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Group Guided Low Intensity Self-Help for Community Dwelling Older Adults Experiencing  
Low Mood

A dissertation presented in partial fulfillment of the requirements for the degree of Doctor of  
Clinical Psychology

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## ABSTRACT

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Depression is amongst the most common health issues affecting older adults, however, access to evidence-based psychological treatments remains low amongst this age group. This is due, in part, to numerous barriers that surround current mental health treatment and delivery, which has contributed to discrepancies between treatment needs, availability, and uptake. To address such barriers, low intensity Cognitive Behavioural Therapies (LI-CBT) and in particular guided self-help interventions have emerged as promising, brief, cost-effective, and evidence-based alternatives to traditional high intensity therapies.

Recently, interventions have begun to utilise the advantages of guided LI-CBT self-help within a group or class setting, thus providing both a cost-effective and time-efficient form of treatment delivery. Of these group guided approaches, *Living Life to the Full* (LLTTF) is the only intervention that primarily targets depression and has undergone randomised effectiveness testing. While early evidence lends support for the efficacy of LLTTF, further research is needed to extend the findings to different populations and age groups, particularly older adults.

The current study examined the effect of the group guided version of LLTTF on community dwelling older adults' ratings of depression, anxiety, and quality of life. Additionally, the relationship between older adults' engagement with LLTTF and improvements in their reported ratings on all primary outcome measures was evaluated. Twenty-four older adult participants with symptoms of depression were recruited from a New Zealand community setting. Participants completed the intervention over eight sessions and data was collected at baseline, during each session, and at 1- and 6-week follow-up. Data was analysed using Multilevel Modelling, implementing a multilevel (2 level), repeated measure (11 waves), single group design.

Results indicated significant improvements in participants' symptoms of depression, anxiety, and quality of life over time. There was no evidence of an interaction between participants' engagement and depression or anxiety ratings. Unexpectedly, engagement did however interact with quality of life, demonstrating that higher levels of out-of-class engagement with self-help content was related to significantly lower improvements in quality of life. Finally, supplementary analyses indicated greater reductions in anxiety



symptoms amongst participants who lived with others compared to those who lived alone.

These results endorse LLTTF as a viable and effective low intensity treatment option for depression in older adults, with additional benefits for symptoms of anxiety and quality of life. When delivered to older adults, LLTTF could increase treatment access and choice, contribute to the reduction of secondary mental health service load, minimise treatment barriers, and importantly support older adults' to manage symptoms of depression and anxiety while remaining in communities of their choosing.

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## ACRONYM GLOSSARY

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<b>A-VAS</b>	Anxiety Visual Analogue Scale
<b>CBT</b>	Cognitive Behaviour Therapy
<b>D-VAS</b>	Depression Visual Analogue Scale
<b>GAI</b>	Geriatric Anxiety Inventory
<b>IAPT</b>	Improving Access to Psychological Therapies
<b>LI-CBT</b>	Low Intensity Cognitive Behaviour Therapy
<b>LLTTF</b>	Living Life to the Full
<b>MAR</b>	Missing at Random
<b>MLM</b>	Multilevel Modeling
<b>Model A</b>	Anxiety Series of Multilevel Models
<b>Model D</b>	Depression Series of Multilevel Models
<b>Model Q</b>	Quality of Life Series of Multilevel Models
<b>NICE</b>	National Institute for Health and Care Excellence
<b>MCAR</b>	Missing Completely at Random
<b>NMAR</b>	Not Missing Completely at Random
<b>PEQ</b>	Participant Engagement Questionnaire
<b>PHQ-9</b>	Patient Health Questionnaire - 9
<b>Q-LES-Q-SF</b>	Quality of Life Enjoyment and Satisfaction Questionnaire Short Form
<b>Q-VAS</b>	Quality of Life Visual Analogue Scale
<b>SPARX</b>	Smart, Positive, Active, Realistic, X-factor Thoughts
<b>VAS</b>	Visual Analogue Scale





## **CHAPTER 1: DEPRESSION IN OLDER ADULTHOOD, EVIDENCE-BASED PSYCHOLOGICAL TREATMENT, AND THE NEED FOR ALTERNATIVE TREATMENT APPROACHES**

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### **Outline of Chapter**

In this chapter, the significance of depression in a growing older adult population and the need for alternative evidence-based psychological treatment options beyond that of traditional Cognitive Behavioural Therapy is discussed. In doing so, this chapter will briefly outline the growing proportion of older adults in society, as well as the classification of depression, along with its prevalence, presentation, and its consequences in older adulthood. Cognitive Behaviour Therapy for depression, its efficacy, barriers that may limit older adults access to treatment, and the need for alternative treatments such as low intensity Cognitive Behaviour Therapy is then discussed.

### **Mental Health Demand in an Ageing Population**

According to current and projected statistics, population ageing is taking place at an increasingly rapid rate, with the proportion of older adults growing faster than any other age group (Wermelinger Ávila, Lucchetti, & Lucchetti, 2017). For example, in recent years, the proportion of older adults (aged 60 years and over) has increased from 9.2% of the total global population to 11.7% between 1990 and 2013 (Department for Economic and Social Affairs, 2013). This trend is likely to continue with projections indicating that older adults will account for 21.1% of the global population by the year 2050 (Department for Economic and Social Affairs, 2013). The changing population of older adults in New Zealand is consistent with this global trend. That is, the number of New Zealanders' aged 65 years and over has increased by 22.5% between 2006 and 2013, with estimates that the total number of older adults will double over the next 25 years (Stats NZ Tatauranga Aotearoa, 2013). In addition to total numbers, the proportion of older adults in New Zealand is also rising. For instance, in 1981 older adults in New Zealand made up 9.9% of the total population, in 2013 this increased to 14.3%, and projections indicate it may rise to 26.7% by 2063 (Stats NZ Tatauranga Aotearoa, 2013).

These changing demographics elucidate the need to address the increasing health concerns that accompany an aging population, including mental health (Laidlaw & Baikie,

2007). Mental health is acknowledged as an important area of one's overall health and an area that is particularly important given the high rate of mental health difficulties associated with negative outcomes that can occur in later life (Blazer, 2003; Laidlaw, 2014). Therefore, as the proportion of older adults in society continues to rise, there is an on-going demand for a greater number of, and accessibility to, psychological treatments for older adults, as well as treatments that address the specific needs that are common to this age group (Laidlaw & Baikie, 2007).

### **Depression in Older Adulthood**

#### **Depression Classification**

Depression is a prominent and prevalent psychological health concern that affects people of all ages and across all countries. It is a heterogeneous illness, characterised by a range of mental health difficulties that impact individuals' thoughts, emotions, behaviours, and physical wellbeing (Fiske, Wetherell, & Gatz, 2009). In diagnosing depression, the most common tool used in psychological literature is the *Diagnostic and Statistical Manual of Mental Disorders (DSM)*, developed by the American Psychiatric Association (APA; National Collaborating Centre for Mental Health [UK], 2010). In its latest edition *DSM-5* (American Psychiatric Association, 2013) a diagnosis of Major Depressive Disorder (MDD) is indicated by at least two weeks of significant functional impairment resulting from profound low mood and/or loss of interest or pleasure. To meet full criteria, individuals must also present with at least five of the following depression-related symptoms: significant weight changes, loss of energy or fatigue, feelings of worthlessness, disproportionate guilt, on-going difficulties with concentration, or recurrent thoughts of death or suicidal ideation. It should be noted that significant distress in the form of functional impairment can also be present in individuals who experience less severe depressive symptomatology. Research indicates that many older adults can suffer from a cluster of depression symptoms and their consequences (i.e., functional impairment), but their symptoms may be insufficient to meet the classification of MDD (i.e., sub-threshold depression; Lyness et al., 2006; Meeks, Vahia, Lavretsky, Kulkarni, & Jeste, 2011). Thus, the experience of depression symptomatology amongst older adults (with or without meeting the full diagnostic criteria) is a serious mental health issue that can negatively affect important areas of an individual's life.

### **Prevalence of Depression in Older Adulthood**

Depression is amongst the most common psychiatric illnesses in older adulthood (Blackburn, Wilkins-Ho, & Wiese, 2017), and is ranked as one of the highest causal factors contributing to the current global burden of disease (Mathers & Loncar, 2006). It is estimated the impact of depression will continue to rise internationally, with projections it will increase from the fourth to second leading cause of disease (second only to HIV/AIDS) by the year 2030 (Mathers & Loncar, 2006). In this way, an increasing number of older adults (both in terms of proportion and prevalence) are predicted to experience depression in the future (Blackburn et al., 2017). In a recent meta-analysis of older adults (operationalised in their study as being aged 50 years and older) with mental health disorders, Volkert, Schulz, Härter, Włodarczyk, and Andreas (2013) reported a depression point prevalence rate of 3.29%. It is noteworthy that depression rates reported in the studies included for analysis fluctuated widely (from 1.09% to 26.9%) and such fluctuations are common in other older adult depression prevalence studies (e.g., Djernes, 2006). Thus, accurate predictions of depression in older adults are difficult to determine. Sub-threshold depression is estimated to be even more common in older adults. For example, in a meta-analysis of sub-threshold depression amongst individuals aged 55 years and older, Meeks et al. (2011) revealed sub-threshold depression to be two-to-three times more prevalent than MDD. Additionally, approximately 8-10% of older adults experiencing sub-threshold depression were estimated to go on to develop MDD per year (Meeks et al., 2011). In New Zealand, depression is considered to be the amongst the most common non-dementing mental health disorders affecting older adults (Tynan, 2008). Given the lack of epidemiological data concerning the elderly in New Zealand, however, it is difficult to accurately determine prevalence. Estimates from Te Rau Hinengaro: The New Zealand Mental Health Survey conducted in 2006 (Oakley Browne, Wells, & Scott, 2006) estimate New Zealand older adults (aged 65 years and older) have a lifetime prevalence rate of depression of 9.8% and a 12-month prevalence rate of 1.7%.

### **Presentation and Treatment Seeking Behaviour in Older Adults with Depression**

Older adults represent a unique population in the way that they present and manifest symptoms of depression (Blackburn et al., 2017). For example, compared to younger age groups, older adults are more likely to present with low or absent subjective mood

complaints and show a tendency to minimise, or at times deny, feelings of sadness and depression (Fiske et al., 2009). Older adults are also less likely to endorse cognitive-affective type symptoms such as guilt or feelings of worthlessness than their younger counterparts (Gallo, Anthony, & Muthen, 1994). Instead, they are more inclined to endorse somatic symptoms of depression (Gallo & Rabins, 1999), such as loss of appetite (Brodaty et al., 1991), insomnia (Christensen et al., 1999), agitation (Brodaty et al., 1991), psychomotor retardation (Christensen et al., 1999; Gallo et al., 1994), or fatigue (Gallo et al., 1994). As an additional complication of presentation, many of the symptoms reported by older adults are not present in diagnostic criteria, and relevant symptoms can be equally common in other medical disorders (Karel, Ogland-hand, & Gatz, 2009).

For those older adults who are aware of potential depressive symptoms, treatment-seeking behaviour and referrals to access mental health therapies for depressive symptoms are low. For instance, in a recent evaluation of referral rates to mental health services in the United Kingdom by age, Pettit et al. (2017) revealed that the percentage of individuals referred for common conditions such as depression and anxiety significantly reduced with age. Analysis indicated that the highest numbers of referrals were for those aged 20-24 years, with the lowest being those between 70-74 years. This reluctance is likely the result of a number of variables. Variables may include individuals' fears concerning the ramifications of their symptoms, fear of being stigmatised, concerns about potential loss of independence, comorbid health conditions reducing accurate recognition of symptoms, or the preference for dealing with the problem themselves (Gonçalves, Albuquerque, Byrne, & Pachana, 2009; Pettit et al., 2017). Consequently, the emergence of depression symptomatology can at times be left unrecognised or untreated, both for those presenting with symptoms and for those responsible for their care. This can thereby lead to increased symptom severity and may contribute to increased negative health outcomes (Katon & Ciechanowski, 2002; Penninx et al., 1998).

### **Consequences of Untreated Depression in Older Adulthood**

Depression, if left untreated, has serious consequences. For example, depression in older adulthood has a large economic cost, whereby, both major and sub-threshold depression can lead to increased utilisation of hospital and outpatient medical services compared to healthy controls (Goldney, Fisher, Grande, & Taylor, 2004). Research has

demonstrated that depression in later life is associated with higher rates of cognitive impairment, functional impairment, and increased disability (see Blazer, 2003, for review), along with higher rates of mortality (Covinsky et al., 1999). Those experiencing sub-threshold depression symptoms are also subject to similar risk factors. That is, sub-threshold depression is also associated with cognitive impairment (Han, McCusker, Cole, Abrahamowicz, & Čapek, 2008), physical health decline (Beekman, Deeg, Braam, Smit, & Van Tilburg, 1997), increased disability (Broadhead, Blazer, George, & Tse, 1990), and increased rates of mortality (Cuijpers & Schoevers, 2004).

Quality of life in older adulthood is linked to one's health, family, and social networks (Ministry of Health, 2012). Also, home and independence are often important factors that contribute to older adults' wellbeing, with many preferring to remain living in their own home and communities as they age (Wiles, Leibing, Guberman, Reeve, & Allen, 2012). However, many of the aforementioned implications of depression symptomatology in older adulthood result in restrictions in leisure or social activities, reduced quality social support, and increased rates of isolation (Alpass & Neville, 2003; Blazer, 2003; Holtfreter, Reisig, & Turanovic, 2017). In turn, these factors may contribute to the loss of independence that necessitates a move away from familiar family, friends, and communities (Alpass & Neville, 2003; Blazer, 2003). It is no surprise, then, that depression in older adulthood is strongly associated with overall reductions in quality of life (Doraiswamy, Khan, Donahue, & Richard, 2002; Rapaport & Judd, 1998).

### **Treatment of Depression**

Given the negative implications of depression and its associated symptomology, researchers have sought to identify the most effective prevention and treatment options. As a result, a substantial body of evidence has emerged supporting Cognitive Behaviour Therapy (CBT) as the most effective non-pharmacological treatment for depression, as well as for many anxiety disorders that can often present alongside low mood (Hofmann, Asnaani, Vonk, Sawyer, & Fang, 2012; Schoevers, Beekman, Deeg, Jonker, & Tilburg, 2003).

### **Cognitive Behaviour Therapy**

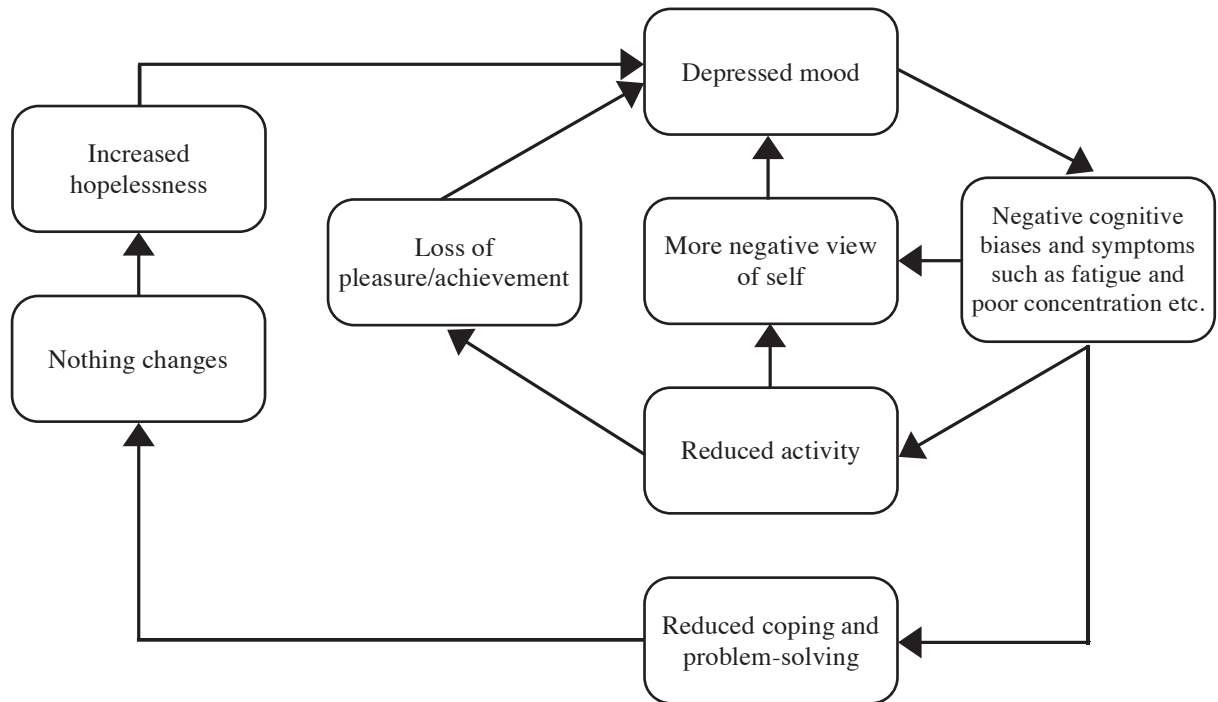
CBT is a structured, problem-oriented, and collaborative short-term psychological therapy that incorporates both cognitive and behavioural principles emphasising the

interrelationship between individuals' thoughts, feelings, physical symptoms, and behaviour (Westbrook, Kennerley, & Kirk, 2011). A fundamental hypothesis in CBT is that individuals' emotional and behavioural responses are critically influenced by the thoughts, beliefs, and interpretations about one's self and their situation (Westbrook et al., 2011). In this way, dysfunctional or maladaptive processes in these areas are proposed to considerably contribute to individuals' mental health difficulties and are thereby targeted in treatment to help to alleviate distress (Fenn & Byrne, 2013). Traditional CBT therapy consists of approximately 6 to 20 one hour sessions (depending on the disorder and complexity) and is generally delivered by a mental health expert (e.g., CBT therapist or psychologist) in a primary care or community setting (Lovell & Richards, 2000).

### **Cognitive Behavioural Model of Depression**

Heavily influenced by Aaron Beck's (Beck, Rush, Shaw, & Emery, 1979) early cognitive theory of depression, it is proposed in CBT that biased information processing plays a primary role in the development and maintenance of depression. In the CBT model, cognition is conceptualised as three separate levels of thinking: 1) Automatic thoughts: instant and involuntary thoughts less accessible to one's awareness that occur in response to underlying assumptions; 2) Underlying assumptions: unarticulated and conditional assumptions that are influenced by one's core beliefs and drive everyday behaviours; and 3) Core beliefs: fundamental and rigid beliefs about oneself, others, and the world, which impact on higher levels of thought (Beck, 2011). Within these levels of cognition, it is suggested individuals exhibit a *depressive cognitive triad*, in that they show consistent patterns of negative thoughts about themselves, the world, and the future (Westbrook et al., 2011). Accordingly, depressed individuals are thought to present with cognitive distortions that maintain these negative beliefs (Beck, 2011). This creates a vicious cycle (see Figure 1). Individuals are thought to negatively evaluate and assimilate information in such a way that it acts to confirm or reinforce their negative views (particularly concerning oneself; Westbrook et al., 2011). This can lead to the reduction of activity, preventing opportunities that facilitate pleasure or a sense of achievement. It can additionally lead to a reduction in one's ability or attempts to cope and deal with their issues, thereby increasing the likelihood of experiencing a sense of hopelessness, which further reinforces low mood (Westbrook et al., 2011). It is hypothesised that the interplay between negative patterns of

thinking (amongst the different levels of cognition) and one's situational experiences can impact on multiple areas of an individuals' life, such as one's cognitive, emotional, behavioural, and physiological responses (Westbrook et al., 2011). In CBT, therefore, treatment is focused on modifying dysfunctional thoughts and behaviour, improving mood and lifting sufferers from depression.



*Figure 1.* Common maintenance process in depression outlined by Westbrook et al. (2011, p. 253).

### **Efficacy of Individual and Group CBT**

Since its inception, CBT has generated consistent support for its use as an effective psychological treatment for symptoms of depression (Hofmann et al., 2012). While the majority of previous CBT outcome studies have been based on young and middle-aged adult populations, a good body of evidence now exists demonstrating CBT has similarly beneficial results when applied to depressed older adult populations. Research has demonstrated that CBT is superior when compared to waitlist, treatment-as-usual, placebo, and other control groups; moderate to large effect sizes are sustained over time; and that CBT is just as effective in treating depression in older adult populations as compared with younger adult populations (Cuijpers et al., 2006; Gould, Coulson, & Howard, 2012; Mackin & Areán, 2005; Pinquart et al., 2007).



With the success of one-to-one CBT, depression protocols have since been successfully translated into group formats (Bieling, McCabe, & Antony, 2013). Group-based CBT (GCBT) is the delivery of CBT interventions in a group format, utilising small group numbers, and emphasising member interaction and in-session interventions to deliver therapy that is tailored to the specific aims and formulations of those attending (Whitfield, 2010). GCBT studies have demonstrated that this therapeutic approach is consistently effective in treating depression amongst older adults (Krishna et al., 2011). It must be noted, however, that although a number of studies suggest GCBT is approximately equivalent to individual CBT in terms of its effectiveness in treating depression in adult populations (e.g., Morrison, 2001; Scott & Stradling, 1990), studies specifically evaluating older adults have shown that GCBT, while still effective, have at times produced smaller effect sizes compared to controls (e.g., Krishna et al., 2011).

### **Barriers to Treatment for Older Adults**

Despite reports of CBT's efficacy, wide use, and initiatives to broaden its dissemination, there is a wide variety of potential barriers that may limit older adults' access to evidence-based treatment such as CBT (Cuijpers, van Straten, & Smit, 2006; Mackin & Areán, 2005). For example, although GCBT is estimated to cost approximately half the price of individual therapy (Vos, Corry, Haby, Carter, & Andrews, 2005), both intervention approaches require highly trained specialist therapists to conduct the treatment. This means that therapy costs may still be beyond reach for many who would benefit from it (Lovell & Richards, 2000). Additionally, incorrect perceptions concerning the required severity to access treatment, poor knowledge and literacy of mental health procedures, low motivation for change, and perceived stigma related to seeking help may also influence older adults' decisions to seek care (American Psychological Association, 2014; Mechanic, 2006; Mohr et al., 2006).

For older adults who overcome the above factors, additional barriers may further hinder potential treatment. Public mental health services often reserve funding for predominantly severe mental health issues, consequently excluding those who do not meet minimum symptom severity but who still suffer from mental health difficulties and may benefit from treatment (Bennett-Levy et al., 2010; Mental Health Commission, 2012). Likewise, for those who do meet criteria for treatment, there is often only a limited number

of specialist trained professionals available to administer high intensive CBT treatment (McClay, Morrison, McConnachie, & Williams, 2013). These issues, in addition to the increasing rates of depression foster a bottle neck of treatment services and long waiting lists, which further hinder timely and effective treatment access (Lovell & Richards, 2000; McClay et al., 2013). As a consequence, this elucidates a treatment gap, whereby, it is estimated that fewer than 50% of individuals suffering from depression (many of whom are older adults) receive appropriate treatment for their difficulties (Kohn, Saxena, Levav, & Saraceno, 2004). Thus, the demand for brief, more cost-effective, and evidence-based psychotherapy options has grown (Ridgway & Williams, 2011; Rodgers et al., 2012; Turpin, Richards, Hope, & Duffy, 2008).

### **Addressing Increasing Demands for Mental Health Services and the Need for Alternative Treatment Approaches**

In light of the treatment gap and as the proportion of older adults continues to increase, there is a growing acknowledgement for the need to appropriately address the impending increase in demand for mental health services that older adults will likely require. In New Zealand, steps have been taken to address this issue, as is evident by the Ministry of Health's (2012) plan outlining the direction for mental health and addiction service delivery for the period 2012-2017. The Ministry of Health has proposed to improve outcomes for older people with high-prevalence conditions such as depression. To do this, a number of key priority actions were outlined. These include supporting and assisting older adults to manage their own wellness where possible, seeking to decrease current service waiting times and increase treatment access by facilitating earlier and more effective mental health services for older adults, and recognising the importance of supporting older adults to live independently to facilitate positive quality of life. The Ministry of Health also seeks to optimise older adults' "ability to live in the home and community of their choice and to contribute positively to that community" (Ministry of Health, 2012, p. 54).

### **Summary**

In summary, both the proportion of older adults and the rate of depression within society are rising. Consistent with this, there will be an increased need for treatments and services that address the specific needs of older adults. Although depression has serious negative implications in older adulthood, there is a breadth of research in support of CBT as

an effective treatment option. However, many of those who may benefit from CBT are not receiving treatment due, in part, to the numerous barriers that surround current mental health treatment delivery. These barriers have led to a discrepancy between treatment needs, availability, and uptake, contributing to serious implications for older adults' psychological health and quality of life. Given this, the demand for alternative treatment options that address such barriers and increase access to evidence-based treatments has grown. Low intensity CBT (discussed further in the following chapter) has emerged as a brief and cost-effective treatment alternative to traditional CBT therapy that may help to address many of the aforementioned needs.

## **CHAPTER 2: LOW INTENSITY CBT AND SIGNIFICANT FACTORS CONTRIBUTING TO ITS DEVELOPMENT**

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### **Outline of Chapter**

In this chapter, low intensity therapy, with a specific emphasis on low intensity CBT is discussed. The chapter then outlines an influential study advocating for a change in traditional mental health service delivery towards a greater focus on low intensity therapies. The chapter then proceeds to outline a significant depression report in the United Kingdom. It discusses how this report has influenced the initiation of a prominent programme developed to improve access to evidence-based therapies and how this has acted as a catalyst for further work, demonstrating how low intensity CBT can be effective and utilised within models of health service delivery. This thereby argues that low intensity CBT may be a beneficial treatment option to consider for New Zealand older adults with depression.

### **Paradigm Shift in Mental Health Treatment Delivery**

In response to both treatment access and uptake concerns (such as those outlined in Chapter 1), Bennett-Levy et al. (2010) describe a paradigm shift in mental health treatment delivery. This highlights a shift in focus from the sole reliance on traditional intensive CBT delivery (i.e., high volume, one-to-one and face-to-face treatment by a specialist therapist) and toward the inclusion of low intensity therapy prevention and treatment options.

### **Low Intensity Therapy**

Given the relatively recent distinction between low and high intensity treatments, there is currently no single definition of low intensity interventions (National Collaborating Centre for Mental Health [UK], 2011). Instead, low intensity interventions are typically those that conceptualise therapeutic work as requiring minimal specialist therapist time or the use of therapist time more cost-effectively (Bennett-Levy et al., 2010; Bower & Gilbody, 2005). In this way, when offered prior to or alongside more intensive therapies, low intensity interventions can be psychological or psychosocial interventions that require either no or little support from a specialist mental health professional (Rodgers et al., 2012). As such, low intensity interventions are often offered to or utilised by individuals experiencing mild to moderate psychological difficulties, while enabling the provision of

higher intensity therapies (such as traditional one-to-one CBT) to be accessed by those with more severe difficulties (Bower & Gilbody, 2005).

