An investigation of the effectiveness of Internet delivered education about emotional health and wellbeing in tertiary students experiencing depression and anxiety as part of a stepped care student counselling service

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Certification by Candidate

I certify that the work found within this thesis is all my own and has not been submitted for a higher degree to any other university or institution. All empirical research presented within this thesis was approved by the Human Research Ethics Committee of Macquarie University (reference number: 5201400474).

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Summary

Despite fewer than 30% of university students experiencing anxiety and depression seeking treatment university counselling services report difficulty in meeting demand for treatment. This study aimed to examine the efficacy of clinician guided transdiagnostic internet-delivered Cognitive Behaviour Therapy (CBT) treatment for students. It was hypothesized that post-treatment symptom scores of anxiety and depression would be lower than pre-treatment scores and that this would be maintained at three-month follow-up with less than 50% of treated students seeking face-to-face counselling within 3 months of treatment ending. There was a significant reduction in post-treatment anxiety and depression scores as measured by the GAD-7 ($p <$ .001) (*Cohen's d* = -0.92) and PHQ-9 ($p <$ .001) (*Cohen's d* = -0.76) compared to pre-treatment scores with no significant difference between post-treatment and three-month follow up GAD-7 ($p =$ .443) and PHQ-9 ($p =$ .150) scores. A face-to-face counselling appointment was requested by only 16% of participants within 3 months of treatment ending and the mean amount of clinician time per participant for the whole treatment and follow-up period was 50.3 minutes (*SD* = 15.8) (95% CI 47.8 – 53.1). All four lessons were completed by 67% of participants and 90% of participants surveyed would recommend the treatment to a friend. The results suggest that this treatment may be effective for students using a university counselling service however a trial that compares the treatment to treatment as usual is required.

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1: Introduction

1.1   Overview

There is growing concern about the mental health of young people, and university students in particular, in Australia (Simpson & Ferguson, 2012; Stallman, 2008) and internationally (Callender, Fagin, Jenkins, Lester, & Smith, 2011; Kitzrow, 2003). Anxiety and depression are the most common mental disorders found in the Australian community, with 14.4% of 16-85 year olds experiencing an anxiety disorder and 6.2% experiencing an affective disorder in a 12 month period (Australian Bureau of Statistics, 2007). Anxiety and depression are also the most mental disorders found in university students with 18.3% reporting severe or extremely severe symptoms of anxiety and 13.3% reporting severe or extremely severe symptoms of depression (Larcombe et al., 2014). There are effective treatments for these disorders that have traditionally been delivered through face-to-face psychotherapy with a psychologist over several weeks or months (Hunsley, Elliott, & Therrien, 2013). However despite the availability of effective treatments the majority of people, especially young adults, experiencing depression and anxiety do not seek help (Rickwood, Deane, Wilson, & Ciarrochi, 2005; Storrie, Ahern, & Tuckett, 2010) and two of the most common reasons that people do not seek treatment are stigma (Martin, 2012; Thornicroft, 2008) and difficulty accessing services (Eisenberg, Golberstein, & Gollust, 2007).

Despite the majority of people experiencing depression and anxiety not seeking treatment many services report difficulty in meeting increasing demand (Sethi, Campbell, & Ellis, 2010) and this is especially true in university counselling services (Callender et al., 2011; Kitzrow, 2003). Traditional individual psychotherapy is

unlikely to meet the need for treatment (Kazdin & Blase, 2011) and despite improved

services to treat mental illness in Australia unmet need remains (Jorm, 2011).

Increasing demand in university counselling services has led to increased waiting

times for services, restrictions on the number of appointments students can make with

a university Counsellor and students being referred to external services for treatment

(Stallman, 2012; Storrie et al., 2010).

Without proper treatment students experiencing depression are at increased risk

dropping out of study and this can have lifelong implications for their education, and

employment (Waghorn, Chant, Lloyd, & Harris, 2011). Depression is also linked

with an increased risk of suicide (Chesney, Goodwin, & Fazel, 2014), which is the

leading cause of death in people aged 15 to 24 (Australian Instutute of Health and

Welfare, 2013). Student suicide has received considerable media attention due to

university student suicides in the USA (Kennedy, 2013; Koziol, 2016; Lake, 2002)

and concern about the possible link between the stressors experienced by university

students and suicide (Coughlan, 2016; Wong, 2011).

Anxiety too has a negative impact on quality of life and can lead to disruption of

university study (Vitasari, Wahab, Othman, Herawan, & Sinnadurai, 2010),

employment (Waghorn & Chant, 2005) and health (Russ et al., 2012). Perhaps,

because anxiety is not as strongly linked with suicide, (Sareen et al., 2005) it may not

receive the attention that depression receives, despite having a much higher

prevalence. However anxiety and depression disorders commonly occur together

(Brown, Campbell, Lehman, Grisham, & Mancill, 2001; Kessler, Chiu, Demler, &

Walters, 2005) and are comorbid in up to 50% of cases in a primary care setting

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(Hirschfeld, 2001). These disorders are often treated separately, which can be time consuming for the person receiving treatment and the clinician delivering it. What is needed to meet the growing demand for treatment is a treatment that is more accessible than traditional face-to-face services, treats these commonly occurring disorders together and requires less clinician time to deliver.

The Internet has been successfully used to deliver effective evidence based treatment to treat anxiety disorders (Cuijpers et al., 2009) with no difference in overall effect sizes for face-to-face treatment and guided internet cognitive behavioural therapy in treating social anxiety disorder and panic disorder (Andersson, Cuijpers, Carlbring, Riper, & Hedman, 2014) and reducing depression symptoms (Lambert, Gregersen, & Burlingame, 2004). Guided internet treatments for depression have also been found to be effective with a mean effect size *Cohen's d* = 1.0 (Andersson & Cuijpers, 2009). University students may be ideal candidates for this form of treatment, as they are required to use the Internet and online learning as a routine part of their education. However until now there have been few examples of effective Internet delivered treatment that have been successfully provided to students as part of routine treatment (Farrer et al., 2013). The studies to date have either involved clinical trials with small sample sizes (Day, McGrath, & Wojtowicz, 2013; Kenardy, McCafferty, & Rosa, 2003) or self-guided internet treatments including Beating the Blues (Santucci et al., 2014) and MoodGYM (Sethi et al., 2010) and these too have had small sample sizes. Although the Santucci et al trial (2014) is in a clinical setting the sample size is small (N=44) and the majority (88%) of participants did not complete all treatment sessions. What is needed is a large scale trial of clinician guided Internet delivered CBT

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treatment for anxiety and depression symptoms in university students as part of routine care.

1.2 The impact of depression:

The World Health Organisation (WHO) reports that unipolar depression is the leading cause of years lost to disability in the world in middle- and high-income countries worldwide despite the availability of reliable treatments (Mathers, Fat, & Boerma, 2008). The twelve-month prevalence of Major Depressive Disorder (MDD) in the United States is approximately 7% (American Psychiatric Association, 2013a) and in Australia the twelve-month prevalence of affective disorders has been found to be 6.2% and 4.2% for a depressive episode (Australian Bureau of Statistics, 2007). There is some debate about whether the prevalence of common mental disorders, including Major Depressive Disorder and anxiety disorders are increasing, (Baxter et al., 2014; Patel, Flisher, Hetrick, & McGorry, 2007; Summerfield, 2006). Baxter et al (2014) argue that when standard diagnostic criteria are applied prevalence rates have been stable over the past two decades with point prevalence of anxiety disorders remaining at 4% and prevalence of Major Depressive Disorder unchanged at 4.4%. Countering this view some have described rising rates of depression as an "epidemic" (Ilardi, 2010; Seligman, 1993) and point to evidence that unipolar depression may become the leading cause of disease burden worldwide by 2030 (Lépine & Briley, 2011). Recurrent episodes of depression between the ages of 21-25 have been linked with lower rates of degree completion and higher rates of unemployment (Andrews & Wilding, 2004; Fergusson, Boden, & Horwood, 2007). The seriousness of the impact of depression has led the WHO to call on its member countries to make the prevention

and treatment of depression a priority (Marcus, Yasamy, Van Ommeren, Chisholm, & Saxena, 2012).

1.3   The nature of depression:

Depression is a mood disorder with two key indicators; depressed mood, for at least two weeks, and a loss of interest or pleasure in things that would normally bring pleasure or interest. Depression can also bring with it fatigue, changes in both sleep and appetite, a persistent sense of guilt or worthlessness and thoughts of death or suicide (American Psychiatric Association, 2013a). Depression is a major risk factor for suicide (Cantor, Neulinger, Roth, & Spinks, 1999) and in Australia in 2010 - 2012 suicide was the leading cause of death in the 15 – 24 age group (Australian Instutute of Health and Welfare, 2013). Around 50% of this age group are involved in tertiary study in Australia (Reavley, McCann, & Jorm, 2012) and the higher rates of depression in this age group make suicide a very real concern in higher education (Lake, 2002). Although there is often no clear single cause for depression what is known is that effective treatments are available (Cuijpers, Sijbrandij, et al., 2013). Effective early treatment can minimise the lifelong impact of depression on income (Kawakami et al., 2012), education, employment and health (Waghorn et al., 2011). Further effective, intervention can improve academic performance and potentially save lives however despite the availability of reliable treatment for depression and anxiety most people in the community do not seek treatment (Australian Bureau of Statistics, 2007) and students at university may be even less likely to seek treatment (Hunt & Eisenberg, 2010).

