( d = .72 \) and self-control, \( t(147) = 2.37, p = .001, d = .64 \), with males reporting lower scores on both.

On all outcome measures of psychological distress and positive psychological functioning the current sample scored more poorly than expected with moderate to large effect sizes as shown in Table 2. Scores on the BRS were combined for both genders and found to be below international reported norms from a sample of university students.
t(149) = -7.64, p < .001, d = .63. WEMWBS scores were below international reported norms for males, t(32) = -2.4, p = .023, d = .42, and females t(115) = -6.18, p < .001, d = .58. GHQ12 scores were found to be significantly higher than norms from an ABS sample for males, t(32) = 3.64, p < .001, d = .64 and females, t(115) = 9.42, p <.001, d = .89. GSI scores were above international outpatient norms for males, t(32) = 5.26, p < .001, d = .93, and females, t(115) = 8.49, p < .001, d = .79. K10 scores were higher than norms from an ABS sample for males, t(32) = 5.28, p < .001, d = .93 and females t(115) = 10.85, p < .001, d = 1.01. For the HPVS males and females scores were combined and differences were found for all three traits from norms of applicants for a university medical program, involved t(149) = 8.68, p = < .001, d = .71, resilience t(149) = -17.85, p = < .001, d = 1.46, and control t(149) = -16.38, p = < .001, d = 1.34. The current sample was more involved with others, less resilient and less self-controlled.

Prevalence of mental illness

Using the ABS cut offs for the K10, 32.7% (n=49) of the T1 sample (n = 150) scored in the High or Very High range compared to the most recent estimate from the general population of 10.8% meeting the same criteria (ABS, 2012a). Using available data on prevalence rates of mental illness broken down by K10 score (Andrews & Slade, 2001), and assuming a similar pattern of correspondence in the current sample, 38% (n = 57) of the current sample would meet the criteria for current mental illness compared to the general population estimate of 13.5% (Andrews & Slade).

Comparison to other samples

Stallman (2010) reported that 83.9% of their sample (n = 6 479) of university students had K10 scores in the Moderate to Very High range: 76% of the current sample at T1 meet this criteria. Comparing across the Very High range on the K10 the current
sample had 18% at T1, Stallman report 19.2% and estimates for the general population are 3%. In a sample of first year psychology students Bore et al., (2008) found that 25% had a GSI score above the psychiatric inpatient norm: 22% of the current sample met the same criteria. Using the GHQ-12 cut off of 4 or higher, 48% of the current sample met criteria and this is comparable or higher than a sample of Canadian university students (n = 7622) where it was reported that 30% met this criteria (Adlaf et al., 2001) and a sample of Norwegian students (n =1750) where it was reported that 21% met this criteria (Nerdrum et al., 2006). The current samples mean GHQ-12 score of 3.66 (3.31) was also significantly higher than the Norwegian samples mean of 2.08 (2.61), t(149) = 5.86, p < .001. These results suggest that the current sample reports similar or higher levels of psychological distress than comparable samples of university students.

Risk and protective factors

The majority of students reported some financial stress (91.2%) with 41.2 % reporting occasional, 29.1% reporting frequent and 20.9% reporting constant financial stress. The students’ living situation was collapsed into two groups based on the findings of Stallman (2010): connected (living with parents, partner/children or university residency) being 85.2% of the students versus unconnected (living in a share house or alone) being 14.8%. A series of linear regressions were then performed on BRS, WEMWBS, GHQ-12, K10, and GSI scores at T1 (the regression were not performed on T2 due to the small participant number) with the predictors of gender, age, enrolment, financial stress and living situation. Significant models emerged for BRS and GHQ12 however the models were weak, explaining 12% and 6% of the variance respectively. The three personality traits of the HPVS resilience, control and involvement, were then included as predictors (these three trait predictors were not highly correlated, r < .34). Significant models emerged for each outcome measure and
are detailed in Table 4. The personality construct of resilience was a common predictor with the direction of association being that high resilience was associated with high positive psychological functioning and low psychological distress.