Low intensity interventions have been developed based on a number of theoretical models, however, the most empirically supported low intensity approach is based on CBT, otherwise known as low intensity CBT (LI-CBT; Richards, 2010). As with other low intensity interventions, LI-CBT often utilises traditional and non-traditional formats to communicate evidence-based CBT principles through accessible and flexible formats so as to facilitate consumer choice (Papworth, Marrinan, Martin, Keegan, & Chaddock, 2013). Currently, formats include (but are not limited to) bibliotherapy (i.e., book-based therapy), computer- and internet-based programmes, phone-based therapy, group treatment, and psycho-educational classes (Bennett-Levy et al., 2010). While LI-CBT continues to share many of the same fundamental principles of high intensity CBT, such as being present-focused, collaborative, structured and time-limited, LI-CBT is typically briefer than other forms of therapy, generally less complex to undertake, utilises more accessible language, and may require lower levels of therapeutic expertise to effectively deliver their content (Baguley et al., 2010; Hill, Kuyken, & Richards, 2014).

### **Significant Factors Contributing to the Field of LI-CBT**

In considering the pivotal shift in treatment perspectives, few factors have been more influential to the field of LI-CBT and its development than those outlined in the early work of Lovell and Richards (2000) and Layard (2006). In the following section, a number of significant factors contributing to the development of LI-CBT will be discussed.

#### **A Proposal for Multiple Access Points and Level of Entry for Mental Health Services**

By acknowledging the inequality between mental health treatment needs and treatment accessibility, Lovell and Richard's (2000) paper 'Multiple Access Points and Level of Entry (MAPLE): Ensuring choice, accessibility and equity for CBT services' was a turning point in CBT's delivery development. The paper acted as a catalyst for both mental health service redesign in the United Kingdom, as well as the acceptance and promotion of alternative CBT delivery pathways internationally. In their paper, the authors noted that most services that provide traditional forms of CBT, that is, highly intensive, frequent, and prolonged face-to-face sessions by a specialist trained CBT expert, provide treatment based on an inadequate referral system which limited treatment accessibility. In

critique of this referral system, Lovell and Richards argue that a number of factors, such as the limited number of CBT therapists and high symptom severity needed for service referral, combine to ultimately stifle access to mental health treatment, induce long waiting lists, and consequently worked to “disenfranchise the majority of people who would benefit from CBT” (p. 379).

Considering this, Lovell and Richards (2000) evaluated a number of CBT dismantling studies with the intention of investigating evidence for therapies that utilise specific aspects of CBT treatment, compared with traditional full length high intensity CBT packages. The authors identified that, while there remained evidence for traditional CBT, there was also increasingly pervasive evidence for alternative and less therapeutically intensive CBT interventions. They argued that in order to maximise access to evidence-based treatment, clients should be offered briefer, more focused, low intensity interventions prior to more traditional high intensity CBT therapy options.

### **Implementation of NICE Guidelines for Depression**

The National Institute for Health and Care Excellence (NICE) is an independent body established to evaluate evidence-based treatments in order to guide National Health spending in the United Kingdom (Pearson & Rawlins, 2005). In the wake of Lovell and Richard's (2000) article, NICE published Clinical Guidelines recommending CBT as the treatment of choice for the management of depression and some anxiety disorders (National Institute for Clinical Excellence, 2004a, 2004b). The guidelines encouraged the implementation of a stepped care approach (defined below) for treatment delivery, which included LI-CBT treatments for mild (and later updated to also include moderate) depression. Despite shifts in the NICE guidelines, Layard (2006) noted that, at the time, these could not be appropriately implemented. This was reportedly due to the high prevalence of depression, limited government funding allocated for talking therapies, and an insufficient number of CBT therapists trained to provide treatment (Layard, 2006). In an attempt to elucidate such discrepancies and assemble an argument to increase the British government's spending on CBT for depression and anxiety, Layard, with the help of a number of other distinguished signatories, published a number of prominent papers. These included the influential “The depression report: A new deal for depression and anxiety disorders” (Layard, 2006).

### **Layard's Influence on the Development of the Improving Access to Psychological Therapies Programme.**

In Layard's (2006) depression report (as well as in other significant papers; e.g., Layard, Clark, Knapp, & Mayraz, 2007), the authors reasoned that the implementation of an appropriately funded psychological therapy service for the treatment of depression and anxiety could provide greater treatment access and could consequently lead to a number of positive outcomes. Layard argued that greater mental health funding, accompanied by greater treatment dissemination, would lead to significant reductions in the large number of individuals experiencing depression and anxiety symptomatology in the United Kingdom, and that both individuals and the wider society would thereby benefit from improved mental health and wellbeing. Layard was also able to make a convincing economic case, presenting depression prevalence statistics and highlighting the large economic cost of depression to society. This was compared to the relatively smaller cost of training and employing a greater number of therapists to implement the necessary number of CBT services needed to treat those suffering from depressive symptoms. In this way, Layard argued that a properly funded health service (i.e., greater funding from the government) was an economically viable decision. That is, Layard argued there would be cost savings over time, whereby the increased funding into mental health services would allow for new health initiatives that aim to improve treatment availability and access, reduce depression prevalence, and reduce the proportion of individuals who were on sick pay or benefits due to factors relating to depression.

As a result of his argument, Layard's (2006) proposal was granted funding for the development and launch of the Improving Access to Psychological Therapies (IAPT) programme. IAPT is an English initiative that aims to implement NICE guidelines and improve access to evidence-based therapies by providing faster and more efficient access to treatment for individuals with depression and anxiety. The implementation of IAPT has been instrumental to the evolution of LI-CBT. First, IAPT has lead the way internationally as the first government-funded mental health service to implement a stepped care approach that provides LI-CBT as an early treatment option for depression and some anxiety disorders. Second, IAPT initiated a new regulated category of mental health workforce known as Professional Wellbeing Practitioners, who are specifically trained to deliver

evidence-based, low intensity therapies. The definition of stepped care is outlined below, followed by that of Professional Wellbeing Practitioners.

### **Stepped Care Approach to Health Service Delivery**

In a traditional replacement-referral model of mental health service delivery, individuals are referred from primary to specialist care when the primary care worker is unable (due to resources or expertise) to deliver the necessary treatment required (Bower & Gilbody, 2005). In contrast, stepped care is a variation from this model, whereby treatment options are provided to clients sequentially, from the least to highest intensity (Bower & Gilbody, 2005). While low intensity interventions can be imbedded in any system of treatment delivery, in a stepped care model, low intensity interventions are conceptualised as being utilised at lower levels of intervention. Lower levels (with low intensity options such as CBT self-help) aim to address milder severity presentations, while higher levels of treatment (with high intensity options such as one-to-one CBT) aim to address more severe and complex client needs (Bower & Gilbody, 2005). In this way, lower tier care (which can come at a lower financial cost to services) can be delivered by non-specialised mental health care workers allowing higher tier care to be conducted by practitioners who have a greater degree of specialised training and experience.

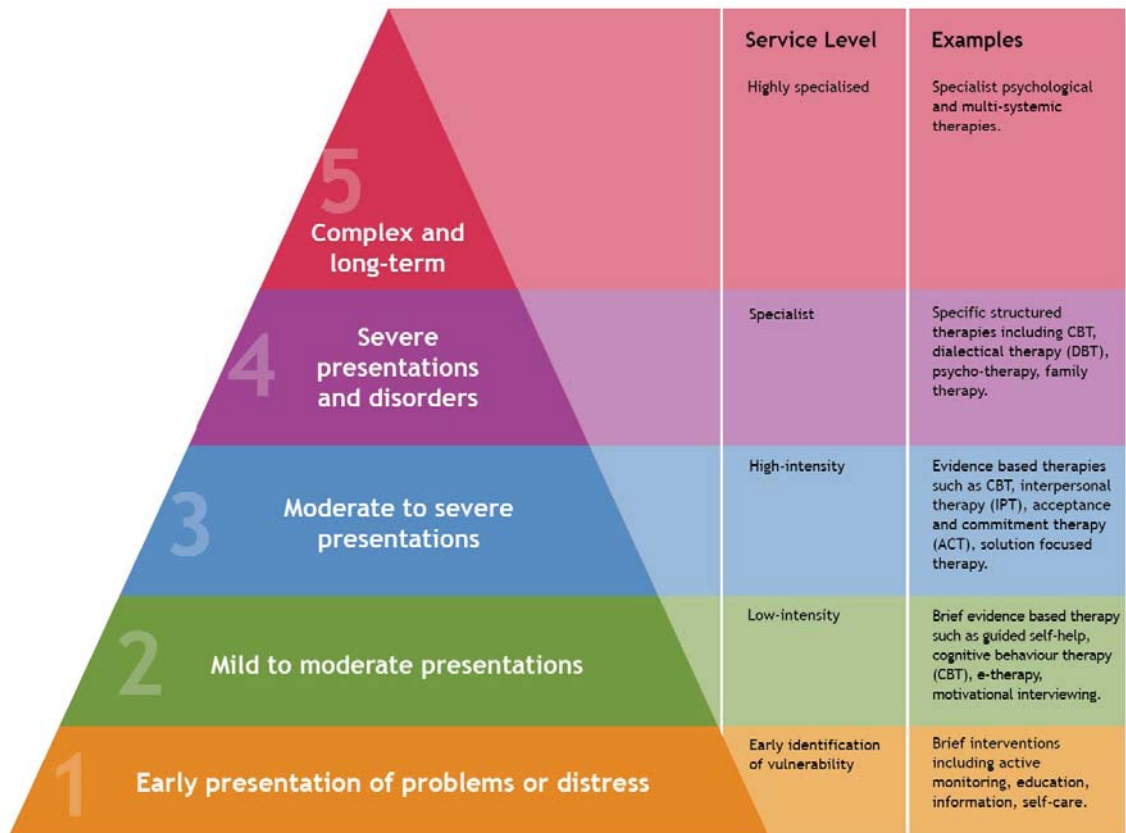
As individuals come into a service, efforts are made to evaluate the client and match them to the lowest intensity treatment option that can provide both the greatest level of effectiveness with the least amount of client burden (Firth, Barkham, & Kellett, 2014). Stepped care services aim to be self-correcting, whereby, if a treatment option fails to lead to sufficient improvements, clients are then *stepped up* to more intensive interventions within the system (Okumura & Ichikura, 2014).

Evidence regarding the use of stepped care models that utilise low intensity interventions for the treatment of depression has shown promising results. For example, Firth et al. (2014) investigated the clinical effectiveness of stepped care services amongst working-age adults with depression. Analysis of 14 studies indicated that recovery rates (i.e., those who no longer met clinical cut-off criteria) for depression were between 40% and 60%, with response rates (i.e., those with a 50% decrease in an outcome measure score) of around 60%. While the study highlighted the effectiveness of stepped care for depression, conclusions as to stepped care's effectiveness in comparison to other systems of



health care were less clear. Despite over half of studies indicating that they were statistically more effective than comparison systems, a large number showed non-significant findings. As such, the results from Firth et al. (2014) review suggest stepped care is at least as effective as care-as-usual, but there is still insufficient information to draw conclusions as to its superiority over other systems of care. Additionally, while results indicate stepped care services for depression are effective for a number of different populations, there is no clear indication as to which elements within services are eliciting improvements (Firth et al., 2014).

Pyramid diagrams are often used to illustrate the theoretical volume of individuals who may require access to the available levels of service. Given the greater proportion of individuals who suffer from less severe levels of depression compared to those with more severe symptomatology (e.g., Meeks, Vahia, Lavretsky, Kulkarni, & Jeste, 2011), there is an assumption that a greater proportion of individuals (illustrated by a greater proportion of the pyramid) will benefit from lower tier interventions (Te Pou o te Whakaaro Nui, 2012). Similarly, fewer individuals are likely to require high intensity treatment options (Te Pou o te Whakaaro Nui, 2012). Constructing service delivery in this way theoretically makes better use of scarce or expensive resources (such as therapists' time), and ensures services are provided more appropriately and cost-effectively (van Straten, Hill, Richards, & Cuijpers, 2015).



*Figure 2.* Illustration of a stepped care model for talking therapies (Te Pou o te Whakaaro Nui, 2016).

### **The Delivery of LI-CBT by Psychological Wellbeing Practitioners**

In order to practically implement the proposed stepped care approach outlined in IAPT and treat the large number individuals that Layard (2006) proposed would benefit from mental health treatment, a greater number of newly trained therapists were required. A new workforce, Psychological Wellbeing Practitioner, was developed in the United Kingdom to meet this need (Clark, 2011). The role of Psychological Wellbeing Practitioners was specifically conceptualised to be able deliver low intensity therapy, reduce treatment resource burden, and increase treatment volume. Certified Psychological Wellbeing Practitioners undergo short-term accredited training, after which their role is to assess and aid clients through the self-management of their recovery (Williams & Chellingsworth, 2010). To do this, they use a range of evidence-based low intensity interventions, including guided CBT self-help (IAPT, 2015). Psychological Wellbeing

Practitioners also have a case management-type role. That is, alongside supervision, they manage high client volumes with shorter contact durations. A Psychological Wellbeing Practitioner may have up to as many as 45 active cases at any give time (IAPT, 2015). During each clinical contact with clients (via methods such as face-to-face, telephone, or web support), routine outcome measures are collected by the workers to monitor the progression of each service user (IAPT, 2015). While the training is much is shorter (e.g., 45 days) than that of other specialised mental health workers, Psychological Wellbeing Practitioners typically have more extensive training and greater role responsibilities than other low intensity practitioners whose only role is to deliver or provide guidance through specified self-help resources.

### **LI-CBT Delivered Within Stepped Care Services amongst IAPT Demonstration Sites**

The success and expansion of IAPT has been underpinned by the early results from two pilot sites. Prior to a full roll-out of IAPT, and as part of the preliminary funding, two demonstration sites were set up in Doncaster and Newham within England to deliver CBT interventions recommended by NICE (Clark et al., 2009). While both Doncaster and Newham sites provided a range of CBT treatments using a stepped care approach, each site had a different emphasis. The Doncaster site emphasised low intensity work (in particular utilising guided self-help), while Newham had a greater emphasis on high intensity CBT. Session-by-session monitoring over 13 months of therapy with nearly 1900 individuals using the two services indicated that clinical outcomes from both sites were largely in line with the forecasted benefits from Layard's (2006) proposal. Results revealed that both low and high intensity services were effective, with 55–56% of individuals who had accessed at least two CBT-based sessions being classified as recovered upon leaving the service. Five percent of recovered individuals also showed improvements in their employment status (Clark et al., 2009). Additionally, treatment gains were observed to be predominantly maintained at a 10-month follow-up (Clark et al., 2009).

The results from the two demonstration sites provided proof of principle for Layard and colleagues' arguments, along with evidence that a stepped care approach utilising low intensity interventions can be an effective model for health care provision. Most critically in regards to the current thesis, the results provided evidence that LI-CBT is a viable treatment option that can significantly contribute to recovery rates for the treatment of

depression and anxiety. Opening services up to self-referrals may also facilitate treatment access for a wider number of individuals who have previously been under-represented in traditional referral practices (Clark et al., 2009). Following the success of the demonstration sites, further funding was allocated (Clark et al., 2009). This increased financial investment helped the implementation of IAPT across a number of new sites and aided the development of further training programmes that produced a greater number of therapists able to provide evidence-based psychological therapies such as LI-CBT (Clark, 2011). With the on-going success of IAPT (Clark, 2011), further funding has contributed to a greater number of Psychological Wellbeing Practitioners being trained and a greater number of individuals being treated (Improving Access to Psychological Therapies, 2012). The increasing number in practitioners has been facilitated with the aim to see therapist capacity able to offer treatment to at least 15% (900,000 annually) of the total estimate of individuals in England with depression and/or anxiety disorders (Improving Access to Psychological Therapies, 2012).

### **Summary**

In summary, in response to concerns regarding treatment access and uptake for individuals with common mental health difficulties such as depression, LI-CBT has emerged as a promising, brief, cost-effective, and evidence-based treatment alternative to traditional high intensity therapies. While low intensity interventions have existed long before Lovell and Richard's (2000) paper, the successful implementation of the IAPT programme utilising a stepped care approach has led to great advancements for low intensity treatments and, in particular, self-help forms of LI-CBT. Over the past 15 years, developments have led to an emerging evidence base, greater dissemination, and a broader range of LI-CBT approaches. LI-CBT may be a beneficial treatment option for many older adults suffering from depressive symptoms, and self-help treatments may work to facilitate New Zealand's Ministry of Health's (2012) aims of supporting older adults to remain living independently, self-manage their wellness where possible, and reduce service wait times.

## **CHAPTER 3: LOW INTENSITY CBT SELF-HELP AND ITS IMPLEMENTATION IN A NEW ZEALAND CONTEXT**

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### **Outline of Chapter**

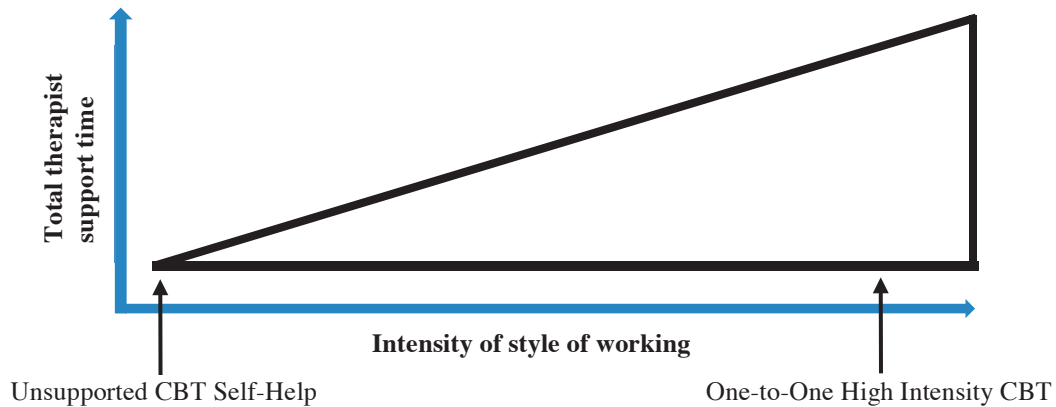
In this chapter, LI-CBT self-help is described, along with its advantages and disadvantages compared to traditional high intensity CBT. Evidence for LI-CBT, including importance of using a support worker is outlined, and its use within a stepped model of care, both nationally and internationally described. Finally, prominent low intensity self-help initiatives for depression that are currently being used in New Zealand are outlined and the need for further empirical research within this area discussed.

### **LI-CBT Self-Help**

CBT self-help is a form of low intensity intervention whereby CBT, largely educational, is provided to individuals using a range of delivery methods congruent with personal consumption (e.g., books, video, computers, and audio; Bennett-Levy et al., 2010). In this way, individuals learn about their difficulties while also learning the CBT skills necessary to help them engage in their own self-assessment (Baguley et al., 2010). Based on established therapeutic principles, individuals also learn appropriate strategies for applying specific techniques to their situation and facilitate their own self-management with minimal to no therapist contact (Baguley et al., 2010).

While the emphasis in CBT self-help is to teach individuals to help themselves, formal support can be provided to help individuals interact with and progress through therapeutic content. There are varying degrees and types of guidance and support that can be given. These typically fall under the classifications of either guided and unguided self-help. Guided self-help refers to treatment where a facilitator guides the individual through the material, and that often work to monitor and assess treatment progress (Rodgers et al., 2012). In contrast, unguided, or pure self-help refers to treatment where no guidance is provided throughout an intervention and the individual works through content independently (Rodgers et al., 2012). In line with the varied delivery of LI-CBT, the type and degree of guidance can also vary between these formats. Guidance typically includes contact either face-to-face, by telephone, email, text messaging, Skype, internet bulletin

boards, or some combination of these (Ridgway & Williams, 2011). The relationship between therapist support time and intensity of working is illustrated below in the Figure 3.



*Figure 3.* Relationship between therapist support time and intensity of delivery methods adapted from .

### **Advantages of LI-CBT Self-Help Compared to Traditional CBT**

In comparing LI-CBT to traditional high intensity therapy approaches, there are a number of advantages of the former. One is that LI-CBT does not necessarily require delivery from a specialist trained CBT therapist (Gellatly et al., 2007). Low intensity interventions are typically less individualised and more structured than other forms of therapy, allowing for a more standardised delivery of content (Baguley et al., 2010). This structure allows the focus of those providing guidance during the intervention to be largely directed toward the consumer (as opposed to the therapeutic direction of sessions), enabling them to support and monitor individuals' progress with the treatment content (Gellatly et al., 2007). As a result, the guidance or delivery of material can be deferred away from a limited number of specialist mental health professionals and onto other practitioners.

If specialist mental health contact is utilised within a low intensity approach, individual contact with this professional is minimised. That is, professionals typically see clients for fewer or shorter sessions by treating multiple individuals at one time (e.g., through group work), or by taking a largely support/guidance role with clients through structured CBT self-help materials (Bennett-Levy et al., 2010). By removing the requirement for treatment to be exclusively run by highly trained health care professionals and by minimising specialist CBT professionals' time spent with or preparing for clients, LI-CBT interventions accommodate a cost-effective option in comparison to traditional

high intensity CBT. This cost saving may also be reflected through treatment prevention. For instance, without access to low intensity treatment, a proportion of those who have depressive symptomatology may worsen over time, leading to higher degrees of symptom severity. Higher symptom severity requires more costly and time demanding, high-intensity treatments. Thus, by treating depression symptomatology early, there is a smaller economic burden placed on treatment health services (Department of Health, 2011).

With many LI-CBT materials being accessible at home (e.g., by phone, book, or computer) or delivered through community and voluntary sectors, LI-CBT may aid in reducing the stigma and discrimination that can be attached to accessing traditional mental health care (Williams & Whitfield, 2001). In addition to social barriers, remote access to many LI-CBT options may overcome potential physical and economic barriers to treatment, allowing treatment access for those who do not usually seek help, or those who may fail to meet the necessary criteria to qualify for mental health service funding (Baumeister, Reichler, Munzinger, & Lin, 2014). Thus, LI-CBT has the capacity to provide treatment to a greater proportion of people suffering psychological distress (in comparison to traditional mental health service delivery) in a time efficient way. The ability to provide broad and rapid access to treatment, often without the need for lengthy wait-list delays, also suggests that LI-CBT may be a more responsive treatment option than high intensity CBT (Bennett-Levy et al., 2010). While CBT self-help material is typically highly structured in that it provides fixed content, consumption of material is highly flexible. That is, LI-CBT resources generally promote treatment flexibility and allow patients to engage with the vast proportion of treatment content at their own pace and during times suitable to their lifestyle (Bennett-Levy et al., 2010). With treatment progressing at a pace convenient to the user, accessing information in smaller amounts (e.g., bite-size pieces of information) may also greater facilitate learning and retention (Bennett-Levy et al., 2010).

### **Disadvantages of LI-CBT Self-Help Compared to Traditional CBT**

The benefits of LI-CBT should be weighed alongside their disadvantages. A commonly cited criticism in low intensity and, in particular self-help literature is the potential loss of the therapeutic relationship or alliance between clients and their therapist associated with utilising brief structured treatment content (Richardson, Richards, & Barkham, 2010). It has been well established that this relationship is often associated with



positive treatment outcomes (Elvins & Green, 2008; Martin, Garske, & Davis, 2000), and concerns have been raised as to whether self-help treatment runs counter to, or limits, the capacity to develop this alliance (Barazzone, Cavanagh, & Richards, 2012; Leahy, 2008). Currently, research within this area is limited and conclusions are made more difficult due to variability in how self-help content is structured, delivered, and supported (Bennett-Levy et al., 2010; Ridgway & Williams, 2011). However, at this time, there is growing evidence to suggest that aspects of a positive therapeutic alliance (e.g., warmth, empathy, and genuineness) are both incorporated and apparent within the writing of self-help interventions (Barazzone et al., 2012; Richardson et al., 2010). Barazzone et al. (2012) argue, however, while there is good evidence for content designed to establish a therapeutic relationship, there is little content associated with the maintenance of this alliance. It is clear that further research is needed to understand how best the therapeutic alliance can be utilised within self-help resources and what effect this may have on treatment outcomes.

A further criticism is that LI-CBT often requires considerable intrinsic motivation to effectively engage with self-help materials (Rickwood & Bradford, 2012). As such, LI-CBT may lead to high rates of premature dropout from treatment. For example, Melville, Casey, and Kavanagh (2010) found an average of 35% of participants dropped out of 16 internet-based self-help programmes. It can be argued, however, that although these rates are high, they do not appear to differ to a higher degree than standard high intensity CBT (Salmoiraghi & Sambhi, 2010).

Although the greater variety of LI-CBT formats creates flexibility in terms of patient choice, content is generally more structured and focused on specific and isolated mental health issues (Bennett-Levy et al., 2010), leaving less flexibility to tailor content to the idiosyncratic presentation of each individual's difficulties. In this way, LI-CBT's tendency for a pre-set structure may be less suitable for individuals who present with more complex, severe, or comorbid forms of mental health needs (Andersson & Titov, 2014; Johansson et al., 2012).

LI-CBT content often involves a large reading component and, as such, it may be less suitable for individuals with difficulties in reading, unfamiliarity with the language used in materials, learning difficulties, or computer illiteracy (National Collaborating Centre for Mental Health [UK], 2011). Furthermore, isolated use of LI-CBT may lead to a



greater potential for inaccurate conclusions to be drawn about one's condition (e.g., self-diagnosis or catastrophisation; Papworth, Marrinan, Martin, Keegan, & Chaddock, 2013).

Perceptions concerning a lack of progress from LI-CBT in individuals who require a higher intensity of treatment may lead to generalisations that all psychological treatments are not useful for their situation and may discourage them for seeking further treatment (Papworth et al., 2013; Richards et al., 2010). It should be noted, however, that when accessing LI-CBT interventions from within a stepped care approach to mental health delivery, on-going monitoring is required, and appropriate patients should be identified and stepped-up to more intensive treatments when necessary (Bower & Gilbody, 2005).

A final limitation of LI-CBT is that, although there is a strong evidence-base for some specific types of LI-CBT (Ridgway & Williams, 2011), the LI-CBT research field is still relatively young. As such, there remains a limited knowledge base regarding the use of LI-CBT with certain populations (e.g., older adults or minority groups) and health problems, and individual characteristics that may contribute to treatment effectiveness (Andersson & Titov, 2014).

### **Evidence for LI-CBT**

While still a relatively young field, LI-CBT is generating a growing body of empirical research (Ridgway & Williams, 2011). As a result, a number of randomised controlled trials, reviews, and meta-analyses have been conducted that provide strong support for LI-CBT as an effective prevention and treatment option. Of the LI-CBT efficacy studies available for depression, the majority have produced medium to large effect sizes in treatment outcomes (Gellatly et al., 2007; Gregory, Schwer Canning, Lee, & Wise, 2004). Studies have often sampled adolescent and adult populations, with older adults being largely under-represented (Crabb et al., 2012). Of the small number of studies that have begun to investigate LI-CBT for depression amongst older adults age groups, equal or smaller effect sizes compared to younger populations are generally reported (e.g., Gregory et al., 2004). More research is still needed within the area of LI-CBT for older adults before more firm conclusions can be drawn.