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1.4   The nature of anxiety:

Although the affective disorders, Major Depressive Disorder (MDD) and Persistent

Depressive Disorder (Dysthymia) (PDD), may be the most well known in the

community the anxiety disorders, Generalised Anxiety Disorder, Social Phobia, Panic

Disorder and Post Traumatic Stress Disorder (PTSD), occur most frequently

(American Psychiatric Association, 2013a; Australian Bureau of Statistics, 2007) and

impact on people and their quality of life can be very significant (Australian Bureau

of Statistics, 2007). Anxiety disorders are not as strongly linked with suicide or

academic failure (Andrews & Wilding, 2004), which may account for their lower

profile in the community. Although anxiety is a normal response to stress or threat

anxiety disorders refer to levels of anxiety that are beyond what is considered normal

and causes clinically significant distress or impairment in important areas of

functioning (American Psychiatric Association, 2013a). People who have an anxiety

disorder commonly avoid situations or activities that trigger their anxiety and

experience disrupted sleep, fatigue and impaired concentration, which have negative

implications for their quality of life.

The Australian 2007 National Survey of Mental Health and Wellbeing found that the

twelve-month prevalence of anxiety disorder in the Australian Community was 14.4%

and for an affective disorder or depression was 6.2% in a twelve month period

(American Psychiatric Association, 2013a; Australian Bureau of Statistics, 2007).

The same survey found that young people aged 18 to 24 have higher rates of

depression and anxiety than any other group surveyed, with 26% of people in this age

range experiencing one of these conditions in a twelve month period (Australian

Bureau of Statistics, 2007). Despite the high prevalence of anxiety and depression in

this age cohort they are less likely to seek treatment (Eisenberg, Downs, Golberstein, & Zivin, 2009; Rickwood, Telford, Parker, Tanti, & McGorry, 2014).

1.5   Cognitive Behaviour Therapy (CBT):

CBT is now is often the treatment advocated for the treatment of anxiety disorders and unipolar depression (Shafran et al., 2009) however in reviewing the history and evolution of CBT, Dobson (2009) has suggested that although CBT is often referred to, as a single form of treatment this may not be entirely accurate. The simplest distinction in CBT may be around whether the treatment is designed to change cognitions of behaviours. CBT may seek to improve the patients' mental state by changing their maladaptive thoughts and beliefs or replace maladaptive behaviours with adaptive ones. However "at their core, CBTs share three fundamental propositions: 1: Cognitive activity affects behaviour, 2: Cognitive activity may be monitored and altered, 3: Desired behavior change may be effected through cognitive change" (Dobson, 2009, p. 4).

Cognitive challenge, of maladaptive thinking and beliefs and behavioural change is also central to CBT (Waller, 2009) as are skill building and homework activities for the client to undertake outside of the therapy room. CBT is very much about changing daily activities and habits and recognises that much of the work of therapy in changing thinking and behaviour occurs outside the therapy session. As the patient is expected to do much of the work themselves CBT aims "to develop patient knowledge, skills and coping strategies to allow efficient self-management with minimal therapist contact" (MacLeod, Martinez, & Williams, 2009, p. 61) and to "teach the patient to become his or her own therapist" (Waller, 2009, p. 119).

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Evidence suggests that face-to-face CBT, like other forms of psychotherapy, requires 18 sessions to be most effective (Cuijpers, Andersson, Donker, & van Straten, 2011). Brief therapy of ten sessions or less has also been found to be effective for anxiety disorders and in reducing symptoms of depression (Cape, Whittington, Buszewicz, Wallace, & Underwood, 2010). However the average number of appointments at a sample of university counselling services in Australia was 2.9 sessions, with no indication of the efficacy in reducing symptoms of anxiety and depression (Stallman, 2012) although the evidence suggests with this small number of sessions the treatment received will not be effective.

CBT treatment for anxiety and depression has been successfully delivered through mediums other than face-to-face therapy such as bibliotherapy (Marrs, 1995), computer (Marks, Shaw, & Parkin, 1998) and more recently the Internet (Johansson & Andersson, 2012; Spek et al., 2007) with no difference found between face-to-face treatment and guided Internet treatment for Social Anxiety Disorder, Panic Disorder and depressive symptoms (Andersson et al., 2014). However there is a greater acceptance and continuation of treatment when there is some form of human contact although the exact amount of human contact that is required is not yet clear (Titov, 2011).

1.6   Growing concern for the mental health of university students

The global concern about the mental health of tertiary students which in part comes from recent student suicides in the United States and Canada (Kennedy, 2013; Lunau, 2012; Wong, 2011) particularly which have brought the mental health of students to

the attention of the media and the wider community. In the USA the death of student Jed Satow in 1998 saw the creation of the Jed Foundation (JED, 2016) by his parents and in Australia the death by suicide of Tristan Jepson led to the establishment of the Tristan Jepson Memorial Foundation (TJMF, 2016). However in the UK the death of Sarah Napuk in 1997 at Oxford University (Manthorpe, 2001) does not seem to have had the same effect although there has been some media attention directed at student suicides in the UK (Ali, 2016; Manthorpe, 2001). Although in 2011 the Royal College of Psychiatrists released a report that recognized the poor mental health of students and provided recommendations aimed at improving mental health services (Callender et al., 2011). In Australia concern about the mental health of students was the focus of the 2011 National Summit on student mental health and the release of student mental health guidelines for Universities (University of Melbourne, 2011).

To meet the mental health needs of students Australian universities provide counselling services to assist students to manage academic and personal problems, including personal counselling, relationship issues and psychiatric issues at little or no cost (Stallman, 2012). However, despite the growing concern about the mental health of university students in Australia and recognition of the negative impact of depression on academic performance (Andrews & Wilding, 2004) there has been little or no increase in treatment services for them (Stallman, 2012). Student-counselling services report an increase in the severity of students presenting both in the USA (Erdur-Baker, Aberson, Barrow, & Draper, 2006) and Australia (Simpson & Ferguson, 2012). Stallman (2012) also indicates that the same services report difficulty in meeting demand in Australia and the same difficulty in meeting demand has been reported in the USA (Arehart-Treichel, 2014; Eudaly, 2003). Some

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university counselling services manage demand by limiting the number of appointments that students can make by focusing on brief therapy or acute services rather than providing longer term treatment (Storrie et al., 2010). The risk with both of these approaches is that students may not receive an effective dose of treatment or will receive no treatment at all.

Just as the prevalence of anxiety and depression is not evenly distributed throughout the population there is some evidence that there are particular groups who have higher rates of anxiety and depression than those found in the community (Ibrahim, Kelly, Adams, & Glazebrook, 2013). University student in particular have been found to have higher rates of depression and anxiety, and more serious mental disorders, than their peers in the community (Stallman, 2008) and law students specifically may have even higher rates of mental disorder than students in other disciplines (Leahy et al., 2010; Medlow, Kelk, & Hickie, 2011). Stefano et al (2010) surveyed law students (N=741) from 13 Australian Universities to and found that law students had higher levels of distress than medical students and are more distressed than young people in the general population. Why university students generally, and students in particular disciplines, have higher rates of anxiety and depression is not well understood however the adverse impact on university completion rates and academic performance is well established (Callender et al., 2011). Failure at university may be the beginning of a decline in mental and physical health that can have a lifelong impact (Freudenberg & Ruglis, 2007; Leach & Butterworth, 2012).

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1.7   Help Seeking:

Despite the existence of treatments that reduce the symptoms of depression and improve quality of life through psychotherapy, pharmacotherapy or a combination of the two (Cape et al., 2010; Cuijpers et al., 2011). More recently internet delivered treatment has also been shown to deliver effective treatment (Andrews, Cuijpers, Craske, McEvoy, & Titov, 2010) however only around 35% of people in the general community who have a mental disorder seek treatment (Australian Bureau of Statistics, 2007). Of those who do seek treatment many drop out before they receive an "effective dose" of treatment with drop out rates as high as 60% due to the variables associated with social class; low socio-economic status, low levels of education and minority racial status (Self, Oates, Pinnock-Hamilton, & Leach, 2005). For some people the treatment they receive may not always be effective and those who do not receive an effective treatment and drop out may be unwilling to seek treatment again (Waller, 2009). While there may be a number of factors that cause patients to drop-out of treatment the alliance between the patient and the clinician seems to be the key factor in drop-out with a strong alliance reducing the risk of drop out (Duncan et al., 2003). The consequences of leaving their anxiety and depression untreated may have a long term impact on the individuals education and employment (Waghorn et al., 2011) and wider public health implications for the community (McGorry, 2005; Stewart-Brown et al., 2000).