**Effect of Group**

Mean scores on age, BRS, WEMWBS, GHQ12, K10, GSI and the HPVS subscales of involved, control and resilience for the participants that responded at both T1 and T2 and those that only responded at T1 were compared using a series of independent sample t-tests. There were no significant differences suggesting that the participants that responded at both times and those that only responded at T1 were similar on the measures. Next a 2 x 2 (time x group) mixed factors ANOVA was performed on BRS, WEMWBS, GHQ12, K10, GSI and the HPVS subscales scores for those participants that responded at both times. The main effect of time for BRS, $F(1,51) = 10.94, p = .002, \eta^2 = .177, d = 0.46$ (d corrected for dependence between means) and the main effect of time for HPVS control, $F(1,51) = 4.60, p = .037, \eta^2 = .078, d = 0.29$ (d corrected for dependence between means) were significant. The direction of difference was that BRS increased over time while control decreased over time. Mean BRS (M= 3.39, SD = .82) scores at T2 were found to no longer be significantly different from the relevant norm.

To investigate whether those participants in the EMT group that had used the techniques taught responded differently from those who did not, participants from the EMT group were further grouped based on reported level of use of the mindfulness techniques. Those participants who reported using the techniques sometimes (22.2% of EMT group), regularly (14.8%) or very regularly (3.7%) were categorised as users. A 2 x 2 (time x group; [user/non-users]) mixed factors ANOVA was performed on BRS, WEMWBS, GHQ12, K10 and GSI. None of these results reached significance. Next,
participants from EMT group were grouped based on reported usefulness of the techniques taught, with those reporting the techniques to be useful (14.8 % of EMT group) or very useful (18.5%) being categorised as helped. A 2 x 2 (time x group; [helped/not helped]) mixed factors ANOVA was performed on BRS, WEMWBS, GHQ12, K10 and GSI. Again, none of these results reached significance.

**Discussion**

In general our predictions were supported with exception of the hypothesis that the material taught to the EMT group would function as an intervention. As predicted students reported greater psychological distress than would be expected compared to the relevant norms. Students’ levels of distress was similar at the two sampling times suggesting a level of stability in their experience of distress. Previous research on first year students’ level of psychological distress over their first year demonstrated an inverted ‘U’ distribution (Cooke et al., 2006). In that study however the reported level of distress was significantly higher across all times during the year compared to baseline prior to commencing university suggesting that while there is variation during semester there is also a stable increase in distress after commencing university. As the current study did not have data collection prior to commencing university or at intermediate times during semester it is possible that there was variation during the semester, however the current results are still consistent with previous research in suggesting that students report elevated levels of distress that is reasonably stable over time.

It could be argued that the current findings are the result of or are exaggerated by the fact that the students were in their first semester at university, which could reasonably be assumed to be more stressful than the subsequent semester. The research of Stallman (2010) however suggests that this was not the case as that study used a sample taken at the beginning of second semester, in order to reduce situational
stressors associated with students first semester at university, and found that first year students still reported elevated levels of distress. Due to the similarity between the current findings and that of Stallman using the same measure along with the finding of Cooke et al. (2006) that student's level of distress is elevated throughout semester suggests that the students’ level of distress is reasonably stable across semesters. Elevated levels of distress has also been reported in students in later years of study (Stallman) suggesting that the reported distress is more than a transient response to students first semester at university.

The finding of elevated distress in the current sample could suggest that university students are a population at risk of higher rates of mental illness. Some caution is warranted however in making this interpretation as there may be some as of yet unknown response bias common to student populations resulting in the reported elevated reports of distress without it being representative of actual increased experience of psychological distress compared to the general population. This point could be further related to the methodological limitation of the current, and the majority of research on this topic in its reliance on volunteer responders who may be unrepresentative in their experience or who may demonstrate a particular response bias. This highlights the need for epidemiological studies of university student populations to determine accurately if they are a population with elevated rates of mental illness as the current and previous research on levels of psychological distress would suggest.