**The importance of guidance in LI-CBT self-help outcomes.** As with other low intensity interventions, the type and level of support provided in LI-CBT varies, making comparisons across studies difficult. However, several systematic and meta-analytic

reviews suggest that guided CBT self-help leads to greater treatment gains (with strong associations found between level of support and treatment effectiveness) compared with unguided CBT self-help (e.g., Baumeister et al., 2014; Gellatly et al., 2007; Hirai & Clum, 2006; Spek et al., 2007). For instance, in Gellatly et al's (2007) meta analysis of 34 self-help interventions for depression, the authors found an overall effect size of 0.43 (95% CI 0.30-0.57). However, when the analysis was restricted to that of guided self-help, the effect size increased to 0.80 (95% CI 0.58-1.01). Furthermore, in some cases, guided self-help has been shown to be equally as effective as traditional high intensity CBT (Cuijpers, Donker, van Straten, Li, & Andersson, 2010). The inclusion of a guided component into a LI-CBT self-help option, therefore, likely leads to greater treatment outcomes than interventions without a guided component, while remaining more cost effective than high intensity CBT.

The titles given to those who provide the guidance in guided self-help vary in the literature. For instance, as previously outlined in Chapter 2, an early initiative by IAPT was the development of a specific low intensity workforce called the Psychological Wellbeing Practitioner. It was noted that in addition to providing guided self-help, the Psychological Wellbeing Practitioner held a variety of other responsibilities requiring more extensive training compared with other low intensity practitioners, whose only role is to deliver or provide guidance through specified self-help resources. While the responsibilities of a low intensity practitioner may differ depending on the service they work in, they share common characteristics. For instance, they typically have brief training (specific to the resources they are providing guidance on) and their primary role is to provide support and guidance to individuals progressing through evidence-based low intensity therapy materials, rather than providing the therapeutic content themselves (Baguley et al., 2010; National Collaborating Centre for Mental Health [UK], 2011). A variation of names for these roles, beyond that of Psychological Wellbeing Practitioner, has been used in literature, including titles such as para-professionals, peer supporters, programme facilitators, and low intensity practitioners (Baguley et al., 2010; National Collaborating Centre for Mental Health [UK], 2011). In the current research, the title of low intensity practitioner will be used.

Research evaluating the difference in guided self-help outcomes delivered by a low intensity practitioner in comparison with a high intensity practitioner is limited. Despite this, Christensen and Jacobson's (1994) research is of note. In their evaluation of

nonprofessional psychological treatments, the authors highlighted how low intensity practitioners tended to produce treatment effect sizes that were comparable to those produced by high intensity practitioners, and greater than that of control groups. Moreover, Bright, Baker, and Neimeyer (1999) examined the relative efficacy of low intensity practitioners (with no advanced degrees in psychology) in comparison to high-intensity practitioners (with a Master's degree or higher in psychology) in providing group-based CBT or minimal support group therapy for depression. They demonstrated that low intensity practitioners were equally as effective as high-intensity practitioners in facilitating treatment that reduced depressive symptoms. However, it is noteworthy that at 6-month follow-up, those who received treatment from a high-intensity practitioner were significantly more likely to be classified as *non-depressed* than *depressed* compared to those who received treatment from a low-intensity practitioner.

### **LI-CBT In National and International Health Services**

Given the accumulating evidence of LI-CBT (particularly guided self-help) and the potential benefits of such interventions to facilitate early treatment access, reducing treatment access delay, and improving cost efficiency, LI-CBT has become an increasingly popular treatment approach with a slowly maturing body of research to support its efficacy (Papworth et al., 2013). Additionally, an increasing number of countries have utilised low intensity interventions as part of a stepped care model of care into mental health services. Countries include, but are not limited to, England (Clark et al., 2009), Chile (Araya et al., 2003), the United States of America (Unutzer et al., 2008), India (Patel et al., 2010), and the Netherlands (Van't Veer-Tazelaar et al., 2010). Overall, international efforts to improve access to evidence-based therapies that utilise initiatives that include LI-CBT interventions show support for improved service user outcomes and potential for positive changes in employment status (Te Pou o te Whakaaro Nui, 2012).

LI-CBT interventions, as well as stepped care models of care, have been proposed as an area of future interest in New Zealand mental health. In 2009, the Ministry of Health produced a guidance paper addressing factors related to the promotion of mental health and wellbeing in New Zealand (Ministry of Health, 2009). In this paper, the authors recognise self-help as a useful and important aspect of managing the current demand for mental health services. In addition to this, the report makes clear recommendations for a stepped

care approach to be adopted into the New Zealand primary mental health service provision. In a more recent document, the Ministry of Health outlined the direction for mental health and addiction service delivery for the period 2012-2017 (Ministry of Health, 2012). It was proposed that there should be an uptake of evidence-based low intensity self-help options to prevent and/or manage mild to moderate mental health and addiction difficulties. Furthermore, the paper specified the introduction of a stepped care model of treatment delivery as a key priority action to improve both service provision and outcomes for individuals in primary and specialist services. The Ministry of Health perceived that a stepped care model would allow services to “intervene in the least intrusive way, from self-care, right across the primary, NGO and DHB continuum, in order to get the best possible outcomes, enabling entry and exit at any point depending on the level of need” (Ministry of Health, 2012, p. 47).

### **Considerations of Stepped Care in a New Zealand Context**

Despite the potential benefits of stepped care services such as those shown by England’s IAPT, it cannot be assumed that international programmes will be generalisable to the New Zealand context (Te Pou o te Whakaaro Nui, 2012). Te Pou o Te Whakaaro Nui (2012) summarise a number of factors that must be considered prior to potentially premature service development in New Zealand. Considerations include New Zealand’s diverse population, a need for specific responsiveness to the Māori population, and both the explicit and implicit differences that exist between different national health systems (Te Pou o te Whakaaro Nui, 2012). Additionally, those therapies provided within a stepped care service must also undergo similar deliberation. That is, while there is a foundational evidence-base for LI-CBT guided self-help (recommended as a prominent low intensity treatment option for depression) amongst different international countries, there is little research evaluating its use within a New Zealand population. As such, caution must also be made before generalising results from international LI-CBT guided self-help research. This is particularly true amongst LI-CBT interventions that have a less extensive evidence base, such as those LI-CBT interventions for older adult populations.

### **LI-CBT Self-help Initiatives for Depression in New Zealand**

To date, only a small number of LI-CBT self-help initiatives for depression have been implemented and evaluated in New Zealand. Notable interventions include SPARX,

Beating the Blues, The Journal, Overcoming Depression, and Living Life to the Full. These are outlined briefly as follows.

### **SPARX**

Funded by New Zealand's Ministry of Health, SPARX (Smart, Positive, Active, Realistic, X-factor Thoughts) is a computer-based CBT self-help programme developed for young people experiencing depression or depression symptoms (Shepherd et al., 2015). Available free online (<https://sparx.org.nz/>), SPARX leads players through seven modules in a three-dimensional fantasy world that enables young people to learn appropriate CBT skills for the treatment of mild to moderate depression (Shepherd et al., 2015). In 2012, a randomised control trial involving 187 adolescents aged 12-19 years who experienced depression was conducted to determine whether SPARX was as effective as standard healthcare provided by a New Zealand counsellor or clinical psychologist (Merry et al., 2012). Results post-intervention and at 3-month follow-up indicated that response rates, remission levels, and reductions in depression symptoms were at least as good as those in patients who accessed standard healthcare. Despite SPARX's promising results, as Griffiths (2012) points out, the study failed to describe whether the healthcare services to which the programme was being compared were actually effective in the first place. Moreover, no personal guidance (known to be beneficial in improving symptom improvements in LI-CBT self-help) was provided to aid individuals' progression through the content. Finally, while not a limitation, in terms of the current study's research focus, the programme was specifically developed for young people, and its fantasy game content is likely to be less relevant to an older population.

### **Beating the Blues**

Beating the Blues is a computer-based CBT self-help programme for depression and anxiety that can be accessed free via a referral from one's Primary Care General Practitioner (Te Pou o te Whakaaro Nui, 2012). The Beating the Blues ([www.beatingtheblues.co.nz](http://www.beatingtheblues.co.nz)) programme involves a 15 minute introductory video, followed by eight CBT modules. Originally developed in the United Kingdom for use amongst older adults with depression and anxiety (Proudfoot et al., 2003; Proudfoot et al., 2004), the programme has generated strong evidence for its efficacy amongst a variety of population groups (see Richards & Richardson, 2012 for review). In New Zealand, Beating

the Blues has been implemented in a number of Primary Care demonstration sites (ManageMyHealth, 2011). Of the New Zealand evidence available, pre- and post-course evaluations, as well as patient feedback ( $n = 100$ ), have indicated positive clinical change as evident by scores on the CORE Outcome Measure (a self-report questionnaire of psychological distress) and high patient satisfaction (62% of individuals) with the programme (as cited in ManageMyHealth, 2011). Therefore, the programme does appear to be promising. Despite this, while there is a strong international evidence base (e.g., Richards & Richardson, 2012) and with some evidence supporting its use with older adults up to 75 years (Cavanagh et al., 2006), no strong methodological studies (e.g., controlled trials) evaluating its effectiveness has been completed in New Zealand. Additionally, as with SPARX, although support can be provided, Beating the Blues is not technically a guided programme, and guidance provided has not been consistent (ManageMyHealth, 2011).

### **The Journal**

Launched in 2010, The Journal is a free computer-based self-help programme for depression that utilises various components of CBT (e.g., behavioural activation and structured problem solving), as well as positive psychology (Te Pou o te Whakaaro Nui, 2012). Accessible at [www.depression.org.nz](http://www.depression.org.nz), the programme involves six self-help sessions targeting depression symptoms, and it requires users to complete a depression outcome measure (Patient Health Questionnaire-9, PHQ-9; Kroenke, Spitzer, & Williams, 2001). Of the limited outcome data available for this programme, Wyllie (2011) reported that, by December 2010, The Journal had 7,650 users complete at least session one, and 365 had completed all six sessions. Of those who completed all sessions, 71% were identified as having improved from session one (with a PHQ-9 score improvement of at least 25%), 2% showed no change, and 19% showed worse symptoms. An obvious critique is that, while the site is clearly popular in attracting users to its site, the programme itself has demonstrated a very high dropout rate during treatment. The guidance provided is also administered via pre-made video and, thereby, would not strictly be identified as guided self-help. Finally, the programme has elements beyond that of a strict CBT modality, and as with the SPARX programme, while not a limitation, the content appears to be designed for a younger audience, which may not be suitable for the current study's research population.

focus (i.e., older adults).

### **Overcoming Depression**

Overcoming Depression is a six session computer-based (CD-Rom) CBT self-help programme for depression. In a randomised controlled study ( $N = 19$ ), Scheibmair (2010) evaluated the effectiveness of the programme amongst individuals aged 19-77 years of age with mild to moderate depression in New Zealand primary care. The authors demonstrated statistically significant reductions across multiple measures of depression in the treatment at post-intervention and at 6-month follow-up, although significant between-group differences were not found. While the study demonstrated promising findings, due to the small sample size, the study lacked statistical power and the authors identified low up-take and high drop out rates as influential factors that effected the study's evaluation. Additionally, as to the current study's focus, Schibmair's study did not provide a guidance component, nor did the study differentiate between its broad range of age groups.

### **Living Life to the Full**

The Living Life to the Full programme is a CBT self-help programme that can be provided individually or in a group format, and either with or without the guidance of a low intensity practitioner (Williams, 2007). Recently, this programme has been utilised and evaluated in two separate studies within New Zealand and has shown promising results in reducing depression symptomatology (Forman, 2015; Lee, 2014). These studies will be described in detail in the following chapter.

### **Summary and Rationale for Further LI-CBT Self-help Research in New Zealand**

In summary, while not without problems, low intensity psychological interventions have a number of advantages in comparison to high intensity therapies. Of these interventions, LI-CBT self-help has generated a good empirical foundation, and providing a guidance component from a low intensity practitioner can leverage self-help efficacy by significantly improving treatment outcomes. Low intensity self-help interventions and the incorporation of a stepped model of care appear to be a priority for New Zealand mental health services moving forward. However, despite a small number of low intensity self-help options for the treatment of depression being implemented in New Zealand, these rarely extend beyond computer-based self help, have (for the most part) not been rigorously empirically tested, are at times only loosely based on CBT principles, do not always have a

guided component, and none have been evaluated with a New Zealand older adult population. Thus, there is a growing need to examine the efficacy of low intensity guided CBT interventions in a New Zealand context and with a variety of populations, including older adults.



## **CHAPTER 4: GROUP GUIDED LOW INTENSITY CBT SELF-HELP AND THE LIVING LIFE TO THE FULL PROGRAMME**

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### **Outline of Chapter**

Group guided CBT self-help and, in particular, the Living Life to the Full (LLTTF) programme is examined in this chapter. Group guided LI-CBT self-help is also compared to traditional group CBT. Following this is a comprehensive literature review of studies that have implemented the LLTTF programme. As such, the rationale for further research to investigate the effectiveness of the group guided LLTTF programme amongst older adults in a New Zealand context is proposed.

### **Introducing Group Guided LI-CBT**

As noted in earlier chapters, a growing body of research has emerged in support of the most common forms of LI-CBT self-help (i.e., bibliotherapy and computerised CBT) for the treatment of depression and some anxiety disorders (Bower et al., 2013; Cuijpers et al., 2010; Gellatly et al., 2007). In accordance with the field's relatively emerging status, research concerning LI-CBT self-help is progressing, with traditional and alternative forms continually being developed and refined. One low intensity treatment option gaining noteworthy traction is that of group LI-CBT self-help, which as with other low intensity therapies, can be delivered with or without a guidance component.

### **Comparing Group LI-CBT to Traditional Group CBT**

Group LI-CBT is a less intensive extension of traditional group-based CBT, which utilises many of the advantages of both group therapy and LI-CBT (Chellingsworth, Williams, McCreath, Tanto, & Thomlinson, 2010). In contrast to traditional group-based CBT, group LI-CBT emphasises psycho-education (usually presented didactically) as the core, rather than supplementary, component of treatment (Williams & Chellingsworth, 2010). Consistent with this, rather than being tailored to each individual's specific goals (although depending on group size, this may be possible to some extent), content is typically predetermined and manualised based on a particular problem focus (e.g., depression or specific phobia; Chellingsworth et al., 2010).

One advantage of manualised group interventions is that due to emphasis on structured content delivery rather than on content through group members' discussions, the

increased structure allows group sizes to be more flexible. As such, group LI-CBT can be delivered to small (less than 12 members) through to very large (e.g., 100 or more) group numbers. While there are advantages to different group sizes (e.g., greater member discussion in smaller groups), as a group's size becomes larger, the delivery style of such interventions generally become more didactic (Whitfield, 2010). In line with other LI-CBT options, the greater emphasis on a pre-set agenda allows the guidance and delivery of group LI-CBT interventions to be facilitated by trained low intensity practitioners. Considering these factors together, group LI-CBT self-help not only provides a cost-effective treatment delivery option through the use of low intensity practitioners, but it also has the ability to provide treatment to multiple individuals at once, allowing for more rapid and time-efficient treatment distribution.

### **Group Guided LI-CBT Self-Help**

Group guided LI-CBT self-help is a form of group LI-CBT with unique benefits. In contrast to a strictly didactic psycho-education class where group attendees are generally passive in their learning of psychological information, group guided LI-CBT self-help is an intrinsically more interactive and experiential process. An essential distinction of group guided LI-CBT self-help is that CBT self-help resources are provided to each individual group member and guidance is provided by a trained practitioner. The content of the self-help resources is the focus of class teaching and discussion, and acts to facilitate direction for on-going learning and treatment (Chellingsworth et al., 2010). The focus is, therefore, less on specific in-class intervention techniques to facilitate therapy as with traditional group CBT; less on solely communicating psychological concepts as with strictly didactic psycho-education classes; and more on facilitating the engagement of members with their materials with the focus on members applying this information to their unique situations (Williams & Chellingsworth, 2010). In group guided LI-CBT, the role of the practitioner delivering the group is to 1) facilitate the delivery of information relating to the self-help resources, 2) support and guide members to engage in and progress through the content, and 3) to varying degrees, monitor and review the process and outcome of the treatment being used (National Institute for Health and Care Excellence, 2010).

### **Evidence for Group LI-CBT Self-Help**

As previously discussed in Chapter 3, the provision of guidance in CBT self-help interventions is a critical factor shown to significantly improve clinical outcomes when compared to non-guided CBT self-help (Gellatly et al., 2007). However, despite this research, most group LI-CBT interventions do not provide a guidance component. Instead they involve largely passive psycho-educational interactions in which individuals are didactically taught with little to no guidance to help them engage with therapeutic materials. Consequently, to date, there is only a small number of truly group guided LI-CBT self-help programmes designed to specifically target depression that are identified in literature, and there is limited research as to their efficacy. A number of these programmes will be discussed in the following paragraphs.

**Coping with Depression course.** Of the interventions that could be categorised as group LI-CBT self-help, one programme that has undergone a large amount of research is Coping with Depression. Initially developed by Lewinsohn, Antonuccio, Steinmetz, and Eugene (1984) and broadly based on social learning theory (Bandura, 1977), the course delivers highly structured CBT modules for the prevention and treatment of depression through didactic, written, computer-based, or video-based formats (Cuijpers, Smit, Voordouw, & Kramer, 2005). Group formats are largely didactic and attendees progress through a standardised protocol in a largely independent manner (Cuijpers, Muñoz, Clarke, & Lewinsohn, 2009).

In a meta-analysis, Cuijpers et al. (2009) investigated randomised controlled studies regarding the efficacy of the Coping with Depression course. Amongst the investigated studies, analysis of the six preventative studies revealed a mean effect size of  $d = 0.62$ , with estimates that participants had a 38% less chance of developing MDD compared to individuals who did not participate in the course. Analysis of the 18 treatment studies revealed a mean effect size of  $d = 0.28$ . Results also indicated that the Coping with Depression treatment was no less effective than other psychotherapies. Cuijpers et al. argued that the relatively small treatment effect size may have under represented the true treatment affect. They reasoned that the small effect size may have been a consequence of the specific studies chosen for analysis, whereby, the included studies seemed to show greater heterogeneity in terms of their diversity of populations and complexity of presenting

problems.

It is noteworthy that the meta-analysis, while inclusive of both group and individual formats, did not differentiate between the two delivery methods. Despite this, analysis of earlier Coping with Depression group studies (e.g., Allart-van Dam, Hosman, and Hoogduin, 2003) suggests comparable outcomes to Cuijpers et al.'s (2009) findings. Moreover, group delivery of the course with older adult populations has also shown favourable results. In a randomised controlled trial, Haringsma, Engels, Cuijpers, and Spinhoven (2006) investigated the effectiveness of a Dutch version of Coping with Depression in a community dwelling older adult (aged 55-85) population experiencing self-rated, sub-threshold depression or a major depressive disorder. Ten weekly, two-hour sessions were delivered to groups of six to 13 participants. Results indicated that the course was effective in significantly reducing depression symptomatology as well as secondary measures related to mental health (e.g., anxiety, perceived health social and role functioning, and physical functioning and pain) in those in treatment compared with waitlist control groups. Follow-up measures indicated that these gains were maintained 14 months after treatment.

However, while the course has had some success, there has been some dispute in the literature as to the intervention's LI-CBT classification. For example, McClay et al. (2015) argue that Coping with Depression courses deviate away from content delivered through accompanied bibliotherapy resources, incorporating some content that may be classified as high intensity rather than low intensity CBT. In this way, supplementary therapeutic content appears to have been delivered (at least in part) by the practitioner rather than the bibliotherapy materials themselves. Additionally, the full course has up to 14 separate sessions (Cuijpers, Muñoz, Clarke, and Lewinsohn, 2009). While the psycho-educative nature of Coping with Depression has the potential to reach a large amount of people in a technically time efficient manner, the course may not be best described as a brief therapy. Finally, despite some previous attempts to adapt the course so that it could be conducted by non-specialised mental health professionals, the course was originally designed to be facilitated by CBT experts (Cuijpers, Muñoz, Clarke, and Lewinsohn, 2009). This is in direct contrast to the principle of LI-CBT interventions, which is that they are designed with the intention of being used by non-specialised mental health professionals (McClay et

al., 2015). Therefore, for the purposes of the current thesis, the Coping with Depression course was not considered a strictly group LI-CBT intervention.

**Brown's self-confidence classes.** Targeting depression and self-confidence, Brown, Cochrane, and Hancox (2000) developed a one-day psycho-educational workshop. In an attempt to reduce the potential stigmatisation from mental health labels and promote greater uptake from the general public, the authors opted against the label of *depression* when promoting their workshop. Instead, acknowledging the link between depression and self-confidence, the course was titled "How to improve your self-confidence". The workshop involved didactic teaching based on a CBT approach as well as training on how to apply a written self-help book titled "Overcoming Low Self-Esteem" (Fennel, 1999). Evaluating the efficacy of this programme, Brown, Elliott, Boardman, Ferns, and Morrison (2004) conducted a randomised controlled trial of the course with 120 self-referred participants. Participants were allocated to either a treatment or wait-list control group. Results revealed significant self-reported improvements in self-esteem, depression, and distress in those allocated to the workshop compared to wait-list controls. These positive changes were maintained at a 3-month-follow up and found to be largely maintained after two years (Brown et al., 2004; Brown et al., 2008). However, while guidance was provided during the programme, the workshop was provided in a one-off single day session, and no on-going guidance was provided to monitor and support participants through the application of their self-help CBT materials. Given the importance of guidance in LI-CBT self-help, the absence of this likely reduces the potential efficacy of Brown and colleagues' intervention. Thus, the self-confidence workshop fails to meet the sufficient criteria needed to fall within the classification of true group guided LI-CBT self-help.

**LLTTF programme.** Developed by Williams (2007), the LLTTF programme delivers CBT self-help content for the treatment of depression by either a book, DVD, or internet medium. The programme can be provided individually or in a group guided format, and either with or without the guidance of a low intensity practitioner (Williams, 2007). In contrast to Brown et al.'s (2004) one day workshop, the group guided application of the LLTTF programme is structured to provide on-going support by a trained facilitator(s). Small demographic adaptations have also been made to programme materials (e.g., wording and case examples), meaning that delivery formats are available for young people

(adolescents), adults, or older adults. This allows the delivery of content to be more relevant to the age group attending. While the LLTTF programme (in its various formats) has been the subject of a small number of empirically focused investigations (e.g., Palmer et al., 2012), currently there has only been one published pilot study conducted using a randomised controlled trial (McClay et al., 2015). A further successive and larger efficacy trial study is awaiting publication and is outlined in more detail below (Williams et al., 2015).

**Group guided LLTTF pilot.** Pre-empting a larger study to evaluate the efficacy of group guided LLTTF, McClay et al. (2015) initiated a small pilot study of the adult version of the course. In this pilot, the authors aimed to 1) investigate the ability to recruit participants from community settings using a self-referral system, 2) describe the population recruited, and 3) test the delivery of the adult version of the course. McClay et al. implemented a multi-centre (across two sites) pre-post randomised controlled trial, comparing immediate access to a delayed access control. Of those included in the study, 46 participants (30 females) with an average age of 43.7 years and a baseline score of  $\geq 5$  on the PHQ-9 provided baseline data. Measures were also taken at a 3- and 6-month follow-up, although only 48% of participants completed measures at six months.

Results indicated recruitment for participants with mild to moderate depression was effective using community promotion. They additionally provided preliminary information concerning the characteristics of the sample; namely that the majority of participants (93.5%) reported depression symptoms for at least one year, (72%) reported depression or anxiety symptoms for over two years, and over half (57%) reported symptoms lasting longer than five years. Moreover, around half of all participants (52%) reported taking antidepressant medication at the time of the study, which provided some indication of the number of participants who had had previous interactions with health services. Interestingly, 45.7% reported no contact with their GP concerning symptoms of low mood. This proportion lends support to previous research that highlights the so-called mental health treatment gap (Kohn et al., 2004). That is, findings suggested a large number of people were suffering from symptoms of mental health difficulties such as depression, but had not yet attempted to gain access to appropriate health services necessary for their treatment.

Following the programme, participants indicated they were largely satisfied with the course, with mean satisfaction scores of 28 out of 32 on a Client Satisfaction Questionnaire 8 (Nguyen, Attkisson, & Stegner, 1983). In terms of clinical symptomatology, results at three months elucidate a non-significant between-group trend for improvement in depression symptoms amongst immediate access participants compared with the delayed access control group. Specifically, the authors observed a mean difference of 5.25 units on the PHQ-9. Finally, at 3-months, the results indicated a significant between-group difference in scores of anxiety (measured using the General Anxiety Disorder 7; Spitzer, Kroenke, Williams, & Löwe, 2006) with immediate access participants having an average of 6.98 units less anxiety compared with controls. The results provided sufficient information to estimate the sample size needed for a later larger efficacy study.

Despite an inability to draw conclusions as to the course's efficacy, this pilot provided early but supportive evidence that the group guided LLTTF course may be beneficial at improving depression and anxiety symptoms in adults. Results also demonstrated that the course might be a useful intervention to engage with individuals who may otherwise fail to receive appropriate health services. While the focus of the pilot study was the adult version of the LLTTF course, a critical consideration drawn by the authors was the importance of future research amongst alternative populations. In particular, the authors stated that, in the future, the group guided LLTTF course should be evaluated amongst groups such as older adults, whom they argue may be more difficult to engage and treat using this treatment approach (McClay et al., 2015).

***Group guided LLTTF efficacy study.*** In response to the aforementioned pilot, a larger efficacy study was conducted. This study is awaiting publication. In the interim, Williams et al. (2015) have highlighted some of the preliminary findings in a summary report. In this report, it is identified that Williams et al. (2015) sought to investigate the efficacy and cost effectiveness of the LLTTF programme amongst an adult population (N =142) with a mean age 46.6 years. In a randomised controlled trial with a baseline and 6-month follow-up, the authors compared the results from a treatment group versus wait-list control in a sample of community dwelling, self-referred adults presenting with low mood. Analysis indicated both statistical improvement and between-group differences (favouring the treatment group) across outcomes measuring depression, anxiety, and social functioning



at six month follow up. In addition, 59.6% of individuals, increasing from 17.4% at baseline, scored above the clinical cut-off for depression (classified as 10 or above on the PHQ-9; Kroenke et al., 2001) at 6-month follow-up. Economic analysis also indicated a high cost-effectiveness probability, with measures of cost-per-quality adjusted life (an economic evaluation measure to assess value for money of treatment interventions) estimated to be likely under the threshold recommended by NICE (National Institute for Health and Care Excellence, 2010). Taken together, the preliminary results appear to provide evidence that the LLTTF programme was statistically and clinically effective, as well as cost-effective in improving depression symptoms in an adult population.

### **Summarising the Range of Group Guided LI-CBT Self-Help Programmes in Literature**

In light of the literature outlined above, it is apparent that, with the exceptions of an unguided depression workshop (Brown et al., 2004), there is a lack of courses that provide both CBT self-help resources (i.e., bibliotherapy) and on-going guidance specifically for depression. In fact, the only course identified in the literature that has undergone efficacy trials and fits the classification of group guided LI-CBT self-help for depression is that of Williams's (2007) LLTTF programme. However, more research evaluating this programme is needed in order to consolidate findings and to evaluate its efficacy with other population groups (e.g., older adults) and in other settings (e.g., New Zealand). As such, this intervention is the focus of the current study and research incorporating this programme is outlined below.