1.8   Barriers to Help Seeking:

While there may be a number of factors that prevent people seeking help, stigma is a major barrier to help seeking for anxiety and depression, especially among university students (Martin, 2010; Storrie et al., 2010). It has been suggested that stigma is the

sum of three components; ignorance through lack of knowledge, negative attitudes and discrimination that leads to avoidance and exclusion (Thornicroft, 2008). Thornicroft (2008) goes on to say that people with a mental illness are universally less accepted and less valued than people who do not have a mental illness. Both the public stigma associated with mental illness and the self-stigma (Watson, Corrigan, Larson, & Sells, 2007), associated with accepting one's own mental illness, play a major role in preventing students seeking help (Eisenberg et al., 2009). Having to disclose fears about having a mental illness to clinic reception staff and then a clinician may prevent many people requiring treatment from seeking help. Consequently as few as only 10% of students experiencing a mental disorder seek help and drop out rates from therapy can be as high as 60% (Self et al., 2005). Stigma has ben found to be the main barrier to seeking treatment by Australian university students (Martin, 2010; Storrie et al., 2010) and accessibility has also been identified as barrier to treatment in this cohort (Santucci et al., 2014) with the public entrance to many counselling services proving of itself to be a barrier to help seeking (Manthorpe, 2001).

1.9   Traditional Treatment services:

Traditionally psychological treatment has been provided face-to-face both in the community and on university campuses through services that are open during "normal business hours". While these hours may suit the clinicians that staff them they may not always convenient for community members or students they are intended to serve. In university settings the services are routinely located on campus which may not be as convenient for students as students, especially first year students, spending less time on campus due to competing time pressures and the availability of online

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learning systems (James, Krause, & Jennings, 2010; Simpson & Ferguson, 2012).

While physical accessibility is important it may be more important that services

reduce the stigma associated with traditional services as this may be a more

significant barrier to treatment (Eisenberg et al., 2009). Accessing treatment through

traditional university counselling services usually requires initial face-to-face

disclosure about the need for treatment to reception staff and then again to the

clinician delivering the treatment again which can be significant barriers to students

seeking help (Manthorpe, 2001). Removing the need to meet face-to-face to either

make an appointment for treatment and to receive treatment may remove one of the

main barriers students for students requiring assistance.

1.10 Increasing access to treatment:

Perhaps in response to the call by the WHO for its member countries to make the

treatment of depression a priority (Marcus et al., 2012) the Australian Federal

Government introduced several initiatives designed to increase access to treatment

for mental disorders. The Better Access to Mental Health program was one of these

initiatives and it enabled General Practitioner's to refer patients to psychologists for

face-to-face treatment.   Under the Better Access Program psychologists were

included in the Medicare funding program, which reduced the cost of seeing a

psychologist (Whiteford et al., 2014). Around the same time the Federal

Governments funded Headspace services that were specifically designed to deliver

face-to-face treatment to young people, aged 12 to 25 (McGorry et al., 2007).

Headspace centres provide treatment of mental disorders for 12 to 25 year olds in

what are designed to be accessible and attractive one stop shops designed to overcome

the barriers associated with existing services (Muir et al., 2009).

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Early intervention with this 18 to 25 age group has the potential to change the lifelong trajectory of mental illness by reducing the impact of the mental illness on employment (Waghorn et al., 2011) and education (Andrews & Wilding, 2004). Left untreated the impact of mental illness can also reduce life expectancy through poorer physical health and increased risk and incidence of suicide (Chesney et al., 2014). Chesney (2014) found that when compared to the general population people who have a major mental disorder have an increased risk of mortality that was equal to or greater than the reduction in life expectancy caused by heavy smoking.

The evidence to date suggests that following the introduction of the Better Access program there has been an increase in the number of Australians who are now receiving treatment (Whiteford et al., 2014). Likewise there is some evidence of the success of Headspace in improving access to treatment for young people in Australia (Muir et al., 2009). However despite these improvements more than half of all people in Australia who have a mental disorder still do not receive treatment (Whiteford et al., 2014).

1.11 Psychological treatments that may be applicable to students:

Psychological therapy is routinely used as a first line treatment for depression and anxiety disorders (Clark et al., 2009) and there are a number of equally effective psychological therapies available (Baardseth et al., 2013). The psychological therapies that have found to be effective in treating depression that include Cognitive Behavior Therapy (CBT), Interpersonal Psychotherapy, Problem-solving Therapy, Non-directive Supportive Therapy, Psychodynamic Therapy and Behavioral

Activation Therapy (Cuijpers et al., 2011; Cuijpers, Berking, et al., 2013). And, although it has been suggested that all therapies are equally effective (Wampold et al., 1997) CBT currently has the strongest evidence base (Baardseth et al., 2013) and is the generally the preferred form of treatment for clinicians and funders, including the Better Access Program (Society, 2007). However it is worth noting that although the evidence for the effectiveness of other therapies including behavioural activation therapy, problems solving therapy, interpersonal psychotherapy, in treating depression is increasing it is yet to match the evidence available for CBT (Cuijpers, Berking, et al., 2013; Cuijpers, van Straten, Andersson, & van Oppen, 2008).

1.12 Internet delivered treatment:

Computers were first used to deliver treatment for psychological disorders in the 1990's (Marks et al., 1998) and the using the Internet to deliver treatment is a logical extension of computer use. CBT treatment transfers readily to the computer and the internet as it has been manualised for a range of disorders (Hunt, Andrew, & Sumich, 1995; Leahy, Holland, & McGinn, 2011) and internet delivered CBT (iCBT) comprises of a series of lessons and homework (Titov, 2011) that are similar to the manualised treatment. In its simplest form Internet delivered CBT can be a variation of bibliotherapy where the printed book is replaced with a computer screen. However while there is evidence for the effectiveness of bibliotherapy for depression (Williams, Wilson, et al., 2013) simply transferring bibliotherapy from the page to screen without taking advantage of the multimedia and interactive content that is available through the Internet makes it little more than an online book (Ritterband et al., 2003). Consequently iCBT treatment programs are usually "highly structured, comprising systematically presented online lessons, homework, and supplementary

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resources" (Titov, 2011). Patients work through a series of modules or lessons that deliver the CBT treatment and build skills so that the patient can, with time and practice, learn the skills required to "become their own therapist" (Waller, 2009, p. 119). Furthermore the use of multimedia and links allow the patient to explore additional material that enhances and amplifies what has been presented in the formal part of the lessons making iCBT much more than bibliotherapy on a computer. While other forms of treatment have been successfully delivered through the Internet, including Mindfulness (Boettcher et al., 2014), CBT has been found to the most effective online treatment to date (Barak, Hen, Boniel-Nissim, & Shapira, 2008).

Online treatment may be particularly suited to university students who are routinely required to access online learning platforms such as Blackboard and Moodle are used in almost every subject. At university it is not a question of whether online learning is being used rather how much it is being used and an online treatment resembles much of the online learning that they are already familiar with. There is even some evidence that Internet delivered treatment may be preferable for students than traditional forms of treatment (Lintvedt, S⊘rensen, Østvik, Verplanken, & Wang, 2008).

1.13 Effectiveness of iCBT:

CBT has been found to have a higher drop out rate (28%) than other forms of psychological treatment (<15%) which may be due to patients having a poor understanding of the concepts involved in the treatment and a failure to complete the required homework tasks (Cuijpers, van Straten, Warmerdam, & Andersson, 2008). Consequently patients receiving iCBT may be expected to experience similar

difficulties with the concepts and the homework and without the face-to-face therapist

to answer questions and support them, iCBT could be expected to have even higher

drop out rates than face-to face treatment. However there is good evidence that this is

not the case as dropout rates for guided iCBT, at 20% or less, are relatively low and

patient satisfaction is high (Andrews & Titov, 2010) although the number of trials (*n*

= 22) and the number of participants in the studies reviewed still remains relatively

small (*M* = 79) across a range of formats which may make comparisons difficult.