Consistent with elevated levels of psychological distress, and as predicted, measures of positive psychological functioning were lower than would be expected compared to norms at the first sample time. Although both resilience and psychological well-being are constructed as more than the absence of psychological distress, previous research has demonstrated both well-being and resilience to be negatively correlated
with psychological distress (Smith, et al., 2008; Stewart-Brown & Janmohamed, 2008). Therefore the current finding of low resilience and low well-being in the sample is consistent with past research given the high level of distress they reported. Resilience, as measured as ability to bounce back from adverse situation, did improve over time with a moderate effect size suggesting that students may experience an increase in their sense of being able to deal with adversity over the semester. This finding, while preliminary, is interesting in that it may suggest that although students may experience distress they also may be able to develop an increased sense of being able to manage such distress, a theory that is consistent with resilience and psychological distress being separate constructs. It also implies that by only focusing on distress, previous research may have overlooked the complete picture of students’ experience. More research is therefore needed into the relationship between psychological distress and aspects of positive functioning in students, in particular in attempting to determine if aspects of positive functioning can improve irrespective of stability in level of distress.

The possible protective and risk factors of age, gender, financial stress and living situation suggested by previous research were not found to be strong predictors of psychological distress, resilience or well-being for the current sample. Living situation was a significant predictor for resilience however the direction of the relationship was the opposite of that suggested by previous research. Those in less connected living situations such as living alone tended to report a greater ability to bounce back from adversity, suggesting that those in more independent living may tend to have a greater sense of being able to cope with adversity. Gender was a significant predictor for psychological distress as measured by the GSI but again the direction of association was opposite to what would be expected and contrary to that of previous research as males
tended to report higher distress. This finding is most likely a spurious result given the small number of male participants.

The personality trait of resilience was found to be a consistent and significant predictor of both positive and negative functioning in the current sample with associations being in the directions predicted. The personality trait measured was resilience vs. emotional lability and is highly associated the continuum of neuroticism from five factor models (Bore, Munro, & Powis, 2011). The current finding that high resilience was associated with low psychological distress is consistent with the previous research on the association between personality and mental illness (Malouff, et al., 2002) and personality and psychological distress in students (Bore, et al., 2008). The current finding that high trait resilience was associated with high bounce-back resilience (as measured by the BRS) and high mental well-being can also be interpreted as consistent with this research given the known negative correlation between these aspects of positive functioning and psychological distress.

The predictions that personality traits of involved and self-control would also be associated with psychological distress, resilience and well-being were not supported. The trait of self-control vs. impulsivity was not found to have any associations. The trait of involved (with others) vs. detached (from others) was found to be a significant predictor only for psychological distress as measured by the GHQ-12 and the direction of association was opposite to that predicted. The current finding was that higher involvement with others was associated with higher distress. One interpretation of this finding is that as involvement measures aspects of empathy and desire to help others it could be related to over involvement or greater negative impact caused by others’ problems, resulting in increases in psychological distress.
Personality traits can be considered a person’s stable and enduring patterns of perceiving, thinking about and responded to their environment and it therefore makes sense that such traits could be predictors of a students’ experience at university as past behaviour is often the best predictor of future behaviour. Traits related to neuroticism are obviously highly likely to be predictive of student’s experience of psychological distress as it can be considered that they are in a trait (neuroticism) versus state (psychological distress) relationship. Although beyond the scope of the current study’s findings to determine, one possible explanation of the role of neuroticism in students’ levels of distress is that it may moderate the effect the university environment has on levels of distress. The trait of neuroticism could be viewed as a vulnerability: university, with its competitive assessment-focused environment, could trigger the expression of this vulnerability as the state of psychological distress.