### **Review of Studies Utilising the Group Guided Application of LLTTF**

LLTTF as a group guided self-help programme has been applied to a number of different age group and settings, and has consistently shown promising results (Williams & Chellingsworth, 2010). However, other than McClay et al.'s (2015) study and the unpublished work of Williams et al. (2015), much of the information pertaining to the group guide intervention has been contained in grey literature (i.e., unpublished studies or work that has been published in non-commercial form). Thus, a strong empirical methodology has not been a primary focus in a large proportion of the group guided LLTTF studies. Despite this limitation, the following section will include a review of *all* relevant group guided LLTTF literature.



## **Group Guided LLTTF Amongst Adult and Adolescent Populations**

**Group guided LLTTF amongst Irish adults.** Aware Defeat Depression (an independent Health and Social Board in Ireland) evaluated the impact and effectiveness of the LLTTF programme amongst Irish adults (Collins, 2012). The evaluation consisted of an analysis from 52 LLTTF groups delivered between 2009 and 2011 across Northern Ireland. Participants who completed the course ranged in age from 16 to 65+ years (upper age limited not stated). Using a repeated measures, multi-method approach, results indicated significant improvements on aspects related to mental health pre- and post-programme, as measured using the General Health Questionnaire-12 (Goldberg & Williams, 1988). In particular, the proportion of participants classified as meeting the threshold for depression as it is defined in the General Health Questionnaire-12 (Goldberg & Williams, 1988) reduced from 72% at the initial session to 13% by the final session. Of the 11 groups that participated in a 6-week follow-up session, scores at follow-up did not significantly differ from scores at post-treatment, suggesting that improvements remained relatively stable six weeks after treatment concluded. It is noteworthy that the evaluation report did not indicate which LLTTF (age specific) version was utilised or whether any alternative version to the adult version (e.g., adolescent or older adult specific) were utilised. Regardless, the breadth of the study using a large number of participants as well as a variety of groups and ages provides good initial support for the efficacy of group guided LLTTF.

**Group guided LLTTF amongst Canadian adults.** With funding from the Canadian Mental Health Association between 2010 and 2011, the Bounce Back programme (Bounce Back, 2012) conducted a pilot study of the group guided LLTTF course (Canadian Mental Health Association BC Division, 2011). By 2011, Bounce Back had delivered 29 separate group guided LLTTF courses (adult version) to over 380 participants. Further demographic information concerning the study's sample was not provided. Of the 228 participants who completed a post-course evaluation, 85% indicated they found the course useful, with 91% indicating they would recommend the course to family and friends. Additionally, qualitative reports indicated a number of positive life changes amongst individual attendees, such as improved family communication and interactions, higher sleep quality, and increased self-esteem. While these results are promising, there were a number of limitations to the study. Those salient to this thesis include the lack of clear inclusion or

exclusion criteria for sample membership, the fact that no pre-course information was collected for evaluation, the authors did not examine the course's effect on outcomes unique to the course's focus (i.e., depression), and the report did not include information as to whether any older adults were included in the sample.

**Group guided LLTTF amongst Scottish minority ethnic community members.**

In Scotland, the Equally Connected Equality team (NHS Health Scotland, 2014) were interested in whether CBT-based group programmes would be suitable for members of Scotland's ethnic minority community. As such, the team conducted a pilot study of the group guided LLTTF programme (adult version) with ethnic minority female participants (Equally Connected Lothian, 2011). The study consisted of 12 participants aged between 21 and 60+ (no upper limit stated) from a wide range of ethnicities. The course was evaluated using post-course evaluation forms as well as a qualitative question-and-answer session two-to-three weeks following the final session. Analysis indicated that all participants either agreed or strongly agreed that sessions were personally helpful. However, there were mixed views regarding the appropriateness of the course examples and materials. Qualitative reports indicated that some examples used within the workbooks (e.g., topics involving alcohol and bereavement) were not always presented in a way that were relevant or appropriately considered their backgrounds, and it was reported that the overall content of the course was not appropriate or helpful for societal issues, such as racism, that may be contributing to their difficulties. More relevant limitations are again that there were no clear inclusion or exclusion criteria for the sample, pre-course information for evaluation was not collected, and as to the current study's focus, only one participant was stated to be older than 60 years of age. Additionally, the authors did not examine the course's effect on symptoms of depression, although some participants did qualitatively report satisfaction in learning some skills in relation to dealing with issues of depression and anxiety.

**Group guided LLTTF amongst Canadian adolescents.** In 2014, the Blue Wave Foundation conducted a pilot study of the group guided LLTTF programme (adolescent version) amongst Canadian youth (Blue Wave Foundation, 2014). Across three sites, 52 participants (35 of those females) with an average age of 14.9 years were enrolled in the course. They completed a pre-programme questionnaire and the Warwick-Edinburgh

Mental Well-being Scale (Tennant et al., 2007) outcome measure. Thirty participants completed the same outcome measure and a post-programme questionnaire at the conclusion of the programme. Results indicated a moderate and significant improvement on the Warwick-Edinburgh Mental Well-being Scale following the programme. Additional noteworthy results include that 100% of participants found the course useful and would recommend the course to others, the majority of participants reported the course was helpful in improving their self-esteem and isolation, and they also felt more able to deal with issues such as stress and unhelpful behaviours. In contrast to a number of other pilot studies, the Blue Wave Foundation investigated pre- and post-programme changes amongst participants. However, the Warwick-Edinburgh Mental Well-being Scale, while a valid measure of well-being, does not directly measure symptoms specific to depression, which the course was designed to improve. Additionally, the report failed to identify any clear inclusion or exclusion criteria, and the results from the sample age group cannot be generalised to an older adult age group.

### **LLTTF Delivered in New Zealand**

As previously mentioned in Chapter 3, only two studies have involved the examination of the LLTTF programme in a New Zealand context. Of these studies, one was individual-guided, while the other was group guided. Both are briefly outlined below.

**Individually guided LLTTF amongst Asian students in New Zealand.** In 2014, utilising a mixed methods approach, Lee (2014) investigated the effectiveness and cultural compatibility of LLTTF with university students of Asian decent in New Zealand. Results indicated significant improvements in areas of depression, anxiety, quality of life, and in participants' understanding of stress and low mood. The programme was not modified for the specific sample population; however, qualitative reports from participants indicated that the programme was culturally compatible and beneficial to a young, Asian sample. These results lend support to LLTTF's efficacy, as well as demonstrating promising results for the programme's use amongst a minority group in multicultural New Zealand society. With regard to the current research, the programme was delivered in an individual, as opposed to a group format, and its population targeted Asian students rather than an older adult population.

**Group guided LLTTF amongst New Zealand adults.** In her study of New Zealand adults, Forman (2015) attempted to investigate the effectiveness of the LLTTF programme with adults, in addition to mechanisms of change within participants who completed the group application of the LLTTF programme. The author's results revealed non-significant changes in participants' ratings of depression and quality of life over the course of the intervention. However, the author argued that these findings were unlikely to be reliable due to methodological difficulties in the research design, which limited the author's ability to make conclusions as to the effectiveness of the programme. Despite limitations, Forman identified a number of noteworthy findings. First, at a group level, the author identified statistically significant reductions in psychological distress over the course of the intervention, which were maintained at six and 12-week follow-up. Second, when utilising a single case analysis and reliable change indexes as measures of clinical significance, data revealed that a number of participants demonstrated clinically significant improvements across measures of depression, quality of life, and psychological distress. Third, there was some evidence of early rapid response patterns within LLTTF, similar to that of traditional high intensity CBT, and such responses were related to positive treatment outcomes. Fourth, although no relationship was found between group climate (i.e., member-group relationship) and treatment outcomes, a significant relationship was found between cohesion (i.e., presence of trust, belonging, and togetherness) to the group facilitator and to aspects of group climate (i.e., conflict and avoidance). While this study was promising, its methodological issues limited the conclusions that could be drawn as to the LLTTF programme's efficacy in a New Zealand context. Moreover, in regards to the current study, Forman's study examined an adult, as opposed to an older adult population.

#### **Group Guided LLTTF Amongst Older Adult Populations**

In addition to group guided LLTTF amongst adolescent and adult populations, there is a small number of studies that have involved the application of this programme to an older adult population. These are outlined below.

**Road testing LLTTF workbooks amongst groups of English older adults.** As part of a Depression in Later Life project in England, Age Concern Yorkshire and Humber, alongside the LLTTF author, Williams (2007), aimed to road test the LLTTF (older adult version) course workbooks with groups of clinical and non-clinical older adults (Age

Concern Yorkshire and Humber, 2009). In the study, older adults were classified as individuals 50 years or older. Participants ( $N = 30$ ) aged 53-94 (17 female) were asked to read the self-help workbooks, complete a short purpose written questionnaire, and provided feedback. Qualitative data indicated that the majority of participants found that engaging with the workbook was a positive experience and that the content was helpful for identifying and providing skills to overcome mental health issues such as low mood. The authors noted that participants particularly liked the lack of psychological language used within the workbooks, and they argued that this accessible language may have enabled older adults to discuss their difficulties without feeling stigmatised. Quantitatively, 71% of participants reported that they had *liked the books*, 66% indicated that the content was appropriate for the age group, and 54% felt that the examples used were relevant. It is noteworthy that, in general, the clinical group found the workbooks less positive than their non-clinical counterparts, 33% of participants did not find the examples relevant to their age group, and, while rare, the authors reported that some participants felt that the workbooks could induce feelings of depression. Overall, however, the authors argued that the workbooks were largely successful as a way to deliver CBT principles to a range of older adult groups.

**Attempts to pilot group guided LLTTF amongst English older adults.** The Full of Life initiative, in association with the Local Wellbeing Project and The Young Foundation, attempted to pilot the group guided LLTTF course (older adult version) amongst older adults in England with participants suffering mild depression, anxiety, or social isolation (Shandro, 2010). However, despite various preparations (see Shandro, 2010) to run courses over two locations, the initiative was unable to recruit the sufficient numbers of older adults to begin the programme and evaluate the course. Although the recruitment process was not discussed in detail, the difficulty in recruiting for an older adult population amongst community dwelling populations was highlighted as a salient issue.

**Group guided LLTTF amongst Canadian older adults.** At the time of the current study's inception (early 2014), there was no indication in existing literature that there had been any attempt to examine (using rigorous empirical methodology) group guided LLTTF with an older adult population. However, in 2015, Khatri, Hynie, Hardy, Zhang, and Mitchell released a report presenting preliminary findings of their older adult pilot study. In

their study, the authors aimed to evaluate the group guided LLTTF course (older adult version) with Canadian older adults. Participants ( $N = 222$ ) aged 50 years and above (89% female) took part in 30 separate courses across multiple locations. Each participant undertook pre- and post-group measures, as well as 3-month follow-up measures of mental wellbeing (measured using the Warwick-Edinburgh Mental Well-being Scale; Tennant et al., 2007) and quality of life (WHOQOL-BREF; The Whoqol Group, 1998). They also completed a post-course satisfaction questionnaire (Client Satisfaction Questionnaire 8; Nguyen et al., 1983). Of those 222, 91 were categorised as belonging to a *clinical* group and were asked to complete additional measures of depression (Beck Depression Inventory-II; Beck, Steer, & Brown, 1996) and anxiety (Beck Anxiety Inventory; Beck, Epstein, Brown, & Steer, 1988) at each time point.

Following the course, more than 90% of all participants reported satisfaction with the sessions and indicated that they would recommend the course to a friend. The majority (75%) stated that they had learned new skills for coping with stress and 62% of participants reported improvements in mood. Significant improvements were identified in the area of wellbeing, with further significant improvements found between post-course and 3-month follow-up. The psychological domain of quality of life was statistically improved at intervention completion and improvements maintained at 3-month follow-up. The social domain of quality of life also showed a trend for improvement over the intervention, but was not significant until 3-month follow-up. Information on the two final WHOQOL-BREF quality of life domains (i.e., physical health and environment) was not reported. Finally, amongst the clinical group, results indicated significant reductions in depression and anxiety, which were maintained at 3-month follow-up.

Overall, Khatri et al. (2015) concluded that the group guided LLTTF course led to substantial improvements for older adults. In particular, the authors argued that the course may be an effective method for enhancing older adult's quality of life and overall wellbeing, as well as reducing depression and anxiety symptomatology. However, it is noteworthy that the report only presents limited information to the reader. Given that older adults are a heterogeneous group with significant differences between early and late stages of older adulthood, it would have been beneficial for the authors to have included more specific age information concerning those participants in the older adult range of the

sample. Moreover, there is no information as to the inclusion or exclusion of participants, or how the clinical sample was allocated.

### **Summary and Rationale for Further group guided LI-CBT Self-help Research**

Group guided LI-CBT self-help incorporates strengths of LI-CBT with more traditional group CBT. Programmes provide CBT self-help resources targeting a specific problem focus, with the aim that content is delivered via the materials themselves (i.e., bibliotherapy) rather than a CBT expert. Moreover, group guided LI-CBT self-help utilises non-expert low intensity practitioners in order to provide on-going guidance to attendees to support the learning and application of self-help material, both in and outside of the group. These strengths mean that group guided LI-CBT self-help offers a cost-effective and time-efficient prevention and treatment option for common mental health difficulties such as depression. Group guided LI-CBT self-help may be one strategy that could be implemented with the aim to improve treatment access for individuals who may otherwise fail to gain access to traditional health care services for depression symptomatology.

Of the interventions identified in the literature that primarily address symptoms of depression, the group guided application of LLTTF is the only programme that has both undergone randomised controlled trials evaluating its efficacy and can be strictly classified as a group guided LI-CBT self-help intervention. In addition to the randomised controlled trials, the group guided application of LLTTF has been trialled with a number of different age groups and settings, and has generated a growing body of research showing support for group guided LLTTF as an effective low intensity treatment option for symptoms of depression. As it stands, however, a greater empirical base is needed to more definitively understand the programme's effectiveness, particularly with specific populations (such as older adults) and in various settings (such as New Zealand). This research interest is acknowledged by McClay et al. (2015), who emphasise the importance of testing the LLTTF programme's efficacy amongst older adults. Therefore, these factors, coupled with a growing body of evidence for group guided LLTTF's efficacy, suggest promising outcomes for the efficacy of such programmes with an older adult population in a New Zealand context.



## **CHAPTER 5: TREATMENT ENGAGEMENT AND OTHER FACTORS THAT MAY AFFECT OLDER ADULT LOW INTENSITY CBT TREATMENT OUTCOMES**

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### **Outline of Chapter**

Factors that may affect LI-CBT self-help treatment outcomes amongst older adults are discussed in this chapter, with a particular focus on treatment engagement. Following the description of client engagement with treatment, the significance of the relationship between engagement and treatment success is then described, providing a rationale for why accounting for engagement may help to accurately evaluate the efficacy of a low intensity self-help intervention. Therefore, the aim of this chapter is to provide rationale for the inclusion of client engagement as an important variable to account for in the current study.

### **Factors that may Affect Older Adult LI-CBT Treatment Outcomes**

#### **The Impact of Sensory, Physical, and Cognitive Decline**

Despite the availability of psychological treatment options for depression in older adulthood (Gould, Coulson, & Howard, 2012), a number of factors can influence the efficacy of treatment provided. For instance, while some sensory, physical, and cognitive decline is associated with normative ageing, vulnerabilities in these areas can be exacerbated by depressive symptomology, which can lead to substantial distress, increased symptom complexity, and consequently greater depression severity (Gonçalves et al., 2009). Similarly, older age is associated with increased risks of developing more significant difficulties in these areas beyond those seen in normal ageing such as pronounced cognitive impairment, functional impairment, or medical illness (e.g., Harada, Natelson Love, & Triebel, 2013; Ministry of Health, 2006). Such difficulties are associated with worse prognoses and are adversely related to depression treatment outcomes in that symptoms can become more persistent and difficult to treat (Blazer, 2003; Dines, Hu, & Sajatovic, 2014; Gildengers et al., 2005; Raue et al., 2010).

#### **Psychiatric Comorbidity**

Depression in older adulthood is often comorbid with additional psychiatric disorders (Gum & Cheavens, 2008). Both MDD and sub-threshold depression have been found to be associated with increased risk of mood, anxiety, and personality disorders; and



MDD is also associated with substance-use disorders (Laborde-Lahoz et al., 2015). For example, in a nationally representative of community-dwelling adults older adults in the United States, King-Kallimanis, Gum, and Kohn (2009) found that 51.8% of older adults with a 12-month MDD or Dysthymia diagnosis also met criteria for a comorbid anxiety disorder. In an earlier study of community dwelling older adults, Beekman et al. (2000) revealed that 47.5% of individuals with MDD were also experiencing a concurrent anxiety disorder. In fact, the common occurrence of comorbid depression and anxiety in older adults (both threshold and sub-threshold) has led some authors to suggest this pattern is the norm rather than the exception (Beekman et al., 2000; Katona, Manela, & Livingston, 1997; Schoevers, Beekman, Deeg, Jonker, & Tilburg, 2003). This high proportion of comorbidity is significant, as existing research suggests that depression, when combined with anxiety in older adults, is more severe and difficult treat as older adults likely require more time and treatment adjustment to achieve similar symptom reduction and functioning (Andreescu et al., 2007; Gum & Cheavens, 2008; Schoevers et al., 2003).

### **Client Characteristics and Client Fit in CBT Treatment**

A client's idiosyncratic characteristics or fit to the available therapeutic approach may also play a role in influencing treatment outcomes. For instance, with regard to a group approach to treatment, some individuals may have negative pre-conceptions about group interventions or may have a preference for individual work. These factors may increase reluctance to engage with treatment (Bennett-Levy et al., 2010). For those who do engage, treatment is not guaranteed to be successful. Although there is considerable evidence in support of CBT as an effective treatment for depression (Hofmann et al., 2012; Pinquart et al., 2007), it is well accepted that individuals can differ in their response to treatment and that, for a number of people, CBT does not appear to be effective (Laidlaw, 2014).

Aside from factors such as the severity and complexity of depression, the delineation of alternative factors that may explain non-response to treatment intervention is not always clear in research. Accurately predicting treatment success or failure on an individual level would require the consideration of factors such as intra-individual differences, presenting problems, historical factors, as well as other factors relating to the broader context that one's difficulties occur in (Laidlaw, 2014). Thus, fully understanding the influence of these factors is a complex task. Despite this, some general (but not

definitive) criteria that attempt to predict factors in individuals whom may benefit most from CBT treatments have been investigated. For instance, early work from Safran and Segal (1996) argue that factors such as an ability to access and identify their automatic thoughts, awareness and differentiation of emotions, acceptance of personal responsibility for change, compatibility with cognitive rationale, alliance potential, chronicity of problems, use of security and safety-seeking operations, problem focus in therapy, and attitude toward CBT are influential. However, despite such assertions being initiatively appealing, research in this area remains limited. Moreover, it has been argued that treatments should be more inclusive than exclusive, and suitability criteria may act as another barrier to older adult treatment (Laidlaw, 2014; Qualls & Knight, 2007).

### **Client Engagement with Treatment**

As outlined in Chapter 3, an essential aim of CBT self-help is the development and acquisition of evidence-based knowledge, skills, and coping to facilitate self-management with minimal therapist contact (Bennett-Levy et al., 2010). It thereby follows that treatment success is influenced by one's engagement with the treatment content and process (Lebeau, Davies, Culver, & Craske, 2013). While client engagement has been frequently cited in literature, there is limited research as to how this may directly influence CBT and, in particular, CBT self-help outcomes (Holdsworth, Bowen, Brown, & Howat, 2014). One complication contributing to the paucity of research may be the difficulties in, and inconsistencies relating to, appropriate terminology (O'Brien, Fahmy, & Singh, 2009).

**Engagement definition.** In the current research, engagement is operationalised based broadly on definitions from Holdsworth et al. (2014) and Tetley, Jinks, Huband, and Howells (2011). It is defined as all efforts made by clients (both within and between sessions) in all aspects of treatment and toward the achievement of change. It is assumed that these efforts manifest both cognitively and behaviourally (e.g., through reading, thinking, and applying learnings from content provided). It is acknowledged, however, that engagement is a complex term that involves the interplay of factors. The term engagement has been operationalised in a number of ways in literature and it has often been conflated with other concepts such as treatment adherence, homework compliance, participation, attendance, attitude to treatment, and motivation (Holdsworth et al., 2014; Tetley et al.,

2011). Due to such difference, it is important to consider why the term engagement is used in the current research and how other studies may have conceptualised this construct.

**Client adherence and compliance.** Two common terms used when considering engagement are those of adherence and compliance. These terms are often used interchangeably in literature and are proposed to be critical to CBT and self-help treatment outcomes. In a survey of 441 CBT practitioners in the United Kingdom, MacLeod, Martinez, and Williams (2009) reported that adherence was identified by practitioners as being the third most important factor in predicting treatment success in self-help interventions. Additionally, adherence was considered by practitioners as being more critical in self-help treatments compared with high intensity interventions with higher therapist involvement (MacLeod et al., 2009). Despite this, the origins of the terms adherence and compliance come from medical model of health and, with this, the terms often have connotations concerning the degree to which a passive patient follows the medical prescription provided by the expert physician (Wetherell & Unützer, 2003). This distinction is important, as a core principle of low intensity interventions is participant choice; individuals can choose the pace and degree to which they want to work on their difficulties in or out of sessions (Bennett-Levy et al., 2010). Thus, adherence and compliance terminology may not be as well suited to LI-CBT self-help treatment literature when considering a broader conceptualisation of engagement.

Similarly, homework compliance has been used as a predictor of treatment response and as a variable to indicate client's engagement in CBT treatment (Lebeau et al., 2013). While research in this area is mixed, literature typically indicates that homework compliance is related to improved CBT treatment outcomes (Lebeau et al., 2013; Wetherell & Unützer, 2003). Regardless of this, homework generally only represents efforts made between treatment sessions and tends not to reflect any voluntary efforts made beyond that of prescribed tasks (Holdsworth et al., 2014). It does not account for alternative efforts such as reflection on content or non-prescribed practice of skills, and it does not account for efforts made within treatment sessions that clients attend.

**Client attendance.** In contrast to between-session activities, client attendance accounts for behavioural efforts client's make toward being present at any agreed treatment sessions. As would be expected, attendance in CBT has been associated with improved

treatment outcomes (Bowen, South, Fischer, & Looman, 1994). In contrast to one-to-one therapy, CBT self-help has a strong emphasis on content being delivered through means beyond that of the therapist (e.g., book and computer content). Thus, it is plausible that non-attendance to an agreed treatment session for some clients may not always be related to one's commitment to utilising therapeutic content and working towards change outside of treatment sessions (Holdsworth et al., 2014).

**Client participation.** During treatment sessions, participation and involvement has been investigated as proxy for treatment engagement (see Holdsworth et al., 2014). However, as with attendance, this variable tends only to account for observable efforts made by the client within, as opposed to between, sessions. Additionally, participation does not account for differences in client characteristics and preferences in learning. That is, those who appear to be highly participatory in treatment sessions are not necessarily more engaged or committed to treatment content than those with lower levels of observable participation. Participation, therefore, likely reflects only one component of in-session treatment engagement (Holdsworth et al., 2014).

**Client motivation.** Finally, client motivation is considered important in predicting success in CBT self-help (MacLeod et al., 2009). While motivation has been found to predict behaviour (Chatzisarantis, Hagger, Smith, & Sage, 2006), behaviour is not always a subsequent or inevitable response to self-reported motivation (Hardeman, Kinmonth, Michie, & Sutton, 2011). As a result, motivation may not always reflect one's involvement or, subsequently, one's engagement in treatment. Rather, motivation may influence engagement (Tetley et al., 2011).

**Importance of engagement.** Despite differences in terminology and the large number of overlaying concepts involved with engagement, it is clear that the extent to which clients make efforts in, and engage with treatment plays an important role in treatment efficacy. For instance, poor engagement with treatment has been argued to limit the degree to which individuals may come to realise the full potential of an intervention (Zivin & Kales, 2008), contribute to premature treatment termination (Tetley et al., 2011), worsen mental health states, (MacLeod et al., 2009) and lead to services being cost-ineffective (Webb & McMurran, 2009). Poor engagement and poor outcomes may also contribute to both client and programme provider's sense of failure and uncertainty (Klein,

Stone, Hicks, & Pritchard, 2003; Piselli, Halgin, & Macewan, 2011). In addition to traditional CBT treatment outcomes, engagement has been found to be important in self-help literature, as demonstrated by an early self-help meta-analysis. In their meta-analysis, Gould and Clum (1993) investigated both the effect of self-help treatment options and the impact that compliance had on mean treatment effect sizes. Defined as participant interaction with self-help materials and active homework participation, studies were categorised as either having high (75%-100%) or low (less than 75%) compliance. It was found that those individuals who reported high compliance to self-help materials had a mean effect size more than three times greater than those with low compliance.

### **Summary and Rationale for Accounting for Engagement in LI-CBT Self-Help Research**

A number of factors have been shown to affect CBT treatment outcomes amongst older adults, and it is likely that these factors may also affect outcomes in LI-CBT self-help. Common factors include sensory, physical, and cognitive decline; psychiatric comorbidity; client characteristics; and a client's fit with the treatment approach. Client engagement in the process of treatment is likely another critical factor that may influence treatment success. It may be even more important in CBT interventions that provide a self-help component as the emphasis is on clients utilising self-help content in the development and acquisition of evidence-based knowledge, skills, and coping to facilitate their self-management. It thereby follows that client engagement, is an important component to consider when evaluating the efficacy of LI-CBT self-help interventions. By accounting for client engagement, research can more confidently identify the effect of the programme's self-help component on treatment outcomes as well as the effect that participant engagement may have in moderating results.

## **CHAPTER 6: CURRENT STUDY SUMMARY, RATIONALE, AIMS, AND RESEARCH QUESTIONS**

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### **Outline of Chapter**

In this chapter, a summary of information covered in the previous chapters is provided, and the rationale for the current research investigation is outlined. Following this, the study's aim and research questions are outlined.

### **Current Study Summary and Rationale**

Current population and epidemiological data indicates that both the proportion of older adults, and the rate of depression amongst them are rising (Department for Economic and Social Affairs, 2013; Mathers & Loncar, 2006). There is a growing need, particularly amongst increasingly pressured health services, therefore, for evidence-based depression treatments that address the specific needs of older adults (Laidlaw & Baikie, 2007). Although depression has serious negative implications in older adulthood (Blazer, 2003), there is a breadth of research in support of CBT as an effective treatment option (Gould et al., 2012). However, many of those who may benefit from CBT do not receive access to appropriate treatment, possibly reflecting the many barriers that surround current treatment access and delivery (American Psychological Association, 2014; Mechanic, 2006; Mohr et al., 2006). Consequently, there is a discrepancy between treatment needs, availability, and uptake for many who experience depression symptomatology (Kohn et al., 2004).

In response to this issue, low intensity interventions, and particularly that of CBT self-help have emerged as alternative treatment options to traditional and highly intensive forms of CBT therapy delivered by specialised mental health practitioners (Ridgway & Williams, 2011). Low intensity interventions provide evidence-based treatment options via non-conventional means (such as books and computers) in order to minimise specialist therapist time or to utilise specialist time cost-effectively (Bennett-Levy et al., 2010). Such interventions can be accompanied by the support and guidance of non-expert mental health practitioners, which when provided, appears to leverage self-help efficacy by significantly improving treatment outcomes (Baumeister et al., 2014; Gellatly et al., 2007). Given its potential benefits, LI-CBT self-help may be a beneficial treatment option for many older adults suffering from depressive symptoms. Moreover, CBT self-help treatments may work

to facilitate New Zealand Ministry of Health's (2012) aims to support older adults to remain living independently, self-manage their wellness where possible, and reduce current health service wait times.