The evidence for the effectiveness of guided iCBT in the treatment of anxiety and

depression is growing and recent meta-analyses have shown that iCBT is as effective

in reducing the symptoms of depression and anxiety as face-to-face therapy (Andrews

et al., 2010; Cuijpers, Donker, van Straten, Li, & Andersson, 2010). A review of 26

trials of the internet delivered treatment of anxiety and depression found that the

effect sizes for the internet delivered treatments were as large as those for face-to-face

treatments (Griffiths, Farrer, & Christensen, 2010). There may be a number of

reasons why iCBT might be as effective as CBT delivered through face-to-face

therapy. Perhaps first and foremost the patient is actually receiving an effective

treatment (Shafran et al., 2009) as many patients who see a face-to-face therapist may

not receive effective treatment for a number of reasons (Waller, 2009). One of the

reasons face-to face treatment is not effective are clinicians delivering face-to-face

treatment may not believe that evidence from research trials are applicable in clinical

practice, preferring to use a "mix and match approach" rather than strictly CBT

methods and there may also be a lack of training that enables the transfer of

information from research trials to routine clinical settings (Shafran et al., 2009).

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iCBT reliably delivers an effective dose of treatment as "the CBT now largely resides within the materials, rather than within the therapist" (Bennett-Levy et al., 2010, p. 13) which means that treatment is not subject to therapist drift (Waller, 2009). Effective evidence based CBT is also delivered early which is likely to make the treatment for successful as patients experience the benefits of treatment quickly which makes it more likely that they will continue with the treatment (Feeley, DeRubeis, & Gelfand, 1999). Convenience of treatment (Rochlen, Zack, & Speyer, 2004) may also be a factor in the effectiveness of iCBT as patients can log in and undertake their treatment at a time that is convenient to them without the stigma associated with attending a counselling service (Rochlen et al., 2004).

The exact mechanisms that make iCBT effective warrant further research however regardless of the factors that contribute to the effectiveness of iCBT it is clear that this form of treatment has the potential to deliver treatment to more people than ever before (Ritterband et al., 2003). Furthermore, while some treatments may be effective in clinical trials their effectiveness may diminish when they delivered in the community however there is good evidence that iCBT is effective when used in routine care (Andersson & Hedman, 2013).

1.14   The Role of the Therapeutic Alliance in treatment:

The therapeutic alliance refers to the relationship between the client and the clinician and recognises the client's contribution to the relationship and not just the technical skills of clinician or the clinician's adherence to the treatment. It is suggested that the therapeutic alliance has three components; the tasks or behaviours and processes of therapy, the goals that the client and clinician agree on and the bonds or attachment

between the client and the clinician (Lambert & Barley, 2001). It has been suggested that the therapeutic alliance (Horvath & Luborsky, 1993) between the clinician and the patient may be more effective than the treatment itself (Asay & Lambert, 1999) which, if true, would suggest that iCBT may be less effective than face to face therapy. However guided iCBT has been shown to be as effective as face-to-face CBT (Cuijpers et al., 2010) despite not having the opportunity to form the same therapeutic alliance that comes through face-to-face treatment (Andersson et al., 2012). While the relationship with the patient may be quite different with the two forms of therapy it appears that some form of clinician contact, or relationship, is necessary for iCBT to be effective in the treatment of anxiety and depression (Andersson & Titov, 2014; Olthuis, Watt, Bailey, Hayden, & Stewart, 2015) even if the contact is only via email (Titov et al., 2013).

Adherence to iCBT is greater when there is contact with someone who guides and supports the process (Andersson & Titov, 2014) and as with face-to face treatment the strength of the relationship is linked to the frequency and duration of contact (Knaevelsrud & Maercker, 2007). A strong therapeutic alliance can form with the clinician supporting the treatment (Knaevelsrud & Maercker, 2007) consequently clinician guided CBT is the preferred form of online treatment (Andersson, 2010; Johansson & Andersson, 2012)

1.15 Transdiagnostic CBT:

Most people seeking psychological treatment in the community have multiple problems (Seligman, 1995) with around 40% or more of 12 month cases of mental disorder co-morbid with two or more conditions (Kessler et al., 2005). Co-morbidity

rates have also been found to be higher among university students with just over 50% who have Generalised Anxiety Disorder also having Major Depressive Disorder (Eisenberg, Gollust, Golberstein, & Hefner, 2007).   Consequently a treatment that is effective for both anxiety and depression may be preferable to a series of treatments for each separate disorder. Treating both disorders together is likely to save both the patient and the clinician time and lead to a more rapid recovery.

Transdiagnostic CBT (TCBT) is similar to a broad-spectrum antibiotic in that it is designed to treat co-occurring disorders concurrently without the need to provide distinct treatments for each disorder. TCBT is underpinned by the premise that psychological disorders share common psychological and behavioural processes (Mansell, Harvey, Watkins, & Shafran, 2009) that respond to a common form of treatment; a common form of treatment that does not require the separate diagnosis and treatment of each disorder. There is mounting evidence that TCBT is effective both when delivered face to face (Reinholt & Krogh, 2014) and when delivered via the internet with clinician involvement (Dear, Titov, Schwencke, et al., 2011; Titov et al., 2011).   Transdiagnostic CBT for anxiety disorders has been found to have been as effective as treatment as usual for anxiety disorders (Reinholt & Krogh, 2014) and in treatment as usual in reducing anxiety and depression symptoms (Newby, McKinnon, Kuyken, Gilbody, & Dalgleish, 2015). However both studies recommend further research in this area using high quality RCT's that compare transdiagnostic face-to-face or internet delivered treatment with treatment as usual face-to-face treatments to strengthen the evidence base.

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1.16   The Stepped Care Model of Service Delivery:

University counselling services may no longer expect to meet the demand for service from students through face-to-face treatment alone, leading some to adopt a stepped care model of service delivery (Cowley & Groves, 2015), where the least intrusive and most effective treatment is provided first (NICE, 2011). University counselling services in Australia are now often triaging and referring students to more appropriate services (Stallman, 2012) with more labour intensive and expensive treatments, such as face-to-face counselling, only provided after an initial assessment determines that they are needed or after the simpler treatment has not proven to be effective.

The use of computer-based treatments as part of stepped care was recognised almost a decade ago (Barlow, Ellard, Hainsworth, Jones, & Fisher, 2005) and internet treatments for anxiety and depression have been suggested as a first line of treatment in a stepped care model (Andrews & Titov, 2010). Although clinician guided iCBT may not be suitable for all clients and a reliable screening tool is essential to assess risk and the need for more intensive treatment, including hospitalisation if required. Nor is to suggest that iCBT should replace face-to-face therapy, rather it should be complement face-to-face therapies (Andersson & Titov, 2014) and may be suitable in many instances as a first line of treatment.

Transdiagnostic iCBT also fits well within a stepped care model of service as it is both low cost, effective and accessible (Titov, Dear, Ali, et al., 2015). There is also growing evidence that when iCBT when used in clinical settings it remains effective for both anxiety and depression (Andersson & Hedman, 2013; Titov, Dear, Staples, et al., 2015; Williams, Andrews, & Andersson, 2013).

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1.17 Managing Risk:

Suicide is the leading cause of death in the age group for most university students (Australian Instutute of Health and Welfare, 2013) and is a concern for university counselling services and administrators (Furr, Westefeld, McConnell, & Jenkins, 2001; Lake, 2002). Consequently routinely assessing and monitoring risk is essential in any treatment for students and, although the clinician delivering iCBT cannot make a visual or verbal assessment when they have contact with a participant assessments are completed at every log in. Clinician guided iCBT usually requires participants to complete an assessment at every login as it provides a way of assessing and managing risk (Titov, Dear, Staples, et al., 2015). These assessments may provide a more reliable assessment of risk as patients using the Internet have been found to answer more honestly when questioned about risk taking or unhealthy behaviours (Tate & Zabinski, 2004).

1.18   The growing demand for university counselling services:

University mental health services are being called upon to deliver treatment to a growing number of students (Mowbray et al., 2006; Stallman, 2012); treatment that is both accessible and acceptable to students. It is no longer enough to rely on face-to-face counselling services to meet student needs (Regehr, Glancy, & Pitts, 2013). Instead what is needed is an evidence based treatment that can be delivered to the growing number of students without the need for additional staff and transdiagnostic iCBT may assist in meeting this growing demand for treatment. Clinician guided iCBT offers an evidence based accessible treatment for anxiety and depression which may be as effective as traditional face-to-face therapy (Cuijpers et al., 2010) yet requires as little as 1/10 of clinician time (Andersson et al., 2012). Clinician guided

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iCBT may also overcome some of the common barriers to seeking treatment

particularly accessibility and convenience (Andrews & Williams, 2014). Providing a

treatment that is both accessible and convenient to university students has the

potential to prevent more serious mental problems developing (Bennett-Levy et al.,

2010).

1.19 The purpose of this study:

Therefore, in collaboration with the Macquarie University eCentre Clinic, we set out

to pilot a clinician guided transdiagnostic iCBT treatment designed specifically for

university students called Uniwellbeing. Uniwellbeing is a variation on the

Wellbeing program that has been proven to be effective in clinical trials run by the

eCentre clinic (Titov et al., 2013; Titov et al., 2014; Titov et al., 2011). The original

Wellbeing program has been shortened and then refined following the trial of an

earlier version of the "Uniwellbeing" course for students (Mullin et al., 2015). The

research design was a single group repeated measures design that compared pre-

treatment to post-treatment results and again three months later.