Contrary to our prediction there was no effect of group on any outcome measure. Even when looking at students who reported regularly using the techniques taught or those who reported finding them useful there was still no effect, suggest that the academic material presented did not function as an embedded intervention. There are several possible explanations. Firstly, it is highly possible that the material presented was insufficient in content and intensity to function as an intervention. This possibility is supported by the high level of distress reported suggesting more focused or intensive interventions may be needed to address such levels of need. Alternatively the fact that the material was presented as academic work, although taught experientially, means that the students may not have responded to it in the same way they would have to an explicit intervention. Examination of this last point is particularly important in determine the likely efficacy of embedding interventions into university programs.
The current study was an opportunistic study attempting to determine if academic material could function as an intervention. It is therefore perhaps not surprising that it did not, however the current study still has value in helping to start to explore the minimum threshold needed for subject material to function as an intervention. It does not discredit the idea of interventions that are embedded within standard university programs as the logic of such interventions in being able to access more students who would not otherwise seek help remains sound. Rather, it raises questions around do embedded interventions have to be more focused, explicit and/or intensive to be effective? Therefore there still is a need for research into alternate ways to reach and assist university students.

There are several methodological weaknesses to the current study. First, it was an opportunistic study of students who volunteered to participate and there was no random allocation of participants to group. Both of these factors increase the risk that there was a sampling bias in the current study. Second, the sample size in particular of those participants that responded at both times was small decreasing power. The small sample size in particular may affect how stable the models that emerged from the linear regressions are in alternate samples. Lastly, the material presented was not specifically developed to be an intervention and was not explicitly presented as an intervention. Either of these points may have meant that there was a decreased chance of producing an effect.

Conclusions

The overall implications of the current study are that university students are a population experiencing elevated psychological distress, low psychological well-being and low resilience, who are potentially a population with high rate of mental illness. There is a continued need to investigate means of reaching and assisting university
students, with a potential need for alternate intervention forms such as embedded interventions, capable of reaching the large numbers of students in need who do not seek assistance. Lastly, there is a need for continued research into the risk and protective factors that may be associated with student’s levels of distress, with one potential avenue being continued investigation of the role of personality.
Key Points

What is already known about this topic

1. University students report high levels of psychological distress.
2. University students also have lower rates of help seeking.
3. This suggests a need for population level interventions in university student populations.

What this study adds to the topic

1. Replication of previous research of students reporting high levels of psychological distress.
2. Suggests investigation of personality traits as a way to explain students’ levels of distress.
3. That teaching of mindfulness, resilience and self-management techniques as part of the course material of a first year university subject does not function as a population level intervention.
Acknowledgements

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Ethics

The protocol for this research was approved by the University of Newcastle's Human Research Ethics Committee (HREC) in March 2012. As such the protocol was deemed to be in accordance with the National Statement on Ethical Conduct in Human Research, 2007.


Nicholas, J. (2008). Effect Size Calculator. from
http://www.cognitiveflexibility.org/effectsize/


Table 1

*Age, Enrolment and Living Situation For Participants Who Responded Only at T1 and Those Who Responded at Both Times*