Although LI-CBT self-help interventions and the incorporation of a stepped model of care that incorporates such interventions appear to be priorities for New Zealand mental health services moving forward (e.g., Ministry of Health, 2009, 2012), there is currently a dearth of CBT guided self-help options for depression implemented in a New Zealand context. That is, there are few options that: 1) extend beyond computer-based self help, 2) have been rigorously empirically tested, 3) are based on evidence-based CBT principles, and 4) have the additional component of guidance from a low intensity practitioner. Furthermore, none have been evaluated with a New Zealand older adult population. There is a growing need, therefore, to examine the efficacy of guided LI-CBT self-help interventions in a New Zealand context and investigate their usefulness with varying populations, such as older adults.

As the area of LI-CBT guided self-help has received greater research attention, interventions have been developed that utilise guided CBT self-help materials in a group or class setting (Chellingsworth et al., 2010). This category of intervention, known as group guided LI-CBT self-help, is unique in that it can provide both cost-effective and time-efficient, low intensity treatment to multiple individuals at one time. Of the interventions that fall within this category and have also undergone a high standard of efficacy evaluation, the group guided application of LLTTF (Williams, 2007) is the only CBT self-help based intervention that specifically targets depression while also providing on-going guidance. While early evidence provides support for the efficacy and cost-effectiveness of the group guided LLTTF programme (McClay et al., 2015; Williams et al., 2015), as it stands, a greater empirical base is needed to replicate these results and investigate the effectiveness of this intervention with other populations. This research interest is acknowledged by McClay et al. (2015), who emphasise the importance of testing the LLTTF programme's efficacy amongst older adults. These factors, coupled with the need for further evaluations of guided LI-CBT interventions in New Zealand, support the rationale to examine the efficacy of the group guided application of LLTTF with an older adult population in a New Zealand context.



In considering the aforementioned factors, an evaluation was conducted in the current study to investigate what effect the group guided LLTTF programme has on a community dwelling older adult population with mild to moderate depression. Given the potential impact that engagement with self-help content may have on participants' outcomes, engagement was also investigated. By monitoring participant engagement, the aim of the study was to more confidently identify what effect the programme's protocol and self-help materials may have on influencing any observed outcomes, and also what effect participant engagement may have in moderating these results.

By completing this research, it is hoped that this research will contribute to and expand on the currently small research base concerning group guided LI-CBT self-help. In addition to providing a preliminary examination of the LLTTF group guided programme's usefulness with an older adult population, it also seeks to investigate its application in a New Zealand setting. As such, one intention of conducting this study is to bring further attention to the group guided LLTTF programme, particularly in New Zealand, as a cost-effective and time-efficient prevention and treatment intervention for mild to moderate depression symptomology. The specific aims are outlined below.

### **General Aim**

In this research, the effect that group guided CBT self-help programme LLTTF had on community dwelling older adults' ratings of depression, anxiety, and quality of life was examined. A further research aim was to investigate whether there was a moderating relationship between community dwelling older adults' engagement with the LLTTF programme and improvements in their reported ratings on outcome measures.

### **Research Questions**

#### **Primary Question**

1. *The intervention – depression relationship over time:* Does the LLTTF programme result in significant reductions in participants' reported symptoms of depression over time, as measured using the Patient Health Questionnaire-9 (PHQ-9)?

#### **Secondary Questions**

2. *The intervention – anxiety relationship over time:* Does the LLTTF programme result in significant reductions in participants' reported symptoms of anxiety over time, as measured using the Geriatric Anxiety Index (GAI; Pachana et al., 2007)?



3. *The intervention – quality of life relationship over time:* Does the LLTTF programme result in significant improvements in participants' reported quality of life over time, as measured using the Quality of Life Enjoyment and Satisfaction Questionnaire-Short Form (Q-LES-Q-SF; Stevanovic, 2011)?

### **Tertiary Questions**

4. *The moderating effect of out-of-class engagement on the relationship between the intervention with depression over time:* Will participants' reported out-of-class engagement with LLTTF materials (measured using the purpose written Participant Engagement Questionnaire; PEQ) moderate the relationship between the effect of the intervention over time and participants' reported symptoms of depression?

5. *The moderating effect of out-of-class engagement on the relationship between the intervention with anxiety over time:* Will participants' reported out-of-class engagement with LLTTF materials moderate the relationship between the effect of the intervention over time and participants' reported symptoms of anxiety?

6. *The moderating effect of out-of-class engagement on the relationship between the intervention with quality of life over time:* Will participants' reported out-of-class engagement with LLTTF materials moderate the relationship between the effect of the intervention over time and participants' reported quality of life?

## **Research Hypotheses**

### **Primary Hypotheses**

1. *The intervention – depression relationship over time:* The LLTTF programme will result in significant reductions in participants' reported symptoms of depression over time.

### **Secondary Hypotheses**

2. *The intervention – anxiety relationship over time:* The LLTTF programme will result in significant reductions in participants' reported symptoms of anxiety over time.

3. *The intervention – quality of life relationship over time:* The LLTTF programme will result in significant improvements in participants' reported quality of life over time.

### **Tertiary Hypotheses**

4. *The moderating effect of out-of-class engagement on the relationship between the intervention with depression over time:* Participants' reported out-of-class engagement with LLTTF materials will, on average, moderate the relationship between the effect of the intervention and reported symptoms of depression over time.

5. *The moderating effect of out-of-class engagement on the relationship between the intervention with anxiety over time:* Participants reported out-of-class engagement with LLTTF materials will, on average, moderate the relationship between the effect of the intervention and reported symptoms of anxiety over time.

6. *The moderating effect of out-of-class engagement on the relationship between the intervention with quality of life over time:* Participants reported out-of-class engagement with LLTTF materials will, on average, moderate the relationship between the effect of the intervention and reported ratings of quality of life over time.

## CHAPTER 7: METHODS

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### Outline of Chapter

In this chapter, the current study's research methods are outlined. First, the participant sample, selection, and the process and criteria used to recruit participants are outlined, followed by the procedure of the intervention. The process of data collection is then outlined, including a description of the measures used to elicit data, and an explanation of how these measures were administered and then collected. After this is an overview of the ethical issues that were considered, followed by a description of the research design and type of statistical analysis used to investigate research questions. This includes information about data management and considerations such as the coding of time, missing data, and sample size, prior to describing the procedure for the preliminary analysis and Multilevel Model Analysis.

### Participants

The study sample consisted of 24 participants. Participants were 3 (12.5%) males and 21 (87.5%) females ranging in age from 60-74 years of age. Of the sample, 18 (75%) participants identified as New Zealand European and the remaining 6 (25%) identified as Canadian, English, Indian, Latin American, or South African. As part of the inclusion criteria participants identified their living status as community dwelling. Community dwelling was operationalised as living independently in a flat, home, or an independent living village without the current use of ongoing part-time or full-time living assistance.

As described in further detail below (see Participant Selection), participants were required to present with depression symptomatology. This was measured using the PHQ-9 (Kroenke et al., 2001). Initial scores ranged between 3 and 19 (Appendix A). In addition to the presence of low mood, participants were also required to be proficient in reading, writing, and spoken English (i.e., early high school level). Participants were additionally required to have an absence of serious concerns (either personally or expressed by others) regarding their cognitive functioning compared to peers their age; have no current diagnosis for alcohol abuse, substance abuse, psychosis, or borderline personality disorder; and participants could not be concurrently receiving psychotherapy or counselling for depression or anxiety. While these criteria were not formally assessed during screening,

participants were asked as part of their eligibility questionnaire (within their initial information pack; see Appendix B) to declare that they had met these criteria.

Table 1  
*Demographics of Study Participants*

Category	Sub-category	<i>N</i>	%
Gender	Male	3	12.5
	Female	21	87.5
Intake Age	60-64	8	33
	65-69	7	29
	70-75	9	38
Ethnicity	New Zealand European	18	75
	Other	6	25
Employment Status	Unemployed	2	8
	Employed full-time	1	4
	Employed part-time	3	13
	Retired	16	67
	Other	2	8
Living Status	Live with spouse only	7	29
	Live with spouse and other family	1	4
	Live with family without spouse	2	8
	Live with friends or acquaintances without any family	0	0
	Live alone	14	59
Currently Taking Anti-Depressant Medication	Yes	12	50
	No	12	50

## **Recruitment**

Recruitment targeted community dwelling older adults in Auckland, New Zealand, who were aged 60 to 75 years and who were experiencing subjective symptoms of depression. Both direct and non-direct advertising strategies (explained further below) were implemented to recruit participants. Although the intervention is titled *LLTTF*, the title *Wellbeing in Later Years* title was utilised for recruitment purposes to specifically target older adults.

### **Non-Direct ‘Awareness’ Advertising**

Non-direct awareness advertising involved placing advertisements in local newspapers and community newsletters. Posters and leaflets were additionally placed in local areas where older adults might frequent such as community halls, bowling clubs, and Returned Service Association clubs. The advertisements included information on the programme, basic eligibility criteria, and contact details (i.e., website, telephone, and postal address) through which individuals could express their interest or obtain more detailed information about the programme. A website was developed and hosted on the Massey University domain with the URL <http://wellbeing.massey.ac.nz>. The website contained detailed information about the intervention programme, and wider study, information about the facilitator running the programme, and a page where individuals could contact the study coordinator (via telephone or email) to register their interest in participating.

### **Direct Face-to-Face Advertising**

As outlined earlier in Chapter 5, Shandro (2010) attempted to pilot the LLTTF intervention with an older aged population similar to that in the current study. Shandro encountered difficulty recruiting older adult participants through non-direct (awareness) advertising and subsequently adjusted her approach so that it involved personally visiting organisations (e.g., women’s centres and residential care homes). Shandro reported that face-to-face strategies were more successful than non-direct advertising techniques in recruiting participants. Following Shandro's (2010) experience, direct advertising was employed in the current study. The primary researcher gained permission from a number of older adult clubs, organisations, and independent living villages to hold a brief information session to describe and promote the study.

### **Study Information for Interested Individuals**

Individuals who expressed interest in participating in the study were sent an information pack (Appendix B). This contained a thank you note for registering their interest, a study information document, consent form, eligibility questionnaire, all psychometric measures (see Measures below), Visual Analogue Scales relating to each psychometric measure, and a pre-paid envelop to return relevant information by post should they choose to apply to participate. The eligibility questionnaire included questions about basic demographic information and study specific questions (e.g., living status), health information (e.g., current antidepressant use), and safety information (e.g., whether individuals had concerns about their safety throughout the programme). For those who returned relevant information and were selected to participate, data collected concerning depression, anxiety, and quality of life served as their first baseline measure.

### **Participant Selection**

Fifty-six individuals responded to the study's advertisement campaign. Of those, 17 did not meet inclusion criteria and 6 declined to participate. Respondents who were not eligible to participant were contacted by post and provided with information about where they could find either similar resources to those used in the study (i.e., access to LLTTF material online) or alternative high intensity psychological services that could be more beneficial to their needs (e.g., Centre for Psychology and the Crisis Assessment and Treatment Team). Of the remaining 33 participants, 3 did not meet initial criteria for depression symptomatology but were subsequently accepted into the study. The reason for this inclusion is outlined below.

Participants were required to present with scores between 5 (reflecting the minimal clinical cut-off of depression symptoms) and 19 (reflecting moderately-severe symptoms of depression) on the PHQ-9 as part of the inclusion criteria. However, consideration was given to individuals whose scores on the PHQ-9 were lower than the minimum 5 point cut-off. For individuals who fell into this category, their PHQ-9 scores were compared to their equivalent score on a purpose-made depression Visual Analogue Scale (D-VAS), which is described further under Measures. The aim of this comparison was to identify whether there were substantial differences in depression ratings between the two measures. To make rudimentary comparisons between scores on the two measures, the D-VAS scale of 0-100

was converted to a 0-27 rating scale that reflected the range of scores on the PHQ-9. This allowed for approximate comparisons between D-VAS and PHQ-9 scores on a comparative scale.

Incongruent scores were operationalised as having a difference of at least 5 equivalent PHQ-9 points between the two measures. This 5-point difference represented a categorical difference in depression classification based on PHQ-9 scoring guidelines. On this basis, three individuals' scores met this incongruent criteria. Each individual scored three points on the PHQ-9 and had total scores of 32, 33, and 44 on the D-VAS. These D-VAS scores were approximately equivalent to the PHQ-9 scores of 8, 8, and 11 respectively. As the equivalent scores were 5 or more points above their original three point PHQ-9 score, these three individuals were accepted into the study.

Thirty-three individuals were invited to take part in the study. Seven declined, stating they were unable to attend the designated class time, and two further participants withdrew after the first class. These latter participants reported that their circumstances had changed and they could no longer make a commitment to the designated class time and duration. A CONSORT Flow Diagram illustrating the number of participants at each time point is presented in Figure 4.

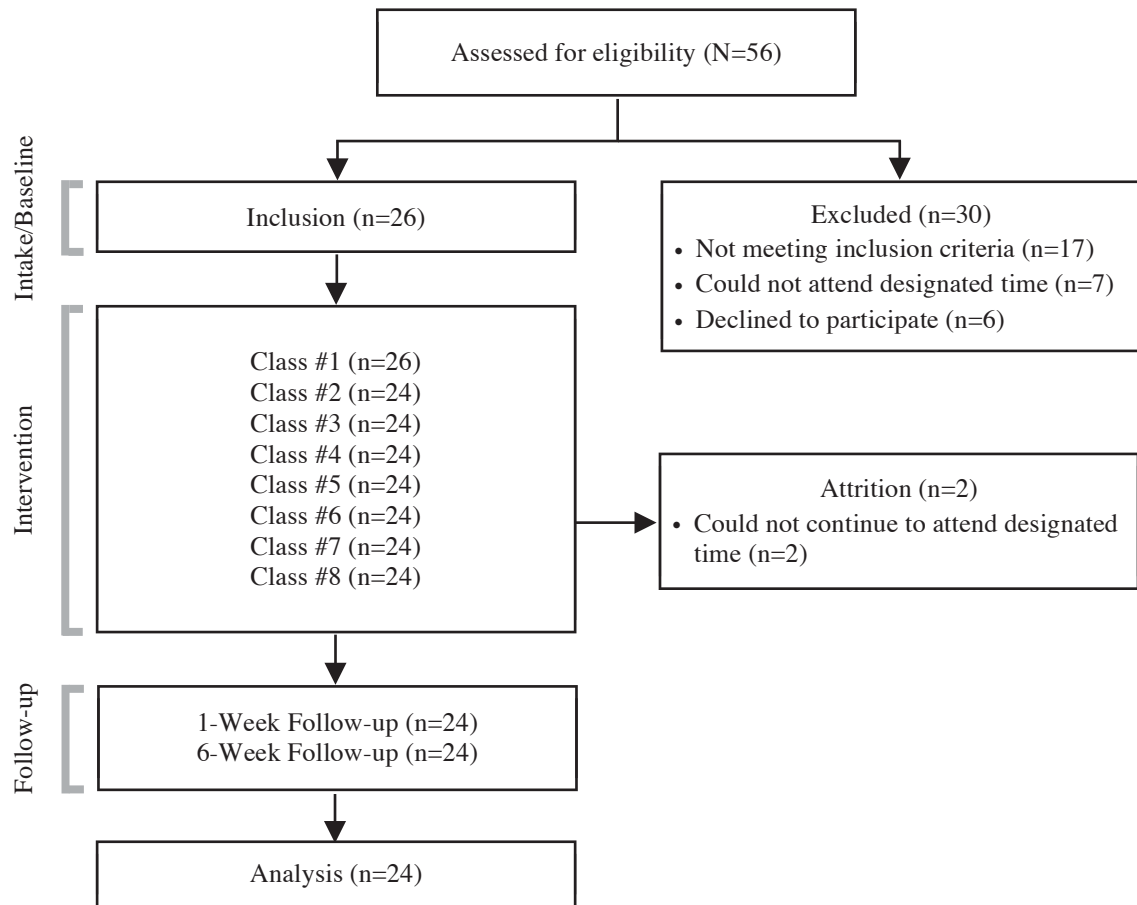


Figure 4. CONSORT Flow Diagram illustrating the number of participants at each time point.

### Group Guided LI-CBT Self-Help Intervention

#### LLTTF programme

The group guided LI-CBT self-help intervention used in the current study was the LLTTF programme developed by Williams (2007). The LLTTF programme is based on established CBT principles and techniques with treatment targeting individuals' situations, thoughts, emotions, physical symptoms, and behaviour. It is administered primarily through a series of short manualised self-help workbooks. Content within these workbooks is specifically designed to be jargon-free and use accessible language without deviating from the traditional CBT framework. For the purposes of the current study, the programme was run in a classroom style group format, facilitated by a low intensity practitioner, and was delivered over eight weekly 1.5 hour sessions.

The core focus of the programme was on the treatment of low mood, although other



common mental health difficulties such as anxiety, stress, and anger were also briefly covered as part of the provided content. The LLTTF programme supports individuals in self-assessing their current experiences, and enabling them to develop the life skills necessary (based on CBT) to deal with their mental health challenges. Each class is centred around a single self-help workbook (see Table 2) and individuals are encouraged to engage with and apply the material both in and out of class. The content of the self-help workbooks were supported by manualised lecture scripts, PowerPoints, worksheets, question and answer time, and group- and pair-based activities. In the current study, the older adult version of LLTTF programme was implemented.

### **Programme Setting and Structure**

The programme was held in the Seminar Room of the School of Psychology at Massey University at the Albany Village Precinct. Each class began with 20 minutes of tea and coffee time. During this time, participants were prompted (via PowerPoint) to complete their weekly psychometric measures. They were then provided with one self-help workbook according to the day's topic and class protocol commenced. At the first session, participants were provided with a self-help workbook titled *Write all over the bathroom mirror*. This workbook was designed to orient individuals to the programme and give practical advice about how they could get the most out of the programme (e.g., how to stay motivated and what to do when feeling overwhelmed). Across the intervention period, participants were provided with eight core self-help workbooks, one for each session. For a brief summary of the content of the programme workbooks and when each were administered, see Table 2.

Additional programme content included two relaxation audio clips. These clips were titled *Anxiety Control Training 1* and *Anxiety Control Training 2* and were narrated by Williams (2007) and are part of the core LLTTF content. Programme instructions indicated that these could be administered at the discretion of the group facilitator. Given the high comorbidity of anxiety alongside depression in older adulthood (Beekman et al., 2000), the decision was made by the low intensity practitioner to include Anxiety Control Training early in the programme. On the third class, CDs with the audio clips were provided for each of the participants to take home to use at their discretion. In addition to encouraging the use of these CDs at home, Anxiety Control Training was also used during group sessions as

part of programme protocol. This involved audio clips being played immediately prior to proceeding with session content, with Anxiety Control Training 1 being played during class number 3, 4, and 5, and Anxiety Control Training 2 being played during class number 6, 7, and 8.

Table 2

*Summary of LLTTF Programme Content*

Class number	Self-help workbook title	Brief content overview
1	Write all over your bathroom mirror and Why do I feel so bad?	<ul style="list-style-type: none"> <li>• Programme overview.</li> <li>• Content on how to get the most out of the self-help workbooks.</li> <li>• The five areas approach overview using the vicious circle (altered thinking, altered feelings, altered physical feelings, and altered behaviour).</li> </ul>
2	I can't be bothered doing anything	<ul style="list-style-type: none"> <li>• Focus on altered behaviour section of the vicious circle.</li> <li>• Identify current activity levels, including ratings for achievement, pleasure and closeness to others.</li> <li>• Make a plan to increase activity levels.</li> <li>• Break one item down into small chunks and come up with alternative ideas to get planned activity done if things get in the way.</li> </ul>
3	Why does everything always go wrong?	<ul style="list-style-type: none"> <li>• Focus on altered thinking section of the vicious circle.</li> <li>• <i>Amazing Bad Thought Busting Programme</i> (Label it, Leave it, Stand up to it, Look at it differently).</li> </ul>
4	I'm not good enough.	<ul style="list-style-type: none"> <li>• Targeting low confidence.</li> <li>• Choosing sensible ideas not negative ones. Practise acting with confidence.</li> <li>• Having realistic goals.</li> </ul>
5	How to fix almost everything.	<ul style="list-style-type: none"> <li>• Problem solving.</li> <li>• Easy four-step plan (break plan into chunks, brainstorm ways to do the first chunk, choose an idea and make a plan to do it, check the plan and put it into action).</li> </ul>
6	The things you do that mess you up	<ul style="list-style-type: none"> <li>• Identifying actions we take when we are feeling down (e.g., substance use, eating for comfort, and self-harm).</li> <li>• Use easy four-step plan to reduce these unhelpful behaviours.</li> <li>• Identifying helpful behaviours.</li> </ul>
7	Are you strong enough to keep your temper?	<ul style="list-style-type: none"> <li>• Identifying things that may cause anger.</li> <li>• Advantages and disadvantages of engaging with people when angry.</li> <li>• Four steps for dealing with anger:               <ol style="list-style-type: none"> <li>1. Identifying what pushes your buttons.</li> <li>2. Know your early warning system.</li> <li>3. Know where the escape hatches are.</li> <li>4. Give yourself respect for leaving the situation.</li> </ol> </li> </ul>
8.	10 things you can do to feel happier straight away.	<ul style="list-style-type: none"> <li>• Coverage of 10 small changes which can improve low mood (e.g., eating breakfast, exercising, and doing good deeds for others).</li> </ul>

### **Group Facilitator and Training**

All classes were led and facilitated by James Martyn, a Doctorate of Clinical Psychology student and the lead researcher on the current study. In accordance with other low intensity interventions, the programme can be facilitated by paraprofessionals other than fully qualified CBT practitioners. The programme instructions dictate that as long as an individual has a good working knowledge of the CBT model and the LLTTF (Williams, 2007) intervention, then the individual can act as a programme facilitator and/or support person (i.e., low intensity practitioner). In preparation for this role, James Martyn received LI-CBT training for facilitating LLTTF classes. After obtaining advice from individuals previously involved in running or supervising a low intensity intervention, the following training was implemented. James Martyn sought to become familiar with CBT principles and techniques by reading relevant chapters of Westbrook, Kennerley, and Kirk's (2011) book *An Introduction to Cognitive Behaviour Therapy: Skills and Applications* and attended a Massey University Postgraduate Diploma in Cognitive Behaviour Therapy four-day block programme. James Martyn sought to become familiar with the application and delivery of LI-CBT content by reading Williams and Chellingsworth's (2010) book *CBT: A Clinician's Guide to Using the Five Areas Approach*, specific chapters of Williams's (2009) book *Overcoming Depression and Low Mood: A Five Areas Approach*, and the content provided in the LLTTF programme materials.

### **Supervision and Monitoring**

The primary research supervisor Associate Professor Paul Merrick (New Zealand registered Clinical Psychologist) informally assessed James Martyn's learning during the LI-CBT training to ensure he reached an appropriate level of ability before commencing with the study. Additionally, Associate Professor Paul Merrick provided weekly supervision throughout the duration of the eight intervention sessions. To address any safety or ethical concerns that arose during each class, a New Zealand registered Clinical Psychologist was present in an observational role and to be available if a critical crisis arose. No crisis arose that required the psychologist's support.

### **Measures**

Participants completed a range of pen and paper self-rated psychometric measures throughout the intervention. Primary outcome measures were the PHQ-9 (Kroenke et al.,

2001) for depression, the Geriatric Anxiety Index (GAI; Pachana et al., 2007) for anxiety, and the Quality of Life Enjoyment and Satisfaction Questionnaire Short Form (Q-LES-Q-SF; Stevanovic, 2011) for quality of life. Additionally, single-item Visual Analogue Scales (VASs) measuring each of the aforementioned constructs were used. VASs have been widely used in both clinical and research settings as they are quickly and easily administered, easy to comprehend, and can finely discriminate subjective phenomena (Abend, Dan, Maoz, Raz, & Bar-Haim, 2014; Hasson & Arnetz, 2005). While providing somewhat crude measures, VASs have generally been shown to have good reliability, validity, and responsiveness (see Ahearn, 1997; Hasson & Arnetz, 2005 for review), with some authors arguing that VASs may demonstrate greater sensitivity in detecting small differences in outcomes when compared with other comparative measures (du Toit, Pritchard, Heffernan, Simpson, & Fonn, 2002). Given the range of symptom severity expected in the present study, standardised psychometric measures may be limited in their ability to reflect change at low levels. As such, VASs were included as supplementary measures with the view that they may better identify small changes in reported symptomatology. VAS data could be examined to investigate whether the measures provided meaningfully different data or further insight into participant change beyond that of primary outcome measures, particularly at the lower levels of symptom severity. VAS were administered for depression (D-VAS), anxiety (A-VAS), and quality of life (Q-VAS). Finally, in order to answer the study's tertiary research questions pertaining to the potentially moderating relationship of engagement (see Chapter 6), participants also completed a measure of out-of-class engagement at each measurement time point. The measure of engagement was the Participant Engagement Questionnaire (PEQ). A list of all psychometric measures completed by participants is presented in Table 3.

Table 3  
*Summary of Measures*

Construct	Measurement name	Number of Items
Depression	Patient Health Questionnaire-9 (PHQ-9)	9
	Depression Visual Analogue Scale (D-VAS)	1
Anxiety	Geriatric Anxiety Index (GAI)	20
	Anxiety Visual Analogue Scale (A-VAS)	1
Quality of Life	Quality of Life Enjoyment and Satisfaction Questionnaire Short Form (Q-LES-Q-SF)	14
	Quality of Life Visual Analogue Scale (Q-VAS)	1
Engagement	Participant Engagement Questionnaire (PEQ)	3

### **Patient Health Questionnaire-9 (PHQ-9)**

The PHQ-9 (Kroenke et al., 2001) is a nine-item self-report questionnaire designed as a clinical tool to aid in screening, diagnosing, and monitoring the symptoms and severity of depression. The measure's nine items were extracted from the depression module of the Primary Care Evaluation of Mental Disorders (PRIME-MD; Kroenke, Spitzer, & Williams, 2001) with each question directly corresponding to one of the the diagnostic criteria of Major Depressive Disorder outlined in the *Diagnostic and Statistical Manual-Fourth Edition (DSM-IV*; American Psychiatric Association, 2000). Individuals were asked to rate from 0 (*not at all*) to 3 (*nearly every day*) how often they were bothered by each of the the nine symptoms of depression over the previous two weeks. Total scores can range from 0 to 27 with scores between 0 to 4 representing minimal to no depression, 5 to 9 representing mild depression, 10 to 14 representing moderate depression, 15 to 19 representing moderately severe depression, and 20 to 27 representing severe depression.

The PHQ-9 has been extensively validated in clinical and non-clinical samples across a number of countries (Kroenke et al., 2001). Kroenke et al. (2001) demonstrated good internal consistency reliability with a Cronbach's  $\alpha$  of 0.89. Titov et al. (2011) demonstrated good convergent validity when comparing the PHQ-9 to the Beck Depression Inventory-II (Beck, Steer, & Brown, 1996) with correlation coefficient of  $r = 0.72$ . Importantly, the PHQ-9 has been validated amongst community samples (e.g., Martin et al., 2006), assessed for its diagnostic accuracy amongst older adult samples (e.g., Phelan et al.,

2010), and has been widely used in LI-CBT research (e.g., Clark et al., 2009), including that which utilised the LLTTF intervention (Williams et al., 2015).