1.20 Hypotheses:

It was hypothesised that:

1: Students who undertake the clinician-guided iCBT Uniwellbeing course will have

  reduced anxiety and depression scores post-treatment compared to pre-treatment

  assessment.

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2: The anxiety and depression scores of students who undertake the clinician guided iCBT Uniwellbeing course will remain reduced three months after completing the course.

3: Less than 50% of students who undertake the clinician guided iCBT course will require face-to-face counselling within three months of completion. The rationale for choosing a figure of less than 50% of students who complete the Uniwellbeing course requiring face-to-face counselling was based on the more than 50% of students who did not complete the earlier version of Uniwellbeing (Mullin et al., 2015) and may therefore require further treatment through face-to-face counselling.

Three secondary research questions were also investigated:

1: Is the completion rate for the four-lesson version of Uniwellbeing higher or lower than for the earlier five-lesson version?

2: How much clinician time is required to deliver Uniwellbeing?

3: Is the Uniwellbeing course something that students were satisfied with and would recommend to a friend?

The pilot is designed to test the effectiveness of clinician guided transdiagnostic iCBT in treating anxiety and depression in students who request a routine appointment with the Macquarie University Counselling Service. This form of Internet based treatment, if effective, has the potential to increase the capacity of the Counselling Service,

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reduce waiting times for treatment and overcome some of the barriers that prevent

students seeking treatment.

2. Method

2.1 Participants

Participants were 154 students from Macquarie University, Sydney, Australia. There

were 45 males (29.2%) and 109 females (70.8%) with ages ranging from 17 to 51 (M

$= 23.83$, $SD = 5.98$). The sample size is larger than might be expected in a pilot due

to the inclusion of participants with no clinical symptoms of anxiety or depression and

the relatively low completion rate in the earlier trial of the treatment (Mullin et al.,

2015) which could have resulted in a small number of participants completing the

three month follow-up. Participants were recruited from students requesting

counselling from the university Allied Health Service. Consent was obtained from all

participants through an online format.

Approval for this study was obtained from the Human Research Ethics Committee at

Macquarie University, protocol HREC 5201400474. The trial was also registered

with Australian New Zealand Clinical Trials Registry (ANZCTR):

ACTRN12614001099617.

2.2 Procedure

When submitting a request for Counselling students were required to complete a

Counselling Intake Form (CIF) (see Appendix A) that was adapted from the DSM-5

level 1 Self Rated Cross-Cutting Symptom Measure (American Psychiatric

Association, 2013b).

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An Allied Health Services Psychologist reviewed CIF's and students with mild symptoms who had scores of (2 or less) for risk of self-harm or suicidal ideation and 3 or less on questions relating to anxiety and depression, were referred to a Uniwellbeing clinician for a phone assessment. These students were screened to determine their willingness to participate in the Uniwellbeing course and those accepting were registered and confirmed via email.

Participants accessed a secure website to read weekly lessons, download 'do-it-yourself' guides, additional resources and case studies. Prior to commencement of the course and on the initial weekly login participants were required to complete the GAD-7 and PHQ-9. These measures provided data for the study and allowed monitoring of individual symptom levels.

Participants received weekly phone (< 20 mins.) and/or written contact via a secure messaging system to provide an opportunity to ask questions, reinforce core messages and address elevated symptoms.   Additionally, participants received emails informing them of course details, their progress and reminders of available lessons and questionnaires throughout the course.

On completion, and again 3 months later, participants were asked to complete the GAD-7 and PHQ-9 and provide feedback on their experience. These questionnaires provided data that enabled the clinician to generate a progress report for each participant.

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2.2.1   Managing Risk

Clinicians throughout the study monitored participant's PHQ-9 scores and reviewed them weekly with their eCentreClinic supervisor. If a PHQ-9 score increased by more than five points or the score for question 9, which has been linked with increased suicide risk (Simon et al., 2014) was above 3 the participant was contacted and assessed. Participants assessed as requiring more intensive treatment were referred to the university Counselling Service for a face-to-face appointment.

2.3   Measures

2.3.1   7-item Generalised Anxiety Disorder Scale (GAD-7) (Spitzer, Kroenke, Williams, & Löwe, 2006).

The GAD-7 is a 7 item self-report questionnaire that has been found to be a valid and reliable measure of the symptoms and severity of anxiety (Löwe et al., 2008). Specifically, the GAD-7 has been found to be a useful screening tool for the four anxiety disorders most commonly found in the population; generalized anxiety disorder, panic disorder, social anxiety disorder and posttraumatic stress disorder (PTSD) (Kroenke, Spitzer, Williams, Monahan, & Löwe, 2007) and is sensitive to change (Dear, Titov, Sunderland, et al., 2011; Löwe, Kroenke, Herzog, & Gräfe, 2004).

The GAD-7 is scored using a 4-point scale: "not at all" (0) to "nearly every day" (3) with severity ranges: 5 – 9 *mild*, 10 – 14 *moderate* and 15 – 21 *severe* anxiety (Löwe et al., 2008). The initial research found that the internal consistency of the GAD-7 was high (Cronbach α = .92) (Spitzer et al., 2006, p. 1094) and in this study the internal consistency was also high (Cronbach α = .87). A GAD-7 score

equal to or greater than 8 indicates possible cases of anxiety (Kroenke et al., 2007) consistent with DSM-IV criteria.   Increasing scores indicate increasing symptom severity (Löwe et al., 2008).

2.3.2   9-item Patient Health Questionnaire (PHQ-9) (Kroenke, Spitzer, & Williams, 2001)

The PHQ-9 is a 9 item self-report questionnaire used to measure the symptoms and severity of depression that is sensitive to change (Kroenke, Spitzer, Williams, & Löwe, 2010). It is based on the DSM-IV criteria for depression with a score of 10 indicating a likely diagnosis of depression with higher scores indicating more severe symptoms (Kroenke et al., 2001). The PHQ-9 has also been found to be useful in screening for increased risk of suicide attempt and death (Simon et al., 2014). Original research on the PHQ-9 found that it had very good internal consistency (Cronbach $\alpha = 0.89$) (Kroencke, Spitzer, & Williams, 2001, p. 608) and in this study the internal consistency was also high (Cronbach $\alpha =$ .84).

2.4   Intervention

The intervention treatment consisted of a four-lesson (five week) clinician guided transdiagnostic iCBT course (Uniwellbeing). The Uniwellbeing course was developed using evidence based CBT principles that systematically teach participants skills and provide information so that they can learn to manage symptoms of worry, stress, anxiety, low mood and depression. The course materials have been modified from those used in the original Wellbeing treatment program (Titov et al., 2013) and the earlier Uniwellbeing course (Mullin et al., 2015) to make them engaging and

The 4 lessons were presented as PowerPoint presentations containing 46, 53, 53 and

56 slides respectively. Lesson 1 was an introductory lesson providing psycho-

education and introducing the CBT framework. Lesson 2 addressed 'Thought

Challenging' while Lessons 3 and 4 provided information and skills to assist with

physical and behavioural symptoms. Lesson 4 also provided information on relapse

prevention while all lessons encouraged continual revision and practice of skills.

The Do-It-Yourself Guides (DIY) were summaries of lessons and also provided

worksheets and other interactive materials to encourage engagement and skills

practice. Participants were able to download and keep these materials for future

revision. Five case studies were provided to assist leaning and demonstrate the

versatility of the skills taught. These were hypothetical students who had participated

in the course and shared their experiences integrating weekly lessons into their lives.

All 5 were from culturally and linguistically diverse backgrounds, of varying ages and

tackling different life situations while at university.

Additional resources were offered at times deemed to be relevant to the lesson

materials. Resources covered topics such as: sleep, procrastination, problem solving,

assertive communications, beliefs, mental skills and communication skills. These

could be downloaded according to the participant's needs. Campus Wellbeing staff

delivering the Uniwellbeing course were formally supervised by a clinical

psychologist from the eCentre clinic. The supervision involved a review of each

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participant's weekly GAD-7 and PHQ-9 scores, contact(s) made with the participant and the participant's engagement with the course.

2.5   Statistical Analysis

Statistical analysis was based on mixed fixed/random effect models to allow individuals who missed one or more visits to have such as were available to be included. The model included a fixed time effect with levels pre-treatment, end-of-treatment and 3-month follow-up as well as a random person effect.   Post-treatment GAD-7 and PHQ-9 scores were compared to pre-treatment GAD-7 and PHQ-9 scores and 3-month follow-up GAD-7 and PHQ-9 scores were compared to post-treatment GAD-7 and PHQ-9 scores. Effect sizes (*Cohen's d*) and 95% confidence intervals were calculated using the estimated marginal means for within-group changes, based on the pooled standard deviation with an effect size of 0.2 to 0.5 described as small, between 0.5 to < 0.8 as medium, and $\geq$0.8 as large (Cohen, 1992).