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<td>15(7.96)</td>
<td>23(15.65)</td>
<td>4(28.57)</td>
<td>5(12.82)</td>
<td>9(16.98)</td>
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<td>35-44 years</td>
<td>1(3.03)</td>
<td>9(4.42)</td>
<td>10(6.80)</td>
<td>1(7.14)</td>
<td>4(10.26)</td>
<td>5(9.43)</td>
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<td>&gt; 45 years</td>
<td>1(3.03)</td>
<td>5(5.31)</td>
<td>6(4.08)</td>
<td>1(7.14)</td>
<td>2(5.13)</td>
<td>3(5.66)</td>
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<td>Full Time</td>
<td>31(93.94)</td>
<td>102(87.93)</td>
<td>134(89.33)</td>
<td>12(85.71)</td>
<td>35(92.11)</td>
<td>47(90.38)</td>
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<tr>
<td>Part Time</td>
<td>2(6.06)</td>
<td>13(11.21)</td>
<td>15(10.00)</td>
<td>2(14.29)</td>
<td>3(7.89)</td>
<td>5(9.62)</td>
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<td>Living Situation</td>
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<tr>
<td>University</td>
<td>-</td>
<td>7(6.09)</td>
<td>7(4.70)</td>
<td>1(7.14)</td>
<td>3(7.69)</td>
<td>4(7.55)</td>
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</tr>
<tr>
<td>Residential</td>
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<tr>
<td>Parents</td>
<td>20(60.61)</td>
<td>70(60.87)</td>
<td>90(60.40)</td>
<td>5(35.71)</td>
<td>22(56.41)</td>
<td>27(50.94)</td>
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<tr>
<td>Partner &amp;/or</td>
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<tr>
<td>children</td>
<td>7(21.21)</td>
<td>23(20.00)</td>
<td>30(20.13)</td>
<td>4(28.57)</td>
<td>7(17.95)</td>
<td>11(20.75)</td>
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<tr>
<td>Alone</td>
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<td>10(8.70)</td>
<td>13(8.72)</td>
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<td>4(10.26)</td>
<td>5(9.43)</td>
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<tr>
<td>Share House</td>
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<td>1(0.87)</td>
<td>3(2.01)</td>
<td>1(7.14)</td>
<td>1(2.56)</td>
<td>2(3.77)</td>
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<td>Other</td>
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<td>4(3.48)</td>
<td>6(4.03)</td>
<td>2(14.29)</td>
<td>2(5.13)</td>
<td>4(7.55)</td>
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<tr>
<td>Measure</td>
<td>Male N = 33 Mean (S.D.)</td>
<td>Female N = 117 Mean (S.D.)</td>
<td>All N = 150 Mean (S.D.)</td>
<td>Norms</td>
<td>Sample Cronback alpha</td>
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<td></td>
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<td>-----------</td>
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</tr>
<tr>
<td>BRS</td>
<td>3.44(0.74)</td>
<td>2.97(0.75)</td>
<td>3.08(0.77)</td>
<td>-</td>
<td>3.53</td>
<td>.89</td>
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<tr>
<td>WEMWS</td>
<td>47.70(8.63)</td>
<td>47.70(8.63)</td>
<td>46.41(7.80)</td>
<td>51.3</td>
<td>50.3</td>
<td>.89</td>
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<tr>
<td>GSI</td>
<td>.90(0.71)</td>
<td>.82(0.60)</td>
<td>.83(0.63)</td>
<td>.25</td>
<td>.35</td>
<td>.97</td>
<td></td>
</tr>
<tr>
<td>K10</td>
<td>20.97(7.70)</td>
<td>22.31(7.75)</td>
<td>21.95(7.75)</td>
<td>13.9</td>
<td>14.5</td>
<td>.90</td>
<td></td>
</tr>
<tr>
<td>GHQ12</td>
<td>2.61(2.81)</td>
<td>3.98(3.39)</td>
<td>3.66(3.31)</td>
<td>0.83</td>
<td>1.02</td>
<td>.85</td>
<td></td>
</tr>
<tr>
<td>HPVS - Involved</td>
<td>122.79(19.65)</td>
<td>134.40(11.74)</td>
<td>131.99(14.71)</td>
<td>-</td>
<td>-</td>
<td>.88</td>
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</tr>
<tr>
<td>HPVS - Resilience</td>
<td>70.55(13.29)</td>
<td>67.34(11.63)</td>
<td>68.14(12.05)</td>
<td>-</td>
<td>-</td>
<td>.91</td>
<td></td>
</tr>
<tr>
<td>HPVS - Control</td>
<td>67.52(8.91)</td>
<td>73.28(9.05)</td>
<td>71.99(9.28)</td>
<td>-</td>
<td>-</td>
<td>.86</td>
<td></td>
</tr>
</tbody>
</table>

Note: * denotes gender difference, # denotes difference from norm.
BRS norm of 128 American undergraduate students (Smith, 2008)
WEMWS norms from two samples, total N=1749, of adults from Scottish general public (Stewart-Brown & Janmohamed, 2008)
GSI norms used were adult non-patient norms from users manual (Derogatis & Spencer, 1982)
K10 norms from 1997 ABS National Survey of Mental Health and Well Being sample (Andrew & Slade, 2001)
GHQ12 norms 1997 ABS National Mental Health Survey sample (Donath, 2001)
HPVS - Involved norm from university medical program applicants, N= 4 738
HPVS – Resilience & Control norms from university medical program applicants, N = 4 715
### Table 3