### **Geriatric Anxiety Inventory (GAI)**

The GAI (Pachana et al., 2007) is a 20-item self-report questionnaire designed to assess the presence of anxiety symptoms in the older adult population. The measure utilises dichotomous *agree/disagree* items to reduce the likelihood of response confusion, and somatic symptom questions are limited to minimise overlap between symptoms common to anxiety, general medical conditions, and medication side effects (Pachana et al., 2007). The measure assesses the presence of symptoms of anxiety in the week prior to administration. Total scores range from 0 to 20 with a total score of 0 to 8 representing the absence of clinically significant anxiety and 9 to 20 representing the presence of clinically significant anxiety.

The GAI has good reliability and validity in both community dwelling and primary care samples. For example, Pachana et al. (2007) reported good internal consistency, yielding a Cronbach's  $\alpha$  of 0.91 among community dwelling older adults, and 0.93 among a psychogeriatric sample. The same study also provided evidence of good construct validity, with the GAI being significantly correlated with a number of other popular anxiety measures. Compared with the Goldberg Anxiety and Depression Scale (Goldberg, Bridges, Duncan-Jones, & Grayson, 1988), Beck Anxiety Inventory (Beck, Epstein, Brown, & Steer, 1988), and the Penn State Worry Questionnaire (Meyer, Miller, Metzger, & Borkovec, 1990), correlation coefficient's were found to be 0.59, 0.63, and 0.70 respectively. With a small older adult sample, Pachana et al. (2007) demonstrated the GAI's high test-retest reliability ( $r = 0.91$ ) and inter-rater reliability ( $r = 0.99$ ); and also demonstrated that scores on the GAI were not significantly correlated with factors such as age, gender, or cognitive function (Pachana et al., 2007).

### **Quality of Life and Enjoyment Questionnaire-Short Form (Q-LES-Q-SF)**

The Q-LES-Q-SF (Stevanovic, 2011) is a frequently used self-report questionnaire that measures perceived quality of life (Stevanovic, 2011). The 16-item measure is a short version of the original 93-item Quality of Life Enjoyment and Satisfaction Questionnaire (Endicott, Nee, Harrison, & Blumenthal, 1993). As with the original questionnaire, the Q-LES-Q-SF was developed to assess the dimensions of physical health, subjective feelings,

leisure activities, social relationships, general activities, satisfaction with medications, and life satisfaction (Endicott et al., 1993). Participants are asked how satisfied they have been over the previous week in the above areas from 1 (*very poor*) to 5 (*very good*). Total raw scores range from 1 to 70. If individuals miss items, raw scores can be transformed into a percentage statistic and pro-rated based on the total number of items responded to.

The Q-LES-Q-SF has high internal consistency, reliability, and validity across clinical and non-clinical samples. For example, Stevanovic (2011) revealed that the Q-LES-Q-SF was sensitive to change, had good internal consistency ( $\alpha = 0.90$ ), and had good test-retest reliability ( $r = 0.93$ ). Stevanovic (2011) demonstrated that the measure had appropriate criterion validity, with significant correlation coefficients ( $r = 0.89, 0.43$ , and  $0.47$  respectfully) between the Q-LES-Q-SF and the Clinical Global Impression Severity Scale, Patient-reported Global Impression Severity Scale, and Clinical Global Impression Improvement Scale (Guy, 1976).

### **Visual Analogue Scales**

**Depression Visual Analogue Scale (D-VAS).** The D-VAS was constructed by the author as a single-item measure of subjective depression. The D-VAS asked participants to rate (by marking anywhere on the given line) how low (on average) they felt over the past week. The scale presents a single line with three reference points, 0, 50, and 100. Reference point 0 was labelled as *not at all low* and was anchored in brackets with the statement *I have had no feelings of low mood*. Reference point 50 had no label. Reference point 100 was labelled as *extremely low* and was anchored in brackets with the statement *I feel the lowest I have ever felt*.

**Anxiety Visual Analogue Scale (A-VAS).** The A-VAS was constructed by the author as a single-item measure of subjective anxiety. The A-VAS asked participants to rate (by marking anywhere on the given line) how anxious (e.g., stressed or worried) they felt (on average) over the past. The scale presents a single line with three reference points, 0, 50, and 100. Reference point 0 was labelled as *not at all anxious* and was anchored in brackets with the statement *I have had no feelings of anxiety*. Reference point 50 had no label. Reference point 100 was labelled as *extremely anxious* and was anchored in brackets with the statement *I feel the most anxious I have ever felt*.



**Quality of Life Visual Analogue Scale (Q-VAS).** The Q-VAS was constructed by the author as a single-item measure of subjective quality of life. The Q-VAS asked participants to rate (by marking anywhere on the line below) how satisfied you were (on average) with your overall quality of life (i.e., life satisfaction and contentment) over the past week. The scale presents a single line with three reference points, 0, 50, and 100. Reference point 0 was labelled as *not at all satisfied* and was anchored in brackets with the statement *I am in no way satisfied with my life*. Reference point 50 had no label. Reference point 100 was labelled as *extremely satisfied* and was anchored in brackets with the statement *I have felt the most satisfied I have ever felt*.

**Participant Engagement Questionnaire (PEQ).** The PEQ is a non-standardised self-report questionnaire constructed for the purpose of the current study. The questionnaire evaluated participants' self-perceived satisfaction concerning their engagement with the intervention's self-help materials outside of class. For the purposes of the current study, engagement with self-help treatment was assumed to manifest cognitively and behaviourally. Out-of-class engagement was operationalised as the amount of time a participant spent *reading* over any programme material, *thinking* about information outlined in the workbooks and classes, or considering how the information may be relevant to them; and actively *practising or applying* any programme material. As individual differences likely influenced how much time each participant would require to sufficiently read, think about, and personally apply CBT content, having participants record the amount of time they spent completing such activities was not considered an accurate measure of engagement. Thus, participants were asked to rate their level of satisfaction with the amount of time spent *reading, thinking* about and *practicing or applying* programme material as a measure of participant out-of-class engagement with LLTTF content.

The PEQ was composed of three questions, with each question being made up of a single-item VAS. Each scale presented a single line with three reference points, 0, 50, and 100. Reference point 0 was labeled *not at all satisfied* and was anchored in brackets with the statement *I spent no time*. Reference point 50 had no label. Reference point 100 was labeled as *extremely satisfied* and was anchored in brackets with the statement *I spent a greater-than-expected amount of time*. The questions asked participants to rate by marking anywhere on the line how satisfied they were with 1) the amount of time they spent reading

over any programme materials, 2) the amount of time they spent thinking about information outlined in the workbooks and classes or considering how the information may be relevant, and 3) the amount of time they spent actively practising or applying any programme materials over the previous week. The total score out of 300 was used to provide an indication of participants overall out-of-class engagement with the LLTTF materials.

### **Data Collection**

All participants included in the study completed psychometric questionnaires at 11 different time points (Table 4). The three primary outcome measures (PHQ-9, GAI, and Q-LES-Q-SF) and their corresponding VASs (D-VAS, A-VAS, and Q-VAS) were administered at each time point. As the out-of-class engagement with programme content (e.g., engagement with self-help workbooks) could only be assessed after classes had begun, the PEQ was administered at all time points starting from Class 2. Data collected during the assessment of eligibility served as participants' baseline/intake measure and was recorded as week 0 in Table 4. At each class, measures were administered immediately prior to the class commencing. As questionnaires concerned participant' previous week, a 1-week follow-up of all measures was administered to assess the impact of the final class on participants' symptomatology. The 1-week follow-up questionnaires were mailed to participants by post, along with instructions to complete the questionnaire on a designated date and then return them by post. To assess participants' symptom change trajectories after the intervention ended, data was also collected at a 6-week follow-up. As with the 1-week follow-up, participants were mailed the questionnaires by post with instruction for their completion and return. To facilitate a high percentage of 6-week follow-up returns, participants were given a \$20 PAK'nSAVE supermarket voucher following the return of their completed final questionnaires.

Table 4

*Data Collection Number, Description, and Measurement Time Point in Weeks*

Data collection number	Data collection description	Data time point in weeks
1	Intake	0
2	Class 1	1
3	Class 2	2
4	Class 3	3
5	Class 4	4
6	Class 5	5
7	Class 6	6
8	Class 7	7
9	Class 8	8
10	1-Week Follow-up	9
11	6-Week Follow-up	14

Table 5

*Study Measures and Their Administrative Timing*

Measurement type	Measurement time in weeks										
	0	1	2	3	4	5	6	7	8	9	14
Eligibility Questionnaire	•										
PHQ-9	•	•	•	•	•	•	•	•	•	•	•
D-VAS	•	•	•	•	•	•	•	•	•	•	•
GAI	•	•	•	•	•	•	•	•	•	•	•
A-VAS	•	•	•	•	•	•	•	•	•	•	•
Q-LES-Q-SF	•	•	•	•	•	•	•	•	•	•	•
Q-VAS	•	•	•	•	•	•	•	•	•	•	•
PEQ			•	•	•	•	•	•	•	•	•

*Note.* The symbol • denotes the administration of a measure at a given time.

### Ethical Considerations

Ethical approval was gained on 20 May 2015 from the Health and Disability Ethics Committee: Northern B (15/NTB/51). Several considerations were made to ensure ethical and safe research administration. A primary consideration was the safety of individuals

both prior to and during the intervention. As the programme was facilitated by a low intensity practitioner and not a registered clinical psychologist, applicants who endorsed severe symptoms of depression on the PHQ-9 (i.e., a total score of 20 or above) were not eligible for inclusion in the study. When evaluating incongruent scores between the PHQ-9 and D-VAS (as outlined under the Participation Eligibility paragraph of this chapter), only individuals with incongruent low PHQ-9 scores (below 5) were considered for inclusion and not those with incongruent high PHQ-9 scores.

Participants were informed about the importance of safety, and they were asked in their eligibility questionnaire to indicate whether they considered they could maintain their own and others' safety during the period of the intervention. Individuals who indicated that they could not do so were not considered for inclusion in the study. Individuals who were not successful in applying to take part in the study or who could not commit to the dedicated intervention times were provided with information about where they could find appropriate resources used in the study (i.e., access to LLTTF resources online) and information about other alternative high-intensity psychological service that may have been beneficial to their needs. The two participants who only attended one class were provided with all nine self-help workbooks free of charge.

The low intensity practitioner was supervised by a registered clinical psychologist (Associate Professor Paul Merrick) who has many years of experience in older adult psychology. As outlined earlier, Associate Professor Merrick ensured that the low intensity practitioner was sufficiently competent to administer the intervention before commencing with the classes and he provided weekly supervision throughout the study. Throughout the programme, participants' completed measures were reviewed weekly by the low intensity practitioner. Where individuals' scores were significantly elevated (i.e., a severe classification on the PHQ-9) or they endorsed items that indicated they were at risk of harm to themselves or others, Associate Professor Paul Merrick was consulted and a plan was developed in collaboration with the participant to ensure their safety and facilitate access to appropriate external services if necessary.

Privacy, confidentiality, and data integrity were also considered. All individuals were comprehensively notified of the study's requirements, their rights as research participants, and each provided written consent to participate in the study. All

questionnaires were de-identified by either a research supervisor or research assistant and names were replaced with participant numbers during both the eligibility assessment phase and over the intervention. Once information was de-identified, questionnaires were provided to the lead researcher/low intensity practitioner for analysis. In this way, participants were informed that their information remained anonymous to the low intensity practitioner so as to minimise any response bias and encourage honest ratings. One caveat was provided to participants, whereby, if concerns about safety were identified in the questionnaire data, the questionnaire would be discussed with the supervisor and the participant would be identified for the purposes of contacting the individual to ensure their safety.

To ensure that participants came from a wide range of cultural backgrounds and accurately represented the local area, in addition to print advertising, over 200 older adult organisations (e.g., clubs, groups, services, and residential locations) were contacted to promote the programme. A cultural consultation was employed and a meeting held to discuss the research project and its relevance to different cultures, particularly Māori. An arrangement was made for the lead researcher to access additional cultural supervision should any cultural issues arise during the administration of the programme. No participants in the programme identified as Māori at registration and no other cultural issues were identified for consultation. As such, no further cultural consultation was required.

### **Data Analysis**

#### **Research Design**

A quantitative research approach was used in the current study, implementing a multilevel (2 level) repeated measure (11 waves of data), single group, longitudinal research design. The independent variable was the experimental intervention, classified as Time (from 0 to 14 weeks). The coding of Time is described in more detail later in the Coding time paragraph of this chapter. The primary dependent variables were participants' self-perceived ratings of depression (PHQ-9), anxiety (GAI), and quality of life (Q-LES-Q-SF). The secondary dependent variable was participants' self-perceived ratings of engagement (PEQ) with intervention content outside of intervention classes.

### Tools Used in Analysis

Data was analysed using the Statistical Package for Social Sciences (SPSS) for Mac, Version 22.0 (SPSS Inc., 2013).

### Analysis Type

**Multilevel Modelling.** Primary analysis was performed using Multilevel Modelling (MLM; Heck, Thomas, & Tabata, 2014). Since the development of this statistical approach, MLM has been referred to in a number of different ways, including Hierarchical Linear Modelling, Applied Longitudinal Data Analysis, Random Coefficient Models, Mixed-Effects Regression Models, and Multilevel Regression Models (Heck et al., 2014; Singer & Willett, 2003).

The use of MLM allowed time to be treated as a continuous variable, separate to that of other individual variables of interest (Hox, Moerbeek, & Schoot, 2010). This enabled different levels of longitudinal data to be simultaneously investigated. That is, in contrast to examining group averages over time (such as in traditional methods like multiple regression), MLM considers time as a separate variable within (or nested in) individuals (Hox et al., 2010). Analysis of time within individuals allows the development of individual growth models, whereby individual and group trajectories can be evaluated. This enables the investigation of both within- and between-subject variables (Singer & Willett, 2003). That is, relationships can be derived from within an individual's data over time (Level 1) and in the data between individuals over time (Level 2; Heck et al., 2014). Subsequently, researchers can examine whether individual or group outcomes change across time, and if so, examine how this change occurs (e.g., evaluating rates and shape of change; Singer & Willett, 2003). In this way, MLM analysis allows the researcher to question whether any differences in change across time can be predicted by alternative variables (Singer & Willett, 2003). Such evaluations are important in the current study for it is expected that there will be large differences in participants' initial depression ratings at intake (e.g., between mild to moderately-severe classification on the PHQ-9) and that the rates of symptom change across the intervention will vary between participants (Hayes, Laurenceau, Feldman, Strauss, & Cardaciotto, 2007). An alternative interest in this study, was whether participants' engagement with intervention content may predict differences in outcome change across time (see Chapter 6 for more information). Given the

aforementioned benefits of MLM in addition to those outlined by authors such as Heck et al., (2014), Kwok et al., (2008), and Singer and Willett (2003), there was good rationale for the use of MLM in the current study.

### **Data Management and Considerations**

**Coding time.** Singer and Willett (2003) outlined three essential requirements for building multilevel models for analysis. First, authors propose that MLM with longitudinal data requires the investigation of three or more waves (or collection points) of data. The current study fulfilled this criteria with the analysis of 11 waves of data. This is important given that the larger the number of waves a study has, the more reliable the model estimates become (Kwok et al., 2008). Second, MLM was stated to require the use of a reliable and valid continuous outcome variable(s) which change. This criteria was fulfilled through the use of three standardised outcome measures (i.e., PHQ-9, GAI, Q-LES-Q-SF) previously shown to have good psychometric properties. Third, MLM was stated to require a sensible metric for clocking time. This was an important consideration in the current study, for while data was collected at 11 different stages, coding time as 1-11 would not meaningfully reflect the different time periods between the collection points. Instead, the variable of time (from intervention start) was coded in weeks. Thus, time points were coded as 0-14, whereby 0 indicated the intake period, 1-8 indicated each of the eight weeks of intervention classes, 9 indicated the 1-week follow-up, and 14 indicated the 6-week follow-up.

**Coding attendance.** One important consideration during a longitudinal group intervention is the management of class attendance, as not all participants could attend every class (e.g., due to unforeseen circumstances such health difficulties). It was considered ethically appropriate for participants who could not attend a specific class to continue to be provided with the self-help workbook associated with the class they had missed. As absent participants were still able to access the primary intervention content via workbooks, the researcher continued to collect data from absent participants for the week they had missed. It was considered that this data would provide a more accurate indication of the absent participant measured symptoms rather than a retrospective statistical prediction (i.e., missing data computation). Consequently, to account for differences between data for those that attended classes and those who were absent, a separate attendance variable was created and coded. Table 6 indicates participant attendance at each

class and the number of completed questionnaires collected. Differences between participants' level of attendance and all primary outcome data were investigated.

Table 6

*Number of Completed Questionnaires by Participants at Each Measurement Point*

Measurement week	Completed questionnaires (either in class or sent from home when absent)	%	Participants who attended class	%
0	23	96	N/A	N/A
1	22	92	20	83
2	24	100	19	79
3	24	100	22	92
4	24	100	19	79
5	24	100	21	88
6	24	100	22	92
7	24	100	20	83
8	24	100	21	88
9	24	100	N/A	N/A
14	24	100	N/A	N/A

*Note.* N/A represents item as not applicable.

**Missing data.** As Table 6 indicates, despite attempting to collect data from all participants at all time points (including from those who were absent), a number of participants' questionnaires were not obtained. In order to choose the most robust statistical approach to account for missing data, it was important to evaluate both the amount and the type of data that is missing (Allison, 2001). Both the amount and type of missing data were identified, evaluated, and subsequently replaced using SPSSs Expectation Maximisation estimation. Expectation Maximisation is a common and powerful statistical technique based on Maximum Likelihood (Heck et al., 2014). Rather than more traditional forms of missing value approaches such as value deletion, mean substitution, and other regression-based approaches that have been shown to lead to high rates of error (such as inflated standards or error or biased parameter estimates; Allison, 2001; Larsen, 2011), Expectation Maximisation estimates have been shown to reduce bias caused by missing values (Peugh & Enders, 2004).



The total proportion of missing data was calculated to be less than 3%, which falls well in limits argued to be acceptable for valid analysis (Arbuckle, 1996). Missing data can be problematic depending on the probability conditions under which it is missing (Heck et al., 2014). For example, as originally proposed by Rubin (1976), missing data can be categorised as Missing Completely At Random (MCAR), Missing At Random (MAR), or Not Missing at Random (NMAR). Data that is MCAR and MAR is not considered to have a systematic relationship with missing values and other variables of interest (e.g., participant outcomes) and are therefore ignorable. Data that is NMAR indicates that there is some systematic relationship between the missing data and other variables of interest that needs to be addressed.

To evaluate whether the missing data may have had any systematic relationship with variables that may negatively bias the results, the Little's MCAR test was conducted for all data on each measure at each measurement time point. This test evaluated whether missing data was non-significant, thereby inferring no probable relationship and suggesting data is MCAR. The results from this analysis (available in Appendix C) indicate that the vast majority of missing data was non-significant and was therefore ignorable. Additionally, most significant findings were found to be on the supplementary single-item VAS as opposed to primary outcome multi-item standardised measures. Moreover, with no definitive test to determine whether significant findings were either MAR (i.e., ignorable) or NMAR (i.e., non-ignorable; Schafer & Graham, 2002) the strong pattern of results that indicated missing data were largely MCAR provides good support that there is no systematic relationship between participants' missing data and any other variable of interest. Consequently, this evidence provided sufficient justification for the researcher to proceed with replacing all missing data using single Expectation Maximisation estimates. All subsequent analysis were then conducted using the updated data set with missing data replaced.

**Sample size.** The consideration of sample size differs in MLM compared to many other statistical approaches, as sufficient sample sizes must be considered at each level of analysis. Given the conceptual difference of hierarchical analysis compared to single-level analysis in addition to MLMs relatively recent use in a variety of new research fields (Heck et al., 2014), there is not yet a commonly agreed upon sample size considered to be

sufficient for each level (Kwok et al., 2008). What is clear, however, is that models with higher complexity and greater levels of analysis also require larger samples sizes in order to detect statistical effects (Heck et al., 2014). Acknowledging this, the current study utilised the most simple form of MLM to maximise the chances of detecting statistical effects, constructing models with only two-levels; intervention time and participant outcome.

Currently, there is no consensus on minimum sample sizes for MLM, however, common sample size recommendations range between 15 (Bryk & Raudenbush, 1992), 30 (Maas & Hox, 2005) and 50 (Hox, 1998). The current study aimed to recruit 30 participants and collect data at 11 different time points (whereby greater measurement time points increase the statistical power to detect true effects apparent in data; Heck et al., 2014).

Of the 33 individuals who meet inclusion criteria to participate in the study, not all could attend the designated time. As a result, data was collected from 24 participants in all. As such, there were 11 units of data at Level 1 (time) and 24 units of data at Level 2 (individual participant outcomes). When considering the optimal measurement collection points at Level 1, it was decided that 11 (i.e., weekly) data collections points would be in best interest of participants. That is, to obtain a higher number such as 30 data points at Level 1, participants would have to complete around 3 phases of questionnaires per week or alternatively continue to complete questionnaires for many weeks after the intervention concluded. As such, the researcher felt that unnecessary additional data collection points may lead to increased burden on participants and lead to higher attrition rates.

### **Preliminary Analysis**

**Assumption checks.** In line with recommendations from authors such as Heck et al. (2014), Singer and Willett (2003), and Tabachnick and Fidell (2013), three primary assumptions of linearity, normality, and homoscedasticity were evaluated. Linearity refers to the dependent variables as a linear function of the independent variables, normality refers to variables and thereby their accompanying errors having normal distributions, and homoscedasticity refers to the equal variance of errors across the independent variables. Analysis was conducted by visual analysing Normal Probability Plots (P-P plots) and Scatterplots using standardised residual data. Residual data was drawn from MLM computations based on Unconditional Growth Models that were most important to the primary and secondary research questions. That is, residual data was drawn from *Model*

*D3*, *Model A3*, and *Model Q3* (outlined later in more detail) as opposed to examining all residual data from earlier, more primitive versions of the same progressional models. The P-P plots were visually inspected to investigate whether residuals formed a roughly diagonal line indicating a normal distribution. As another data normality check, scatterplots were visually inspected to investigate whether residuals were randomly scattered around the centre of the plot as opposed to skewing at either the top or bottom. Scatterplots were then checked for linearity by visually assessing whether residuals were approximately rectangular in distribution. Finally, Scatterplots were checked for homoscedasticity by visually inspecting whether residuals were scattered with roughly equal widths.

**Measure reliability.** To ensure the assessment of depression, anxiety, quality of life, and engagement were as consistent, reliable, and as accurate as possible, the internal consistency of the questionnaires used to measure these constructs were evaluated. In doing so, a Cronbach's alpha reliability analysis was conducted on the PHQ-9, GAI, Q-LES-Q-SF, and PEQ across each measurement time point.

**Convergent validity.** Given that measures of internal consistency cannot be accurately identified when evaluating single-item measures (Gliem & Gliem, 2003), Cronbach's alpha reliability analysis was not carried out on the study's supplementary VAS measures. Instead, convergent validity was assessed by conducting a two-tailed bivariate Pearson's correlation coefficient analysis between each VAS and its equivalent standardised measure across time. A Pearson's correlation coefficient analysis was conducted for measures of the same construct, namely the D-VAS with the PHQ-9, the A-VAS with the GAI, and the Q-VAS with Q-LES-Q-SF across each measurement time point.

**Visual analysis of participants' ratings on primary outcome measures.** In order to examine participants' overall mean trajectory of change, all participants' ratings on each of the three primary outcome measures (i.e., PHQ-9, GAI, and Q-LES-Q-SF) over time were plotted on a line graph for visual analysis.

**Participants' ratings on VASs compared to ratings on equivalent standardised measures.** The use of VASs were supplementary to that of primary outcome measures and were included to identify whether VAS data could provide meaningfully different data or further insight into participant change beyond that of the primary outcome measures,

particularly at the lower levels of symptom severity. If, however, after an investigation into these ratings it was found that there was no substantial difference between the data, additional MLM analysis based on VAS data would be superfluous. Two steps were conducted to compare VAS data to primary outcome measure data to evaluate the usefulness of the VAS data. First, participants' mean ratings on VASs and their equivalent standardised measures were converted to Z-scores in order to compare participants' ratings on a common scale. In doing so, a visual analysis could be conducted of both the rate and shape of change over time between alternative scales that measure the same construct. Second, individual participant scores on depression and anxiety measures at Week 14 were plotted on bar graphs. In doing so, a comparative visual analysis could be conducted to examine differences in capturing low levels of symptom severity at a single time point. This way the researcher could evaluate if obvious differences were present and whether further analysis was needed.

#### **Assessment of variance within primary variables for Multilevel Modelling.**

Based on recommendations from Singer and Willett (2003), an evaluation was conducted to assess whether sufficient variation existed both within- and between-participant outcome data in order to justify MLM analysis and the subsequent introduction of potential predictors into models. Accordingly, empirical growth models were constructed for individual participants. This enabled a visual inspection of within- and between-participant change over time for each primary outcome measure. Ordinary Least Squares (OLS) regression analyses was also conducted, enabling the evaluation of each participants' intercept (constant) and rate of change (slope). Individual OLS regression lines were superimposed over empirical growth plots to aid in the visual inspection. Finally, overall group OLS regression analysis was conducted, allowing the visual comparison of individual participant change with overall group intercepts and slopes.

**Correlational analysis of engagement.** Of interest in the current study, was whether participants' out-of-class engagement with LLTTF materials (measured by the PEQ) moderated the relationship between the effect of the intervention over time and participants' reported symptoms of depression, anxiety, and quality of life. Prior to adding engagement into MLM models to examine this question, a preliminary correlational analysis was conducted to investigate the relationship between the predictor variable of

engagement and all primary outcome measures. Thus, two-tailed bivariate Pearson's correlation coefficients using participant OLS-estimates of intercepts and slopes were calculated to test whether there were any significant interaction between the predictor variables and engagement (PEQ).

**Preliminary visual analysis for alternative predictor variables.** In contrast to participants' engagement with LLTTF materials, alternative variables may have impacted on participants' outcome ratings over time. Although not the direct focus of the current study, information was collected at intake on participants' antidepressant medication use and living status during the intervention. As these variables may have influenced participant outcome ratings over time, a preliminary analysis was conducted to evaluate these variables and examine whether differences in outcomes between participants were apparent. To evaluate this, both individual and group mean OLS-regression lines were calculated, plotted, and compared. Thus, a visual inspection of the intercept and slope was conducted between participants' either taking or not taking anti-depressant medication during the intervention, and between participants either living alone or living with others during the intervention.

### **Multilevel Modelling Analysis**

**Defining model estimates.** The procedure for MLM analysis is typically sequential, whereby a series of regression-upon-regression analyses are conducted to develop a series of models that build upon one another (Singer & Willett, 2003). Initially, basic models are developed (i.e., Unconditional Means Model) and through the investigation of variation in outcomes, conceptual models are progressively refined (i.e., developing Unconditional Growth Models) in an attempt to more effectively account for variance in data (Heck et al., 2014).