Demographic data including age, sex, citizenship and enrolment status was collected from the students at enrolment in the course and from their student records. Mean individual change scores for participants from each of the demographic groups as well as participants who scored above the clinical threshold for the GAD-7 ($\geq$8) and PHQ-9 ($\geq$10) and below the clinical threshold for the GAD-7 (<8) and PHQ-9 (<10) were calculated by subtracting the post-treatment scores from the pre-treatment scores. All analyses were performed using SPSS version 22.0.

Hypothesis 1 analysis

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A linear contrast based on the mixed model was estimated that compared pre-treatment with post treatment scores and assigned a weight of zero to the 3-month follow-up time point.

Hypothesis 2 analysis

A linear contrast based on the mixed model was estimated that compared post-treatment with 3 month follow up scores and assigned a weight of zero to the pre-treatment time point.

Hypothesis 3 analysis

Analysis of hypothesis 3 was carried out by calculating the number of participants who had seen a clinician with the university counselling service within three months of completing the course. Appointment data was collected from the Campus Wellbeing client record database that shows all appointments and phone and email contacts with students.

Secondary Research question 1 analysis

Analysis of secondary research question 1 was undertaken by calculating the number of participants who completed all four lessons. The clinician recorded the number of lessons completed by each participant.

Secondary research question 2 – analysis

Analysis of secondary research question 2 was undertaken by collecting and calculating the amount of clinician time spent with each participant. Clinicians recorded the amount of time spent each time they contacted a participant.

Secondary research question 3 analysis

Analysis of secondary research question 3 was undertaken using the data from the

post-treatment satisfaction survey.

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3. Results:

3.1 Participant disposition:

Students recruited into the study were male and female undergraduate and post-graduate international and domestic students. Data was not collected on the participant's previous engagement with psychotherapy or medication, as this has no influence on the treatment provided by the university counselling service. As part of the services stepped care model low intensity iCBT treatment is provided to students who are assessed as having a low risk and no previous treatment history. Table 1 shows the disposition of the participants.

Table 1.
Demographic Characteristics of Participants (N = 154)

Characteristic	N	%
Male	45	29.2
Female	109	70.8
Undergraduate	133	86.4
Postgraduate	21	13.6
Domestic	136	88.3
International	18	11.7

The majority of the participants were female domestic undergraduate students. Of the 154 participants recruited into the study 10 participants completed only the initial lesson and GAD-7 and PHQ-9 screening questionnaires and did not participate any further in the course. 87% (134/154) completed pre- and post-treatment assessments and 76% (117/154) completed pre-treatment, post-treatment and 3 month follow up assessments.

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3.2 Participants clinical profile

Of the 154 participants in the study 33% (50/154) had symptoms of anxiety and
depression in the normal range with both GAD-7 and PHQ-9 scores that were below
the clinical threshold (GAD-7 score <8 and PHQ-9 score <10). 15% (23/154) of
participants had elevated symptoms of anxiety with GAD-7 scores ≥8 ($M = 13.75$, SD
$= 3.61$), and 8% (12/154) of participants had elevated symptoms of depression at pre-
treatment with PHQ-9 scores ≥10 ($M = 15.06$, $SD = 3.08$). 44% (67/154) of
participants had both elevated symptoms of anxiety with GAD-7 scores ≥8 ($M =$
13.75, $SD = 3.62$) and depression with PHQ-9 score ≥10 ($M = 15.43$, $SD = 3.99$) at
pre-treatment.

The sample is representative of the population that routinely seeks low intensity
treatment from the university counselling service that includes a range of degrees of
severity of anxiety and depression symptoms.

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3.3 Data description

There was a clear and approximately linear reduction in the participants' mean GAD-7 scores over the course of the treatment as shown in Figure 1.
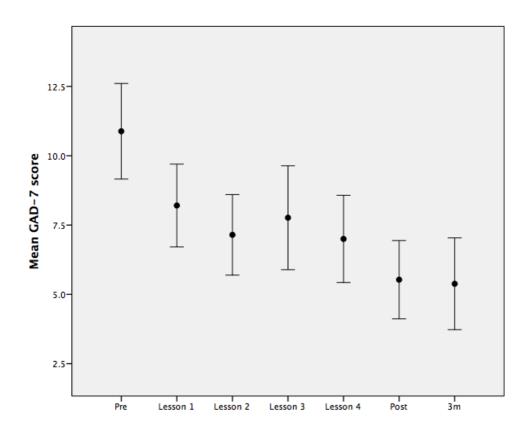

Figure 1. Mean GAD-7 scores. Mean pre-treatment, weekly lesson, post-treatment and 3-month follow up GAD-7 scores 95% confidence interval.

There was also a clear and almost linear reduction in the participants' mean PHQ-9 scores over the course of the treatment as shown in Figure 2.
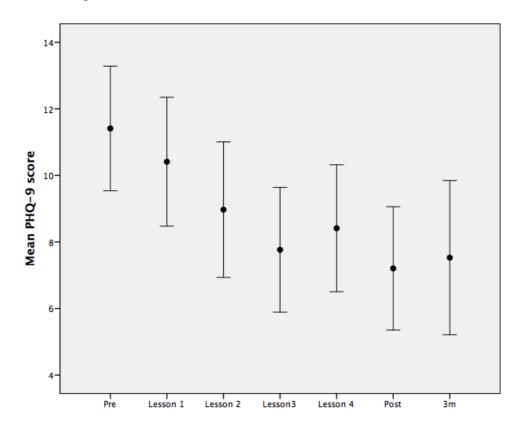
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Figure 2. Mean PHQ-9 scores. Mean pre-treatment, weekly lesson, post-treatment and 3-month follow up PHQ-9 scores 95% confidence interval

3.4 Hypotheses

3.4.1 Hypothesis 1:

Hypothesis one predicted that students who undertook the UNIWELLBEING program would have reduced anxiety and depression scores compared to baseline assessment.

This hypothesis was supported. The GLM was used to compare participant's pre-treatment and post-treatment scores and found clinically and statistically significant changes in the GAD-7 ($p < .001$) and PHQ-9 ($p < .001$) between pre treatment and post treatment scores. The effect size was large for the GAD-7 (*Cohen's d* = -0.92) and medium for the PHQ-9 (*Cohen's d* = -0.76). Mean individual change scores were also larger for the GAD-7 (-4.12) than for the PHQ-9 (-3.52). Mean post treatment

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scores for the GAD-7 and PHQ-9 were below the clinical threshold used in the study

(GAD-7 <8 and PAHQ-9 < 10).

Independent samples t-tests were used to compare pre-treatment to post-treatment

GAD-7 mean individual change scores for males ($n = 37$) and females ($n = 97$),

undergraduate ($n = 116$) and post-graduate students ($n = 18$), domestic ($n = 118$) and

international ($n = 16$) students and students who scored above the GAD-7 clinical

threshold (GAD-7 ≥8) ($n = 80$) and below the GAD-7 clinical threshold (GAD-7 8<)

($n = 54$). The results are shown in Table 2.

Table 2.

Participants mean GAD-7 individual change scores pre-treatment to post-treatment
for male and female students, domestic and international students, undergraduate and
post-graduate students and students who scored above (GAD-7 ≥8) and below the
GAD-7 clinical threshold (GAD-7<8)

	M	*SD*	*df*	*t*	*p*	*Cohen's d*
Male	3.24	4.24	132	-1.40	.163	0.28
Female	4.47	4.65				
Undergraduate	4.09	4.56	132	.254	.800	.07
Post-graduate	4.39	4.65				
Domestic	4.10	4.45	132	-.224	.823	.06
International	4.38	5.44				
GAD-7 ≥8	5.85	4.57	132	-5.95	.000	0.77
GAD-7 <8	1.59	3.16				

The independent samples *t*-tests comparing pre-treatment and post-treatment GAD-7

mean individual change scores showed that there was no significant difference

between males and females ($p = .163$), no significant difference between international

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and domestic students (p = .823) and no significant difference between undergraduate and post-graduate students (p = .800). However there was a significant difference (p = .000) in the mean individual change scores for students who scored above the clinical threshold (GAD-7 ≥8) and below the clinical threshold (GAD-7<8).

Independent samples t-tests were used to compare pre-treatment and post-treatment PHQ-9 mean individual change scores for males (n = 38) and females (n = 95), undergraduates (n = 116) and post-graduates (n = 18), domestic (n = 116) and international (n =17) students and students who scored above the PHQ-9 clinical threshold (PHQ-9 ≥10) (n = 67) and below the PHQ-9 clinical threshold (PHQ-9 <10) (N=66). The results are shown in Table 3.