*Mean Scores for NEM Group (N= 26) and EMT Group (N=27) at T1 and T2 of Participants Who Responded at Both Times*

<table>
<thead>
<tr>
<th></th>
<th>Time 1</th>
<th>Time 2</th>
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</thead>
<tbody>
<tr>
<td></td>
<td>NEM</td>
<td>EMT</td>
</tr>
<tr>
<td>BRS</td>
<td>3.33(0.87)</td>
<td>3.02(0.76)</td>
</tr>
<tr>
<td>WEMWS</td>
<td>45.69(8.25)</td>
<td>47.74(8.86)</td>
</tr>
<tr>
<td>GSI</td>
<td>0.75(0.66)</td>
<td>0.76(0.63)</td>
</tr>
<tr>
<td>K10</td>
<td>20.54(8.18)</td>
<td>21.30(7.19)</td>
</tr>
<tr>
<td>GHQ12</td>
<td>3.77(3.46)</td>
<td>2.93(3.14)</td>
</tr>
<tr>
<td>HPVS-Involved</td>
<td>130.54(17.21)</td>
<td>130.22(15.98)</td>
</tr>
<tr>
<td>HPVS-Resilience</td>
<td>70.54(12.72)</td>
<td>69.85(12.86)</td>
</tr>
<tr>
<td>HPVS-Control</td>
<td>73.85(9.41)</td>
<td>73.04(9.44)</td>
</tr>
</tbody>
</table>

Note: * indicates significant difference
Table 4

Linear Regression Models for each Outcome Measure with Initial Predictors of Age, Gender, Financial Stress, Connectedness, Enrolment, HPVS- Control, HPVS-Resilience and HPVS-Involved.

<table>
<thead>
<tr>
<th>Criterion</th>
<th>$F(8,133)$</th>
<th>$p$</th>
<th>Adjusted $R^2$</th>
<th>Predictors</th>
<th>$\beta$</th>
<th>$p$</th>
</tr>
</thead>
<tbody>
<tr>
<td>BRS</td>
<td>10.95</td>
<td>&lt;.001</td>
<td>0.361</td>
<td>Living Situation</td>
<td>-0.17</td>
<td>0.018</td>
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<tr>
<td></td>
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<td>Resilience</td>
<td>0.56</td>
<td>&lt;.001</td>
</tr>
<tr>
<td>WEMWBS</td>
<td>21.43</td>
<td>&lt;.001</td>
<td>0.537</td>
<td>Resilience</td>
<td>0.73</td>
<td>&lt;.001</td>
</tr>
<tr>
<td>GSI</td>
<td>32.35</td>
<td>&lt;.001</td>
<td>0.64</td>
<td>Gender</td>
<td>0.14</td>
<td>0.017</td>
</tr>
<tr>
<td></td>
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<td></td>
<td></td>
<td>Resilience</td>
<td>-0.83</td>
<td>&lt;.001</td>
</tr>
<tr>
<td>K10</td>
<td>28.96</td>
<td>&lt;.001</td>
<td>0.613</td>
<td>Resilience</td>
<td>-0.82</td>
<td>&lt;.001</td>
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<tr>
<td>GHQ-12</td>
<td>12.35</td>
<td>&lt;.001</td>
<td>0.392</td>
<td>Age</td>
<td>0.22</td>
<td>0.002</td>
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<td>Involved</td>
<td>0.29</td>
<td>&lt;.001</td>
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<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>Resilience</td>
<td>-0.68</td>
<td>&lt;.001</td>
</tr>
</tbody>
</table>

Note: Only significant predictors are reported
Gender coded as females = 0, males =1
Living situation coded as unconnected = 0, connected = 1
References for Full Thesis