Each Multilevel Model contains fixed effects and variance components. In the current study, the fixed effects estimated the true average change trajectory (i.e., intercept and slope) in participants' depression, anxiety, or quality of life over time. In later models including the predictor variable of engagement, the fixed effects also estimated participants' average engagement over time and the covariance of participants' slope (i.e., Time) with engagement. Variance components estimate the error associated with each model and indicate the variance that remains unexplained both within- and between-

participants. As models are developed, variance components are progressively evaluated and the observed variance can potentially be reduced by the addition of further predictors.

During MLM analysis, goodness-of-fit statistics were also computed. Although this was not necessary to answer the core research questions, these statistics enabled the researcher to compare whether model adaptations and additional predictors subsequently improved the newer model's ability to account for variance. The goodness-of-fit statistics used for evaluation were Pseudo  $R^2$ , -2 Log Likelihood, and Bayesian information criterion (BIC). Pseudo  $R^2$  statistics are calculated as a representation of model fit at specific levels of data hierarchy by providing a percentage indication of explained variance between two models. As a single model is progressively developed from one another, Pseudo  $R^2$  statistics can be evaluated for comparison. An increase in Pseudo  $R^2$  between two models indicates a greater proportion of variance accounted for by the model (at a given level of analysis) and, thereby, indicates an improved model fit. The -2 Log Likelihood (or deviance) statistic is a more general measure of model fit, whereby a lower deviance value between two models represents an overall improved model fit. The -2 Log Likelihood has the additional benefit of statistically comparing the proportion of change in deviance values between two models through the calculation of Chi-squared statistics. In doing so, Chi-squared difference in deviance ( $\chi^2$  Change) statistics indicate whether change between two models were in fact significant. Finally, Bayesian Information Criterion (BIC) were computed as an additional measure of overall model of fit. The additional benefit of the BIC is that this adjusts the -2 Log Likelihood statistic for the number of parameters in the model and the sample size. Again, lower deviance values between two models represent an improved model fit.

### **Specifying Multilevel Models and model progression.**

**MLM progression.** As previously noted, MLM is typically conducted in a staged process, whereby a series of models are developed in a sequential process (Heck et al., 2014). In the current study, a series of models was developed for each primary outcome measure. To represent the focus of each model series, models were titled with a letter that indicated the measurement variable. For example, the *D* series of models represented models of depression, *A* series of models represented models of anxiety, and *Q* series of models represented models of quality of life. Additionally, models within a series were

provided with a number to represent their sequential order. For example, *Model D1* was followed by *Model D2*, then *Model D3*, and so on. Each sequential model is described in more detail in the paragraphs that follow, however, it is noteworthy that *Models 1, 2, and 3* were developed to investigate the primary and secondary research questions concerning whether the LLTTF programme resulted in significant improvements in participants' reported depression, anxiety, and quality of life over time. *Model 4* was developed to investigate the tertiary research questions concerning whether participants' reported out-of-class engagement with LLTTF materials moderate the relationship between the effect of the intervention over time and participants' reported primary outcome ratings. Finally, as a supplementary analysis, additional models were developed to investigate the effect of attendance (*Model 5*), antidepressant medication (*Model 6*), and living status (*Model 7*) on the relationship between the effect of the intervention over time and participants' reported primary outcome ratings.

**Unconditional Means Models (*Model D1, Model A1, Model Q1*).** The first model developed through MLM is referred to as the Unconditional Means Model (*Model D1; A1; and Q1*). The Unconditional Means Model was simplistic in that it only considered the dependent variable of interest (without the variable of time) while allowing the intercept to vary by participant. These models were developed in the first instance to confirm appropriate levels of variability to warrant further analysis (as earlier visual inspection also confirmed); then, in the second instance to establish baseline measures of within-participant and between-participant variance and model goodness-of-fit for later model comparison.

**Unconditional Growth Models (*Model D2, Model A2, Model Q2*).** In the next set of models, the added effect of time was included into the base Unconditional Means Models to investigate whether outcome scores change significantly over time during the intervention. Thus, *Model D2, A2, and Q2* fit a linear model for change in outcome scores over time. In these first sets of Unconditional Growth Models, there was an assumption that participant's outcome levels at intake were not equal, as such, the intercepts were allowed to vary by adding a random effect of participant.

**Unconditional Growth Models (*Model D3, Model A3, Model Q3*).** In the next set of models, consideration was given to the expectation that participants' slope would likely be different across different individuals (i.e., intervention effects may be faster or slower



for different individuals; Hayes, Laurenceau, Feldman, Strauss, & Cardaciotto, 2007). As such, an evaluation of whether the effect of time on individuals' outcome ratings might be significantly different across participants was conducted. Thus, these models expanded on previous models to include the random effect of time. That is, the tertiary models allowed the slope (i.e., changes in outcomes) to vary over time and across participants. Thus, *Model D3*, *A3*, and *Q3* fit a linear model for change in outcome ratings over time while allowing both the intercept and slope of time to vary by participant.

**Unconditional Growth Models (*Model D4*, *Model A4*, *Model Q4*).** In the next set of models, the added effect of engagement and the interaction between engagement and time were included into *Model 3*. In accordance with Heck et al. (2014) and Paccagnella (2006), engagement data was centred for each participant at each time point according to the samples' overall average level of engagement (i.e., grand mean centred). Engagement was included into the model to investigate whether participants' engagement significantly interacted with time to predict differences in depression ratings. That is, whether any improvements in participant outcomes over the course of the intervention were significantly influenced by individuals' engagement levels. As such, *Model 4* fits a linear model for change in outcome scores over time while allowing the time intercept and slope to vary by participants.

**Supplementary Unconditional Growth Models.** As a supplementary check for potential variables that may have accounted for differences in participants' outcomes during the intervention period, the added fixed effects and interaction effects of (a) attendance, (b) use of antidepressant medication, and (c) living status over the duration of the intervention were investigated. These variables were included into *Model 3*, to compute new models that controlled for attendance (*Model D5*, *A5*, and *Q5*), use of antidepressant medication (*Model D6*, *A6*, and *Q6*), and living status (*Model D7*, *A7*, and *Q7*). As in *Model 3*, the new models (5, 6, and 7) fit a linear model for change in outcome scores over time while allowing the time intercept and slope to vary by participants.



## CHAPTER 8: RESULTS

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### Outline of Chapter

The following chapter is split into a preliminary analysis section and a multilevel modelling results section. The preliminary analysis includes results from the analysis conducted on the study's data collection measures in order to ensure the reliability and validity of the data collected, visual analogue scale data is compared to primary outcome measures, and variability in data is explored to establish the justification of building multilevel models and including predictor variables. The multilevel modelling results section includes results from building multilevel models in order to answer the primary, secondary, and tertiary research questions, as well as considering supplementary explanations for results.

### Section 1: Preliminary Analysis

#### Assumption Checks

Three primary assumption checks were carried out to examine the data's linearity, normality, and homoscedasticity. Assumption checks were examined by plotting standardised residual normal P-P plots and standardised residual scatterplots (based on residuals from *Model D3*, *Model A3*, and *Model Q3*) for the primary outcome measures of depression (as measured by PHQ-9), anxiety (as measured by GAI), and quality of life (as measured by Q-LES-Q-SF) over time (Appendix D).

Visual analysis of P-P Plots showed that residuals from all models followed a roughly linear diagonal line, indicating only minor departures from normality. Visual analysis of scatterplots (of standardised residuals against predicted values) indicated that values formed a random pattern approximately centred around the line of zero with roughly equal variance throughout. The analysis provided no information to indicate any notable violations and allowed the conclusion that the assumptions of normality, linearity, and homoscedasticity for each model were adequately met.

#### Measure Reliability Checks

**Internal consistency of PHQ-9.** Table 7 summarises the results of a Cronbach's alpha reliability analysis on the primary depression measure (PHQ-9) across each measurement time point.

Table 7

*PHQ-9 Reliability, Mean Scores, Variance, and Standard Deviations Across Time Points*

Measurement time	$\alpha$	$M$	Variance	$SD$
Intake	.745	9.239	18.297	4.278
Class 1	.749	8.198	18.828	4.339
Class 2	.717	7.531	15.991	3.999
Class 3	.429	6.250	7.935	2.817
Class 4	.737	7.048	13.133	3.624
Class 5	.792	5.673	14.794	3.846
Class 6	.780	4.634	11.647	3.413
Class 7	.752	4.164	10.77	3.282
Class 8	.857	4.449	15.98	3.997
1-week Follow-up	.703	3.627	8.621	2.936
6-week Follow-up	.899	3.885	21.418	4.628

The PHQ-9 demonstrated acceptable to good internal consistency over each measurement time point with an average of  $\alpha = .742$  (Table 7). Apart from class number three, all reliability estimates were above .700, which, according to Kline (1999) indicates an acceptable level of reliability. After an inspection of the individual PHQ-9 item data obtained from class three, there appears to be no clear indication as to this drop in internal consistency. Items affecting internal consistency in class three were item number seven, which asked participants to rate how often in the past week they had been bothered by *Trouble concentrating on things, such as reading the newspaper or watching television*, and item number eight, which asked participants to rate how often in the past week they had been bothered by *Moving or speaking so slowly that other people could have noticed? Or the opposite — being so fidgety or restless that you have been moving around a lot more than usual*. An increase in alpha on class three from deleting items number seven and eight would have resulted in an increased  $\alpha$  of .129 and .150 respectively. However, given the consistently high  $\alpha$  across all other time points, the small number of items in the PHQ-9 (which can be problematic when calculating accurate  $\alpha$  estimates; Pallant, 2010), and the measure's existing support of good

psychometric properties (see Chapter 7), it is reasoned that the PHQ-9, in its full form, should be included in the analysis.

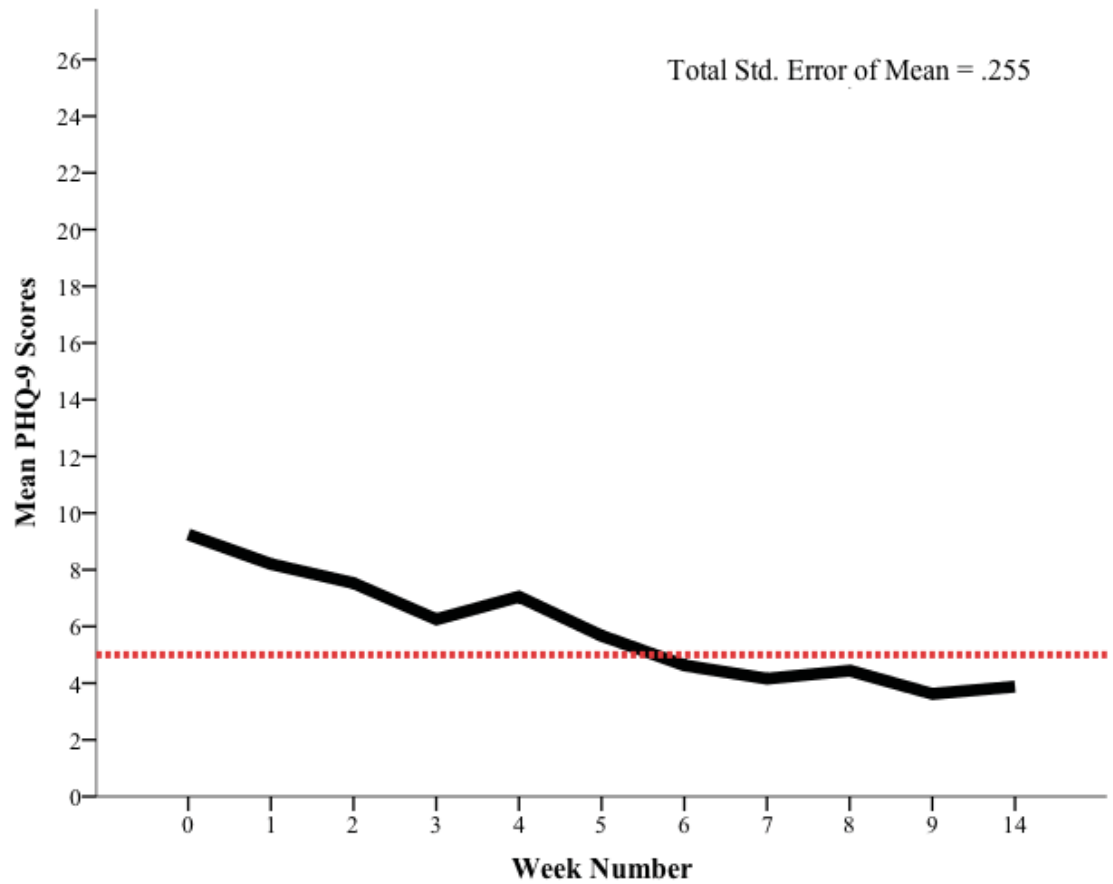
**Internal consistency of GAI, Q-LES-Q-SF, and PEQ.** Results of a Cronbach's alpha reliability analysis on the primary anxiety measure (GAI), the primary quality of life measure (Q-LES-Q-SF), and the measure of engagement (PEQ) across each measurement time point were calculated (Appendices E, F, and G). Results indicate that the GAI demonstrated acceptable to excellent internal consistency over each measurement time point ( $\alpha = .777$  to  $.932$ ,  $M = .856$ ). Likewise, the Q-LES-Q-SF demonstrated acceptable to excellent internal consistency over each measurement time point ( $\alpha = .793 - .935$ ,  $M = .868$ ). Additionally, the PEQ demonstrated good to excellent internal consistency over each measurement time point ( $\alpha = .804$  to  $.929$ ,  $M = .873$ ).

**Convergent validity analysis.** A Pearson's correlation coefficient analysis was conducted for the D-VAS with the PHQ-9, the A-VAS with the GAI, and the Q-VAS with Q-LES-Q-SF across each measurement time point. Results (see Appendix H) indicate that Pearson's correlation coefficient scores for the D-VAS and PHQ-9 relationship showed positive and predominantly significant relationships, with scores ranging from  $r = .319$  ( $p = .129$ ) to  $.869$  ( $p < .01$ ) across time points and an average correlation of  $r = .559$ . Pearson's correlation coefficient scores for the A-VAS and GAI relationship also showed positive and predominantly significant relationships, with scores ranging from  $r = .304$  ( $p = .148$ ) to  $.906$  ( $p < .01$ ) and a large average correlation of  $r = .693$ . Finally, Pearson's correlation coefficient scores for the Q-VAS and Q-LES-Q-SF showed positive and predominantly significant relationships, with scores ranging from  $r = .105$  ( $p = .625$ ) to  $.708$  ( $p < .01$ ) and a medium average correlation of  $r = .468$ . There is sufficient evidence to conclude that each of the VAS were positively related to their equivalent standardised measure of the same construct over time.

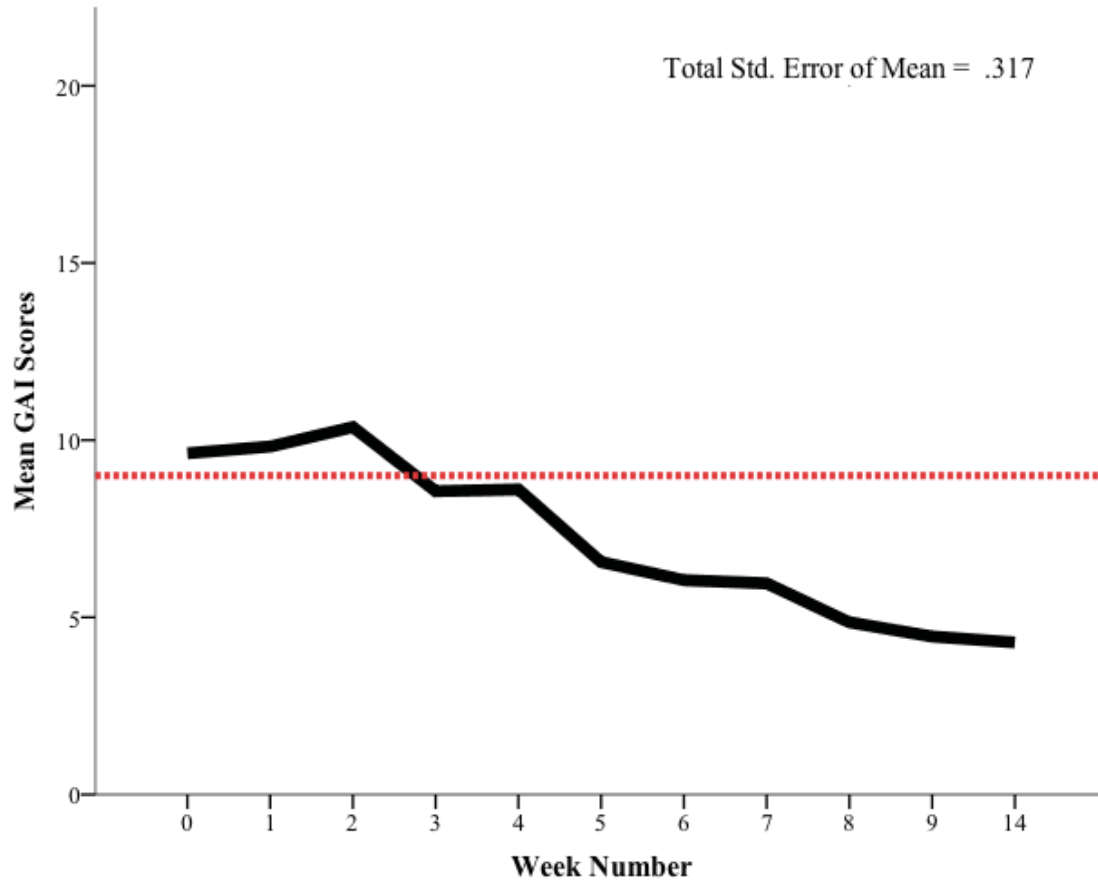
### **Visual Analysis of Participants' Ratings on Primary Outcome Measures**

To examine participants' overall mean trajectory of change over time, participants' mean ratings on each of the three primary outcome measures over time were plotted and a visual analysis was conducted. Results from participants' mean ratings of depression severity over time are plotted on Figure 5, ratings of anxiety severity on Figure 6, and ratings of quality of life on Figure 7.

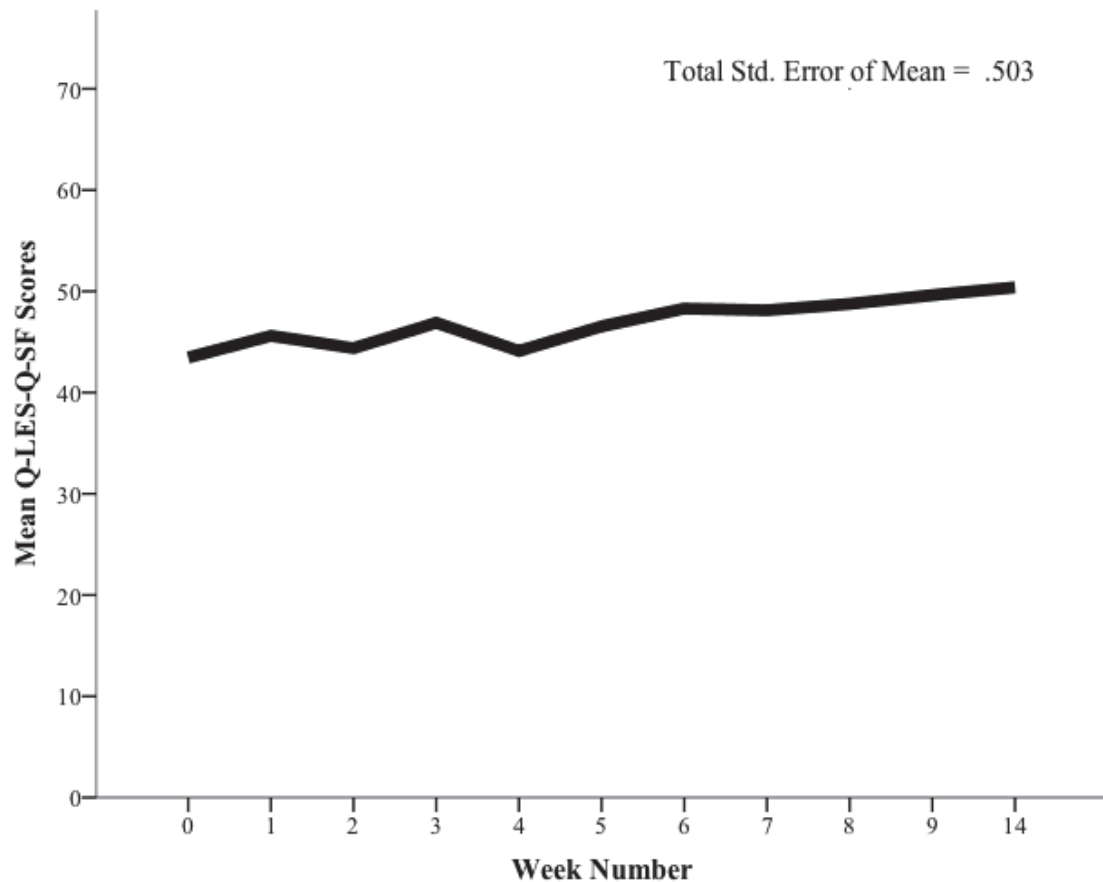
Visual analysis of participants' mean depression ratings on PHQ-9, GAI, and Q-LES-Q-SF.



*Figure 5.* Participants' mean ratings of depression severity (measured by the PHQ-9) over time. The bold line indicates the group mean changes over time and the red dashed line represents the measure's minimal clinical level of symptom severity.



*Figure 6.* Participants' mean ratings of anxiety severity (measured by the GAI) over time. The bold line indicates the group mean changes over time and the red dashed line represents the measure's minimal clinical level of symptom severity.



*Figure 7.* Participants' mean ratings of quality of life (measured by the Q-LES-Q-SF) over time. The bold line indicates the group mean changes over time.

On average, participants' rating on the PHQ-9 at intake was 9.25/27 (Figure 5). Participants' average PHQ-9 scores reduced to 4.46/27 at Week 8, 3.63/27 at Week 9, and slightly increased to 3.88/27 at Week 14 (6-week follow-up). The total Standard Error of Mean across time was .255. According to the PHQ-9, participants moved from clinical (i.e., a score of 5 or above) to non-clinical levels (i.e., a score of 4 or below) of depression prior to the end of the intervention (i.e., by Week 6) and that these improvements were maintained over the 1- and 6-week follow-up periods.

On average, participants' rating on the GAI at intake was 9.63/20 (Figure 6). Participants' average GAI scores reduced to 4.88/20 at Week 8, 4.46/20 at Week 9, and 4.29/20 at Week 14. The total Standard Error of Mean across time was .317. Results indicated that on average, according to the GAI, participants moved from clinical levels (i.e., a score of 9 or above) to non-clinical levels (i.e., a score of 8 or below) of anxiety

prior to the end of the intervention (i.e., by Week 3) and that these improvements were maintained over the 1- and 6-week follow-up periods.

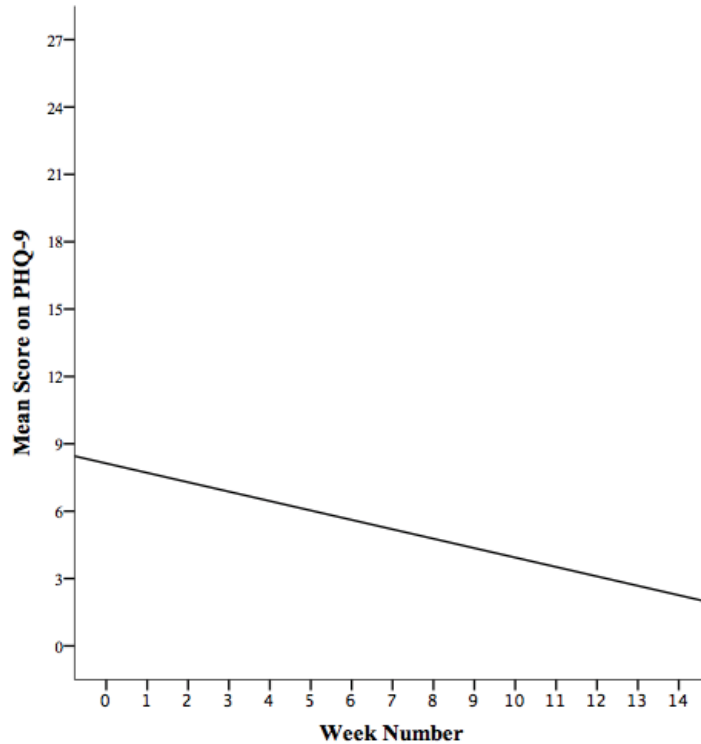
On average, participants' rating on the Q-LES-Q-SF at intake was 43.46/70 (Figure 7). Participants' average Q-LES-Q-SF scores improved to 48.79/70 at Week 8, 49.67/70 at Week 9, and 50.46 at Week 14. The total Standard Error of Mean across time was .503. Results indicated that participants improved their quality of live over the duration of the intervention and that this improvement was maintained over the 1- and 6-week follow-up periods.

### **Participants' Ratings on VASs Compared to Ratings on Equivalent Standardised Measures**

Using a two-step process (outlined in Chapter 7), participants' ratings on VASs were compared to ratings on equivalent standardised measures in order to identify whether VAS data could provide meaningfully different data or further insight into participant change, particularly at the lower levels of symptom severity. Results from z-score comparisons (Appendix I) indicate that the shape and rate of change over time between standardised primary outcome and VAS measures of the same construct were almost identical. This was to be expected given the high correlation found in the convergent validity analysis. Similarly, visual comparisons of participants' ratings between D-VAS and PHQ-9 data and A-VAS and GAI data at Week 14 indicate very similar response styles (Appendix J). Although there was some variability across measures, in general, participants appeared to respond to a degree that was similar in magnitude on each of their comparative measures. In this way, VAS data did not appear to show pronounced differences in their ability to capture low levels of symptom severity on either depression or anxiety in comparison to their standardised alternatives. Considering these results together, there did not appear to be sufficient evidence to suggest that VAS data could provide meaningfully different data concerning symptom severity change, nor did it appear that VAS was substantially better at capturing participants' lower levels of symptom severity. A decision was made by the lead researcher not to proceed with further analysis using VAS data.

### Assessment of Variance Within Primary Variables for Multilevel Modelling

**Assessment of variance within participants' ratings on PHQ-9.** Participants' average change in PHQ-9 ratings (by fitting an average OLS trajectory across all participant ratings) across time is shown in Figure 8. Between-participant differences in intercept and slope by fitting individual OLS growth trajectories for participants' PHQ-9 ratings over time are shown in Figure 9.



*Figure 8.* Average change trajectory of depression severity as measured by the PHQ-9 across time.