Table 3.
Participants mean PHQ-9 individual change scores pre-treatment to post-treatment for males and female students, domestic and international students, undergraduate and post-graduate students and students above (PHQ-9≥10) and below (PHQ-9<10) the PHQ-9 clinical threshold

	M	*SD*	*df*	*t*	*p*	*Cohen's d*
Male	2.13	5.10	131	-1.93	.92	0.36
Female	3.91	4.67				
Domestic	3,66	4.80	131	1.68	.095	0.45
International	1.50	4.80				
Undergraduate	3.33	4.81	131	.440	.661	0.04
Post-graduate	3.88	5.17				
PHQ-9 ≥10	5.39	4.82	131	-5.23	.000	0.91
PHQ-9 <10	1.38	3.97				

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The independent samples *t*-tests of PHQ-9 pre-treatment to post-treatment mean individual change scores showed that there was no significant difference between males and females ($p = .92$), no significant difference between international and domestic students ($p = .095$) and no significant difference between undergraduate and post-graduate students ($p = .661$). However there was a significant difference ($p = .000$) in mean pre-treatment to post-treatment individual change scores for students who scored above the clinical threshold (PHQ-9 ≥8) and below the clinical threshold (PHQ-9<10).

The mean *(SD)* pre-treatment and post-treatment scores mean individual change score, *Cohen's d* and *p* - values for the GAD-7 and PHQ-9 are shown in Table 2. Participants with missing data were not included in the calculation of the mean individual change scores but were included in the linear contrast based on the GLM.

Table 4.
Means with Confidence Intervals and Standard Deviations of pre-treatment and post-treatment follow up GAD-7 and PHQ-9 scores

Variable	Pre-treatment[a]			Post-treatment[b]		
	M	95% CI	*SD*	*M*	95% CI	*SD*
GAD-7	9.6	(8.8, 10.5)	5.2	5.3	(4.6, 6.0)	4.4
PHQ-9	10.4	(9.5, 11.3)	5.8	6.5	(5.6, 7.4)	5.1

Note. CI = confidence interval
[a]*n* = 154. [b]*n* = 135

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3.4.2 Hypothesis 2:

Hypothesis two predicted that there would be no difference between post treatment and 3-month follow up GAD-7 and PHQ-9 scores for participants' undertaking the UNIWELLBEING Course. This hypothesis was supported. The GLM was used to compare participants' post-treatment and 3-month follow up scores and found no significant changes in the GAD-7 (p = .44) and PHQ-9 (p = .15). The effect size was small for both the GAD-7 (*Cohen's d* = -0.08) and the PHQ-9 (*Cohen's d* = -0.15) and mean individual change scores were smaller for the GAD-7 (-0.08) than for the PHQ-9 (-0.15).

Both mean post-treatment and 3-month follow up scores for the GAD-7 and PHQ-9 were below the clinical cut-off scores used in the study for the GAD-7 (8) and the PHQ-9 (10). The mean (*SD*) post-treatment and 3-month follow up scores, mean individual change score, *Cohen's d* and p - values for the GAD-7 and PHQ-9 are shown in are show in Table 3. Participants with missing data were not included in the calculation of the mean individual change scores but were included in the linear contrast based on the GLM.

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Table 5.
Means with Confidence Intervals and Standard Deviations of post-treatment and 3 month follow up GAD-7 and PHQ-9 scores

	Post-treatment[a]			3 month follow-up[b]		
Variable	*M*	95% CI	*SD*	*M*	95% CI	*SD*
GAD-7	5.3	(4.6, 6.0)	4.4	5.2	(4.4, 6.0)	4.6
PHQ-9	6.5	(7.4, 11.7)	5.1	6.0	(5.0, 7.0)	5.7

Note. CI = confidence interval
[a]*n* = 135. [b]*n* = 114

3.4.3 Hypothesis 3:

Hypothesis three predicted that less than 50% of students who undertook in the

UNIWELLBEING course would request face to face counselling within three months

of completion. This hypothesis was supported. Of the 154 participants' who

undertook the Uniwellbeing course only 16% (25/154) (95% CI 10% - 22%) made an

appointment with a Counsellor at the university counselling service within three

months of completing the course.

3.5   Secondary Research Questions:

3.5.1   Secondary research question 1 investigated if the completion rate for the four-

lesson version of Uniwellbeing was higher or lower than for the earlier five-lesion

version of Uniwellbeing.   Participants completed an average of 3.3 lessons out of 4

possible lessons and 67% (103/154) of participants completed all four lessons. The

number of participants who completed all four lessons of the four-lesson version of

Uniwellbeing used in the study was higher (67%) than for the five-lesson version of

Uniwellbeing used in the earlier study (45%).

3.5.2 Secondary research question 2 investigated how much clinician time is required to deliver Uniwellbeing. The amount of clinician time spent speaking with or messaging a participant was recorded each time contact was made with them and collected at the end of the trial. The mean amount of clinician time per participant for the whole course, including the three-month follow up contact was 50.3 minutes (SD = 15.8) (95% CI 47.8 – 53.1) and the mean number of calls per participant was 6.57 (SD = 2.32) (95% CI 6.20 – 6.94). The average clinician time of 50.3 minutes to deliver the Uniwellbeing treatment is equivalent to a single session of traditional face-to-face therapy.

3.5.3 Secondary research question 3 investigated if the Uniwellbeing course was something that students were satisfied with and would recommend to a friend. Of the 154 participants who undertook in the Uniwellbeing Course 82% 126/154) (95% CI 76% - 88%) completed the treatment satisfaction survey at the end of the course. In response to the question " would you recommend this course to a friend" 94% (116/124) (95% CI 89% - 98%) responded yes and in response to the question "was it worth doing this course", 91% (113/124) (95% CI 86% - 96%) responded yes.

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4. Discussion

Depression and anxiety are the two most common mental disorders experienced by university students (Adlaf, Gliksman, Demers, & Newton-Taylor, 2001) and the two disorders that students most commonly seek help for (Day et al., 2013). Despite the relatively low percentage of students who seek treatment for these, and other disorders (Martin, 2010; Storrie et al., 2010) there is a growing demand for treatment by university students (Erdur-Baker et al., 2006) that university counselling services are finding difficult to meet (Mowbray et al., 2006; Stallman, 2012).

Clinician guided transdiagnostic iCBT has been found to be an effective treatment for anxiety and depression (Johnston, Titov, Andrews, Spence, & Dear, 2011; Titov et al., 2011) that requires less time to administer than traditional face-to-face treatment (Andersson et al., 2012). However there is currently little empirical evidence that clinician guided transdiagnostic iCBT is effective when used with university students in routine practice. The present study examined the effectiveness of a clinician guided transdiagnostic iCBT treatment, Uniwellbeing, in reducing anxiety and depression in students seeking a routine appointment with a university counselling service. This heterogeneous sample did not screen out participants who had low symptoms or a previous treatment with psychotherapy and/or medication to enable the testing of Uniwellbeing in a routine population. This combined with the large sample provided an opportunity to investigate the effectiveness of iCBT in the routine care of students that may be the first of its kind. However one third of the participants did not have clinical symptoms of anxiety or depression, which, may account for the small within group effect sizes.

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4.1   Hypotheses

Hypothesis one predicted that students who undertook the Uniwellbeing clinician guided transdiagnostic iCBT course would have reduced anxiety and depression post-treatment scores compared to their pre-treatment state. This hypothesis was supported with a significant reduction in participants' post-treatment GAD-7 ($p < .001$) and PHQ-9 ($p < .001$) scores. The effect size for the reduction in GAD7 anxiety scores was large (*Cohen's d* = -0.92) and the effect size for the reduction in PHQ9 scores was medium (*Cohen's d* = -0.76). This is consistent with previous findings on the effectiveness of clinician guided transdiagnostic iCBT in reducing anxiety and depression in other samples (Dear, Titov, Schwencke, et al., 2011; Johnston et al., 2011). The findings suggest that clinician guided transdiagnostic iCBT is effective in reducing the symptoms of anxiety and depression in university students as measured by the GAD-7 and PHQ-9.

Hypothesis two predicted that the anxiety and depression scores of students who complete the clinician guided iCBT program would remain reduced 3 months after completing the program. The hypothesis is supported with no statistically significant difference between end of treatment and 3 month follow up GAD-7 ($p=0.44$) and PHQ-9 ($p=0.15$) scores. This finding is consistent with previous findings on the persistent reduction of anxiety and depression symptoms at three-month follow-up with participants who have completed clinician guided iCBT (Mullin et al., 2015; Titov et al., 2013; Titov, Dear, Staples, et al., 2015).

Hypothesis three predicted that less than 50% of students who undertook clinician-guided transdiagnostic iCBT would require face-to-face counselling in the three

months after completing the course. The hypothesis was supported with only 16% of participants having face-to-face counselling within three months of completing the Uniwellbeing course.

This finding is consistent with evidence on the reduction in the symptoms of anxiety and depression through clinician guided transdiagnostic iCBT (Dear, Titov, Schwencke, et al., 2011; Johnston et al., 2011) however this may be the first study to collect data and report on the number of university students seeking face-to-face counselling after completing iCBT treatment. Other studies investigating the use of guided iCBT with university students have not reported on the number of students who seek face-to-face treatment after completing iCBT treatment (Day et al., 2013; Mitchell & Dunn, 2007; Mullin et al., 2015; Santucci et al., 2014).

4.2   Secondary Research Questions

Secondary research question 1 investigated if the completion rate for the four lesson five week version of Uniwellbeing had a higher completion rate than the earlier 5 lesson 5 week Uniwellbeing course. Of the 154 students who undertook the Uniwellbeing Course 67% (103/154) completed all four lessons and 73% (114/154) completed the GAD-7 and PHQ-9 at pre-treatment, post-treatment and three month follow. This finding is consistent with the completion rates reported in other studies of clinician-guided iCBT (Dear, Titov, Schwencke, et al., 2011) and is much higher than the completion rate of 45% in the earlier version of the Uniwellbeing course (Mullin et al., 2015).

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Secondary research question 2 investigated the mean amount of clinician time required per participant, including the 3-month follow up contact, and found that it was 50.3 minutes (SD = 15.8). This amount of time is almost the same amount of time spent in a single face-to-face counselling session at the Counselling service (50 minutes).

This finding is consistent with the 5-10 minutes of therapist time per week needed to deliver clinician-guided iCBT (Hedman, Ljotsson, & Lindefors, 2012) although it is higher than the 19.21 minutes (SD = 15.16) of clinician time in the earlier version of the Uniwellbeing course (Mullin et al., 2015). However, the completion rate for this study (67%) is higher than for the earlier Uniwellbeing course (45%) (Mullin et al., 2015) and this is consistent with findings linking increased completion rates with increased clinician time (Knaevelsrud & Maercker, 2007).

There is no data available from the university counselling service on the mean number of counselling sessions or the efficacy of treatment that can be used to compare with the Uniwellbeing treatment. However the average of 50.3 minutes to deliver Uniwellbeing is considerably less than the 18 sessions CBT and face-to-face psychotherapy requires for optimal effectiveness (Cuijpers et al., 2011) or the ten sessions, or less, of brief therapy needed to reduce symptoms of anxiety and depression (Cape et al., 2010). The average 50.3 minutes required to treat each participant is also less than the 2.90 average number of sessions at a sample of Australian university counselling services, (Stallman, 2012) and it is important to note that there was no indication of the efficacy of treatment in this sample.

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Secondary research question 3 investigated the participant satisfaction with the Uniwellbeing course and of the 154 participants who undertook the course 82% (126/154) participants completed the post-treatment satisfaction survey. In response to the question " would you recommend this course to a friend" 92% responded yes and in response to the question "was it worth doing this course", 89.7% also responded yes. This finding is consistent with the satisfaction rates reported in other clinician guided transdiagnostic iCBT treatment (Dear, Titov, Schwencke, et al., 2011; Titov et al., 2011)

4.3 Participants

The value of all students included in the sample completing the Uniwellbeing course is brought into question as students who had GAD-7 scores below the clinical threshold (GAD-7 <8) have a significantly smaller (p <.001) mean individual change ($M = 1.59$, $SD = 3.16$) (95% CI 1.32 - 1.86) than students who have GAD-7 scores above the clinical threshold (GAD-7 ≥8) ($M = 5.85$, $SD = 4.57$) (95% CI 3.80 – 5.34). Likewise students who had PHQ-9 scores below the clinical threshold (PHQ-9 <10) had a significantly smaller (p <.001) mean individual change ($M = 1.38$, $SD = 3.97$) (95% CI 0.71 - 2.05) than students who have PHQ-9 scores above the clinical threshold (PHQ-9 ≥10) ($M = 5.39$, $SD = 4.82$) (95% CI 4.57 – 6.21). However although the Uniwellbeing treatment has little impact on students who do not have clinical symptoms as measured by the GAD-7 and PHQ-9 these students would otherwise see a counsellor are provided with a less resource intensive form of assistance.

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4.4 Implications

The results of this study suggest that the Uniwellbeing clinician guided transdiagnostic iCBT treatment is an effective treatment for students who have mild symptoms of anxiety and depression as part of a stepped care model of service delivery. CBT seems to have translated well into the online format as the CBT treatment was readily translated into a series of structured lessons that built upon each other and because participants reduced their anxiety and depression scores substantially.

The clinician guided transdiagnostic iCBT treatment is more accessible than traditional treatment, as students do not need to attend face-to-face appointments and the online format allows them to undertake treatment at a time of their choosing. Improving access and eliminating the need to meet face-to-face with either reception staff or a clinician is likely to reduce some of the stigma associated with traditional face-to-face services and increase the likelihood that students will seek treatment when they become unwell. Improving access to treatment for students when they do become unwell and seek help has the potential to improve their retention at university and have a positive impact on their long-term education, employment and health.

The five-week four-lesson transdiagnostic iCBT treatment requires the same amount of clinician time as a single face-to-face counselling session. The relatively small amount of clinician time required to deliver the has the capacity to enable the university counselling service to reduce, or possibly eliminate, waiting times and increase its capacity to deliver services to students who have mild symptoms of anxiety and depression. There may also be an opportunity to further reduce the

amount of clinician time required by replacing some phone contact with secure messaging and having non-clinical staff complete some of the routine assessment and recruitment tasks.

Satisfaction rates were high indicating that participating students found this this is an acceptable treatment however the completion rate, although higher than the previous version of Uniwellbeing, was still lower than in other studies of clinician guided iCBT. Consequently the Uniwellbeing course may still require further refinement of the content and frequency and nature of the contact with the clinician.

Students who drop out of the treatment before completing it may or may not be more at risk of experiencing an increase in their symptoms of depression and anxiety. It would be useful to identify these students and developing an intervention that is effective when they are identified and before they cease the treatment. The nature of follow up contact and need for further treatment of students who drop out before completing the treatment is an area for future investigation.

4.4   Limitations of the study

There are several important limitations that need to be considered when interpreting the findings of this study. Firstly, although the findings suggest that the Uniwellbeing, transdiagnostic clinician guided iCBT course, is effective in reducing the symptoms of anxiety and depression, the present study did not have a control group against which the results could be compared. Consequently it is not possible to determine to what extent the anxiety and depression symptoms for this group of students would improve through simply making the decision to seek assistance. It is

desirable for any future trial to use a control group.

Secondly, while there was evidence of further, albeit not significant improvements, from post-treatment to 3-month follow-up the relatively short follow-up period makes drawing any conclusions about long-term clinical outcomes difficult. Future studies would benefit from a longer follow-up time of perhaps twelve months or possibly the remainder of participants enrolment at university.

Thirdly, 32.5% of the students who participated in this study had symptoms that were below the clinical threshold for the GAD-7 and PHQ-9 and their help seeking may indicate that they require a form of assistance other than treatment for anxiety and/or depression. Future studies may need to screen students so that only those seeking assistance with managing their symptoms of anxiety and depression are included. Equally it may be useful to further investigate what form of assistance students with sub-clinical symptoms require.

Fourthly, as there was no treatment as usual group it is not possible to compare the amount of clinician time needed to deliver Uniwellbeing to the amount of time needed to achieve the same reduction in anxiety and depression symptoms through treatment as usual. Future studies that collect data on both the amount of clinician time to achieve the same reduction in symptoms through face-to-face treatment as usual and clinician guided transdiagnostic iCBT are needed.

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4.5 Conclusion

This study investigated the efficacy of clinician guided transdiagnostic iCBT in

reducing symptoms of anxiety and depression in university students with mild

symptoms seeking a routine appointment at a university counselling service.

Statistically significant improvements in pre-treatment and post-treatment anxiety and

depression scores were found and a large effect size was found for the GAD-7 and a

medium effect size for the PHQ-9. There was no statistically significant difference

between post-treatment and 3-month follow-up anxiety and depression scores. The

number of students who undertook the study and then sought a face-to-face

appointment with the university counselling service within 3 months of completing

the course was low and satisfaction with the treatment was high. Treatment

adherence was also high with the amount of clinician time required per participant

equal to a single face-to-face appointment at the university counselling service.

The present study provides support for the use of clinician guided transdiagnostic

iCBT for students routinely seeking treatment for mild symptoms of anxiety and

depression at a university counselling service. Future research that compares

Uniwellbeing to a control group and treatment as usual with a longer follow up period

will provide more information on both its long-term effectiveness as a treatment and

its cost effectiveness.

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