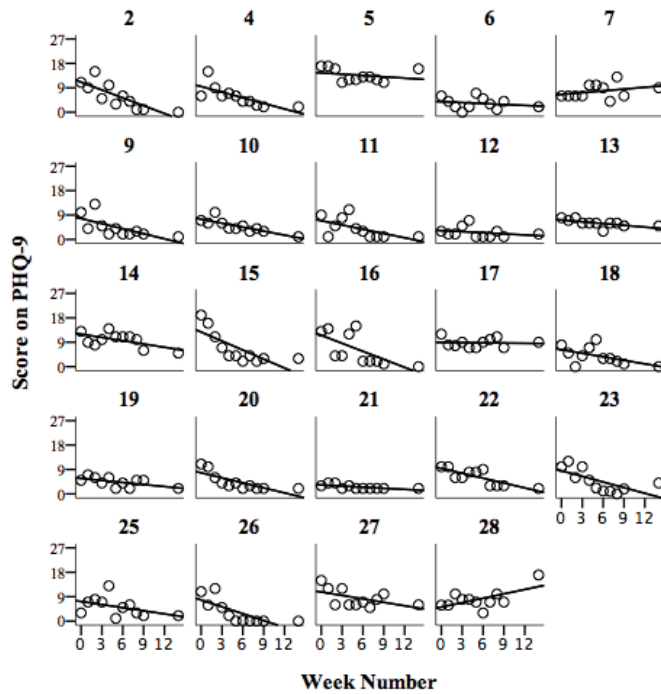


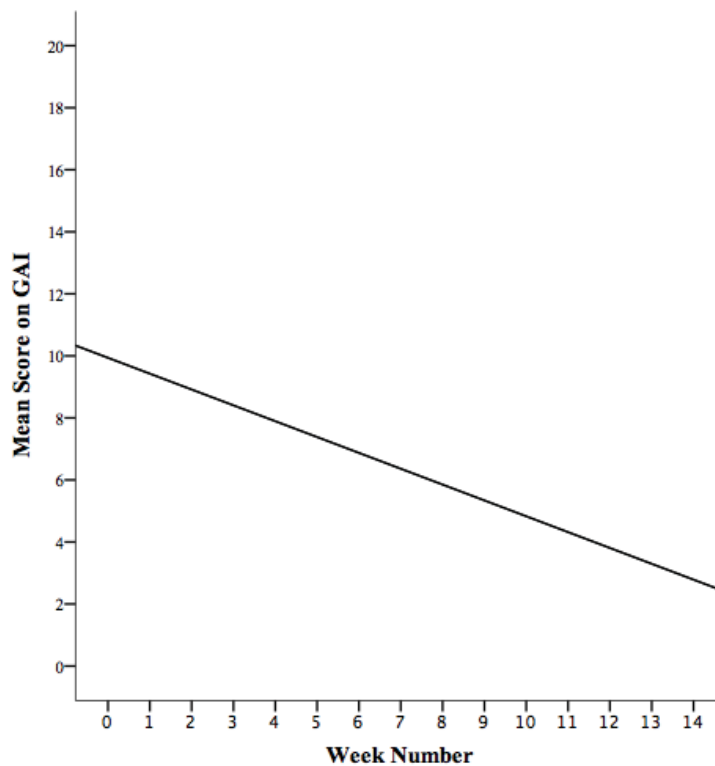
Figure 9. Individual OLS trajectories for participants' PHQ-9 ratings over time.

Figure 8 indicates that the average participant has an observed PHQ-9 level of 8.13 at intake and that this decreases by an estimated 0.42 units per week. These results are consistent with the earlier visual analysis suggesting the intervention was effective in reducing participants' depression severity over time.

Results (Figure 9 and Appendix K) showed that some participant's ratings were grouped around the lowest PHQ-9 values. This lower-bound grouping suggests the presence of a floor effect. As the average intake rating on the PHQ-9 was 9.24, there was only 5.42 available units to improve to reach the classification of no or minimal depression (according to the PHQ-9). Given that it was hypothesised the intervention would be successful in reducing depression symptom severity, low average scores at intake suggest that a floor effect might be expected over time for those individuals whom made substantial improvements. Additionally, results (Figure 9 and Appendix K) showed that 21 participants had a reduction in depression severity, one participant showed little to no average change, and two participants showed an increase in depression severity across time. It is worth noting that, of the two that showed an

increase in depression severity across time, the increase by Participant 7 was only small and Participant 28's rate of change appeared to be considerably impacted by a single elevated measurement time at 6-week follow-up.

**Assessment of variance within participants' ratings on GAI.** Participants' average change in GAI ratings (by fitting an average OLS trajectory across all participant ratings) across time is shown in Figure 10. Between-participant differences in intercept and slope by fitting individual OLS growth trajectories for participants' GAI ratings over time are shown in Figure 11.



*Figure 10.* Average change trajectory of anxiety severity as measured by the GAI across time.

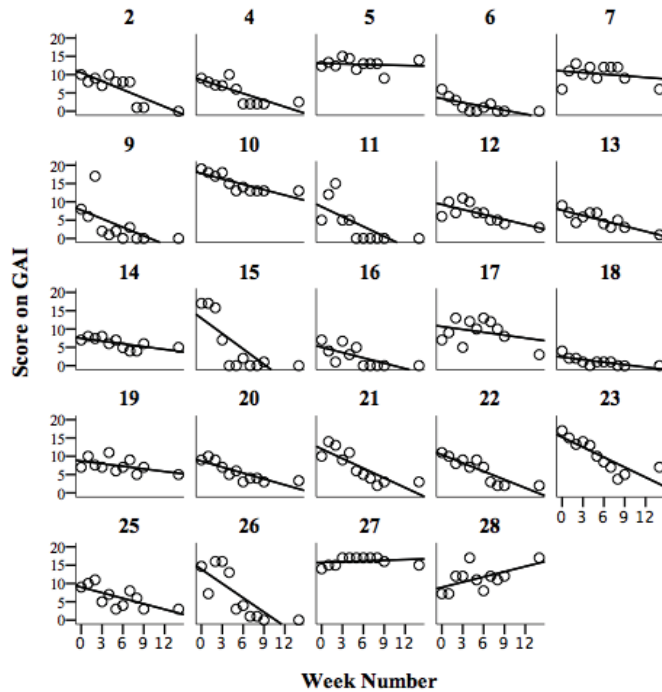


Figure 11. Individual OLS trajectories for participants' GAI ratings over time.

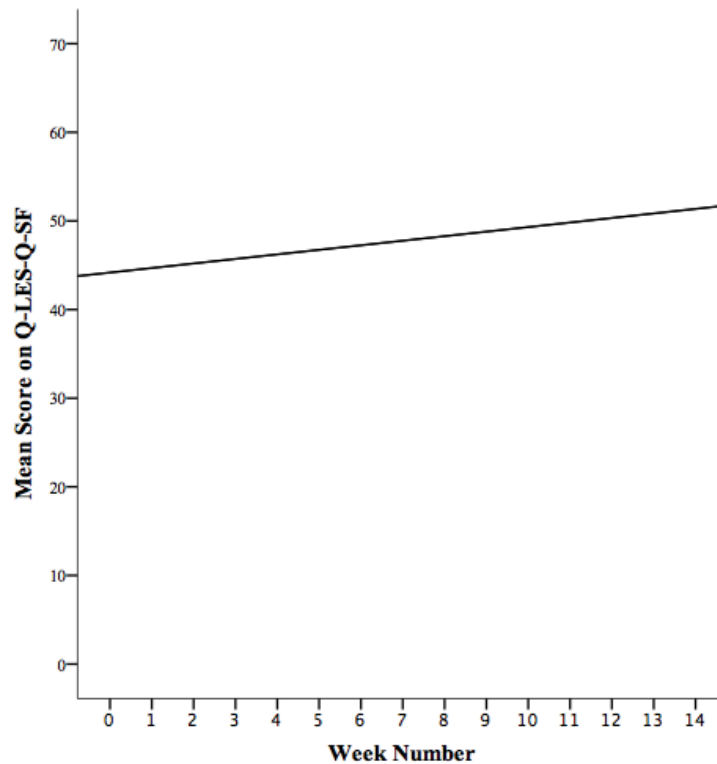
Figure 10 indicates that the average participant has an observed GAI level of 9.94 at intake and that this decreases by an estimated 0.51 units per week. These results are consistent with the earlier visual analysis suggesting the intervention was effective in reducing participants' anxiety severity over time.

Results (Figure 11 and Appendix L) showed that some participant's ratings were grouped around the lowest GAI values. This lower-bound grouping suggests the presence of a floor effect. As the average intake rating on the GAI was 9.63, there were only 3.63 available units to improve to reach the classification (according to the GAI) of minimal anxiety. Given that it was hypothesised the intervention would be successful in reducing anxiety symptom severity, low average scores at intake suggest that a floor effect might be expected over time for those individuals whom made substantial improvements. Additionally, results (Figure 11 and Appendix L) showed that 21 participants experienced a reduction in anxiety severity, two participants showed little to no average change, and one participant (Participant 28) showed an increase in anxiety severity across time. As with depression ratings, it is noteworthy that Participant 28's overall increase in symptom severity appeared to be considerably impacted by ratings

taken at 6-week follow-up.

**Assessment of variance within participants' ratings on Q-LES-Q-SF.**

Participants' average change in Q-LES-Q-SF ratings (by fitting an average OLS trajectory across all participant ratings) across time is shown in Figure 12. Between-participant differences in intercept and slope by fitting individual OLS growth



trajectories for participants' Q-LES-Q-SF ratings over time are shown in Figure 13.

*Figure 12.* Average change trajectory of quality of life as measured by the Q-LES-Q-SF across time.

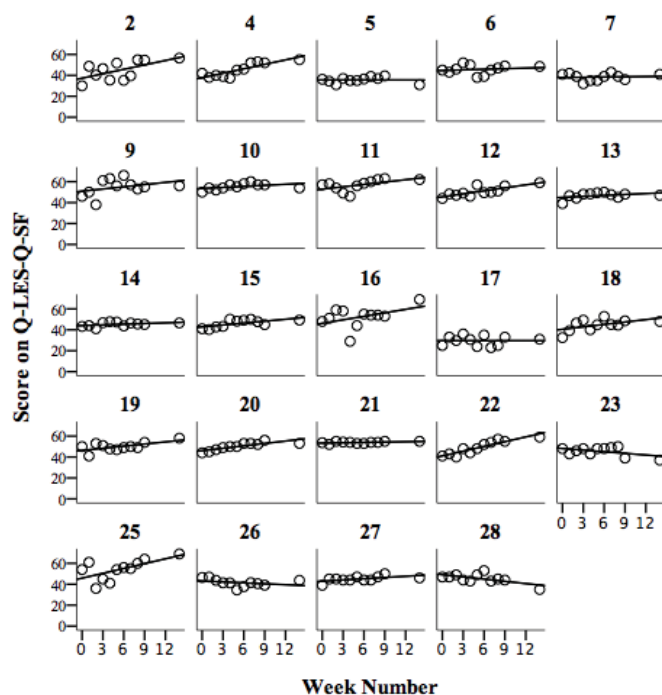


Figure 13. Individual OLS trajectories for participants' Q-LES-Q-SF ratings over time

Figure 12 indicates that the average participant has an observed Q-LES-Q-SF level of 44.17 at intake and that this increased by an estimated 0.51 units per week. These results are consistent with the earlier visual analysis suggesting the intervention was effective in improving participants' quality of life over time. Results (Figure 12 and Appendix M) showed that 18 participants had an increase in quality of life, three participants showed little to no average change, and three participants showed a decrease in quality of life across time.

### Correlational Analysis of Engagement

The variability in the individual growth models for depression, anxiety, and quality of life justifies the introduction of predictors into multilevel models. Further analysis was conducted to investigate the relationship between the predictor variable of engagement (as measured by the PEQ) and all primary outcome measures. Regression analysis using OLS-estimates of intercepts and rates of change was used to test whether there were significant interactions between the predictor variables and engagement (PEQ). By using the estimated slopes and intercepts for each variable, bivariate correlations were carried out. The results of this analysis are presented in Table 8.

Table 8

*Intercept and Slope Correlations For Engagement (PEQ) and All Others Measures*

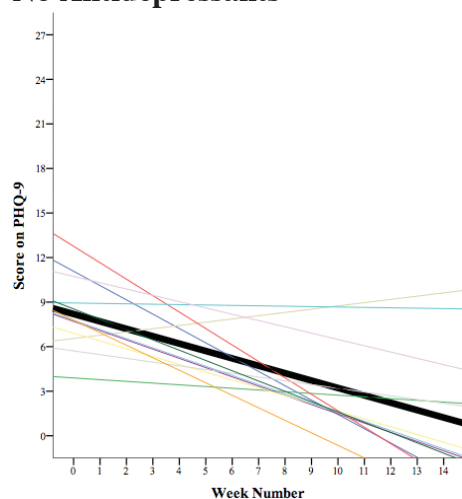
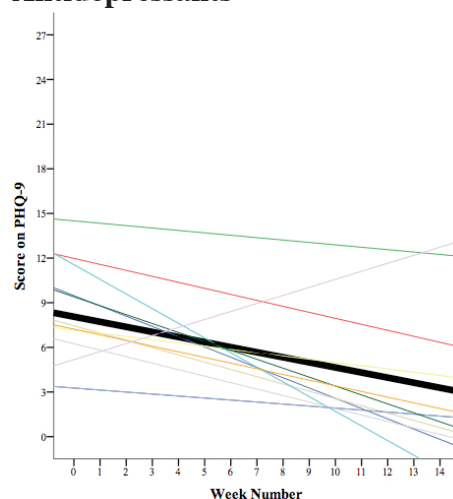
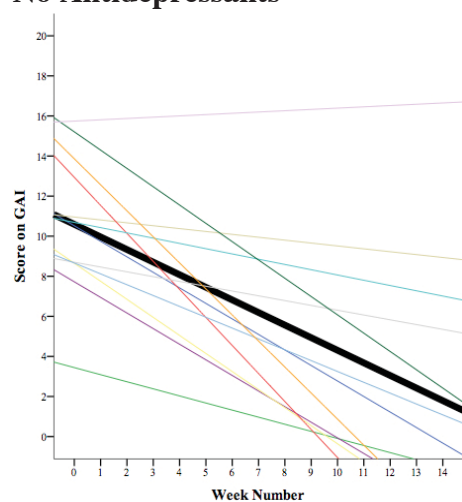
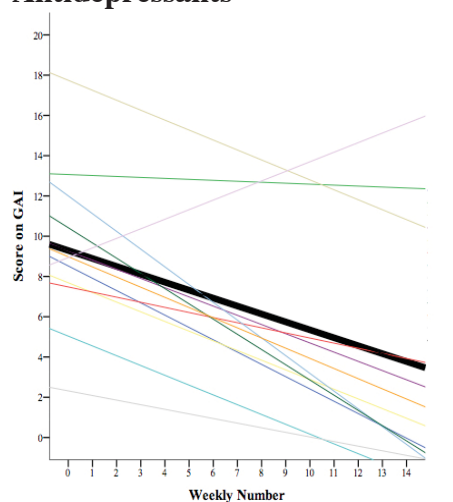
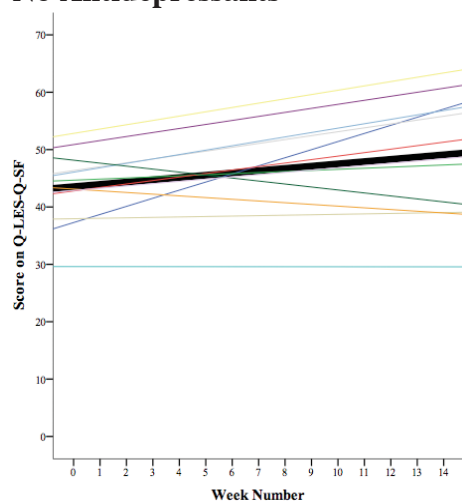
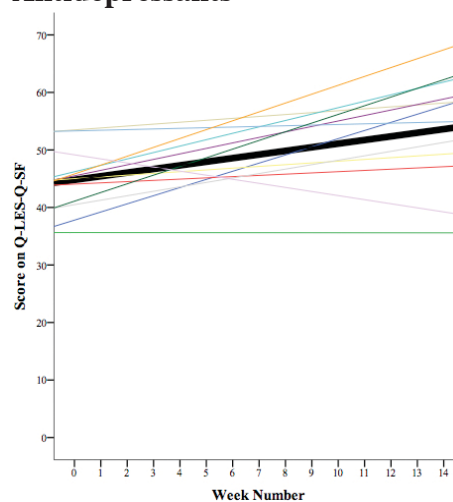
	PHQ-9		GAI		Q-LES-Q-SF	
	$\beta_0$	$\beta_1$	$\beta_0$	$\beta_1$	$\beta_0$	$\beta_1$
PEQ $\beta_0$	-0.168	-0.213	-0.143	-0.218	-0.21	-0.159
PEQ $\beta_1$	0.168	-0.206	0.328	-0.221	0.189	0.327

*Note.* There were no significant correlations;  $\beta_0$  represents initial status and  $\beta_1$  represents rate of change.

Results in Table 8 indicate that no significant relationship exists between dependent and predictor variables' intercepts or rates of change. However, there was a positive trend between the rate of change for PEQ and the intercept of GAI, indicating that those with higher anxiety at intake may experience greater, although non-significant, rates of change in their level of engagement over time. Table 8 also indicates a trend between rate of change in PEQ and the rate of change in Q-LES-Q-SF, indicating that those with greater rates of change in levels of engagement over time may show faster improvements in quality of life over time. Engagement was included as a potential predictor variable in the multilevel model analysis.

### **Preliminary Visual Analysis for Alternative Predictor Variables**

**Differences in outcomes across time between participants using, versus participants not using antidepressant medication during intervention.** Figures 14-19 show the differences on primary outcome ratings in the intercepts and rates of change amongst groups of participants who were using antidepressant medication versus participants not using antidepressant medication during the course of the intervention.

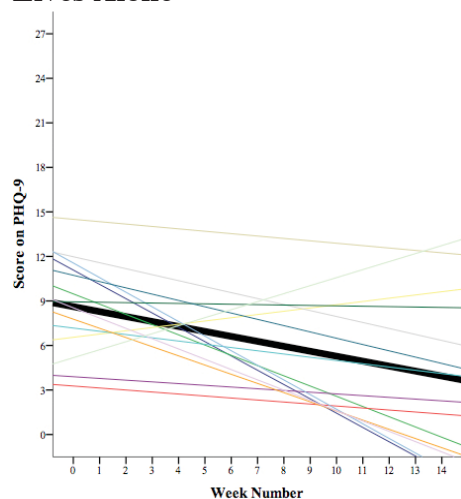
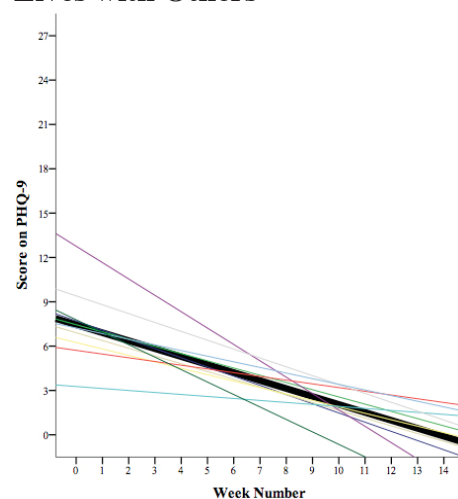
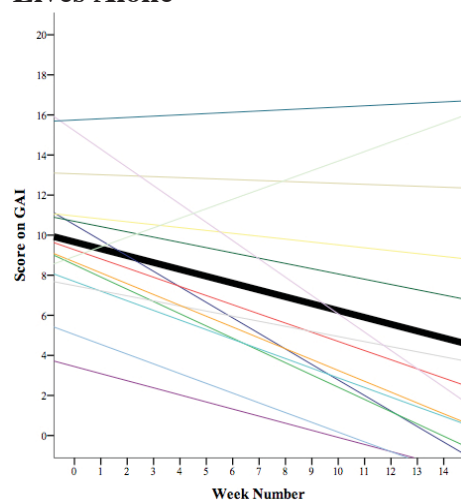
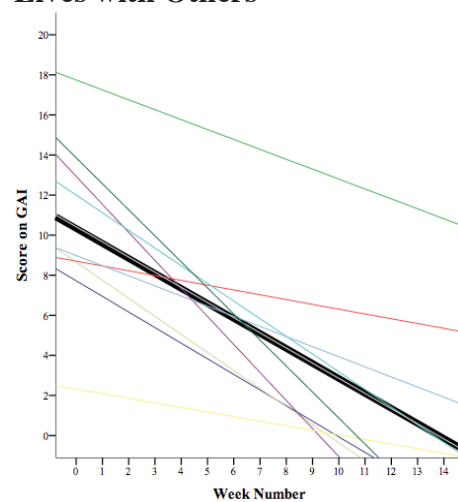
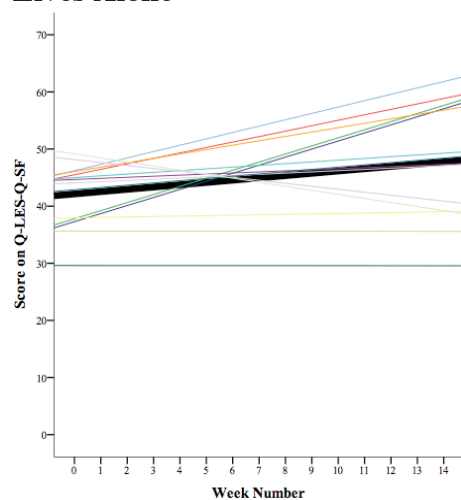
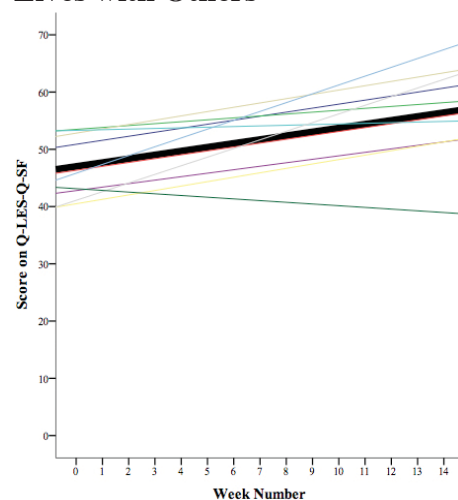
**No Antidepressants****Antidepressants****No Antidepressants****Antidepressants****No Antidepressants****Antidepressants**

*Figures 14-19.* Individual and mean (represented in bold) change trajectories between participants using compared to those not using antidepressant medication over the course of the intervention on each primary outcome measure.

Results from Figures 14-19 indicate little mean intercept and slope difference on the PHQ-9 (no antidepressants:  $M\alpha = 8.20$ ,  $M\beta = -0.50$ ; antidepressants:  $M\alpha = 8.06$ ,  $M\beta = -0.34$ ), GAI (no antidepressants:  $M\alpha = 10.59$ ,  $M\beta = -0.63$ ; antidepressants:  $M\alpha = 9.29$ ,  $M\beta = -0.39$ ), or Q-LES-Q-SF (no antidepressants:  $M\alpha = 43.55$ ,  $M\beta = 0.40$ ; antidepressants:  $M\alpha = 44.8$ ,  $M\beta = 0.63$ ). Visual inspection of the data suggests that, on average, there is little or no difference in either initial status or rate of change in depression and quality of life over time due to use of anti-depressant medication. There does, however, appear to be more pronounced differences between antidepressant medication groups on the GAI, particularly in rates of change over time. This difference suggests that those individuals who were not using antidepressant medication during the intervention, on average may show greater improvements in anxiety severity over time. However, the observed difference appear minimal and such differences rely on a very small number of participants. As such, while there was justification to include antidepressant medication in MLM analysis as a potential predictor variable (as is investigated in the study's supplementary analysis outlined later), caution should be taken in ascribing meaning to these results based on this preliminary analysis.

**Differences in outcomes amongst participants who lived alone versus participants who lived with others during the course of the intervention.** Figures 20-25 show the differences on primary outcome ratings in the intercepts and rates of change amongst groups of participants who live alone versus participants who were living with others during the course of the intervention.



**Lives Alone****Lives with Others****Lives Alone****Lives with Others****Lives Alone****Lives with Others**

*Figures 20-25.* Individual and mean (represented in bold) change trajectories between participants who live alone compared to those who live with others on each primary outcome measures over the course of the intervention.

Visual inspection of Figures 20-25 indicates little mean intercept and slope difference on the PHQ-9 (lives alone:  $M\alpha = 8.62$ ,  $M\beta = -0.33$ ; lives with others:  $M\alpha = 7.45$ ,  $M\beta = -0.54$ ), GAI (lives alone:  $M\alpha = 9.66$ ,  $M\beta = -0.34$ ; lives with others:  $M\alpha = 10.33$ ,  $M\beta = -0.75$ ), or Q-LES-Q-SF (lives alone:  $M\alpha = 42.14$ ,  $M\beta = 0.40$ ; lives with others:  $M\alpha = 47.01$ ,  $M\beta = 0.67$ ). These results suggest that there is, on average, little or no living status difference in either initial status or rate of change in quality of life over time. However, data does indicate more prominent differences between living status groups on the PHQ-9 and GAI, particularly in rates of change over time. The results suggest that those participants who live with others during the intervention, on average may show a greater proportion of improvement in depression and anxiety severity over time compared to those who live alone. As such, this gives good justification for the inclusion of living status as a predictor variable into the later multilevel model analysis.

**Differences in outcomes amongst participants with different levels of attendance.** A final alternative explanation for changes in participants' ratings on primary outcome measures that is of interest to the current study was participants' level of attendance to intervention classes. Although no exploratory analysis will be conducted on this variable, attendance will be examined as a potential predictor variable in the later multilevel model analysis.

## Section 2: Multilevel Modelling Results

### The Intervention – Depression Relationship Over Time

The following section explores the primary research question, investigating whether the intervention results in significant reductions in depression severity ratings amongst community dwelling older adults.

**Depression over time model description.** *Model D1* represents the unconditional means model without the variable of time, while allowing the intercept to vary by participant. *Model D2* fits a linear model for change in PHQ-9 scores over time while allowing only the intercept to vary by participant. *Model D3* fits a linear model for change in PHQ-9 scores over time while allowing both the intercept *and* rate of change of time to vary by participant. Given this, there is a greater research focus given to *Model D3*. Results from *Model D1*, *D2*, and *D3* and presented in Table 9.

#### Depression over time model results.

**Model fixed effects.** The fixed effects of intercept ( $\gamma_{00}$ ) and rate of change ( $\gamma_{10}$ ) estimate the average change trajectory in depression severity over time. As in Table 9, the fixed effect intercept estimate ( $\gamma_{00}$ ) in *Model D3* is 8.129 and the fixed effect rate of change estimate ( $\gamma_{10}$ ) is -0.419. Both  $\gamma_{00}$  and  $\gamma_{10}$  were significant at the  $p < .001$  level. The results provide evidence of a significant effect of time on depression, whereby for every unit of time increase (e.g., per week from intervention intake), on average, participants show a decrease in depression severity on the PHQ-9 of 0.419 units.

**Model variance components.** *Model D3* showed a significant within-person residual variance ( $\sigma^2\epsilon$ ) with an estimate of 7.245 ( $p < .001$ ). This indicates that there is significant within-person residual variance to be explained in the model. The decrease of 4.517 units from *Model D1* to *Model D3* indicates that the reduction in within-person residual variance can be explained by the addition of time in the model. Moreover, this also indicates that a greater proportion of within-person residual variance can be explained when allowing both intercepts and rates of change to vary across participants. According to Pseudo  $R^2$  statistics, 38.4% of within-person residual variance can be explained by the addition of time in *Model D3* compared to *Model D1*.

*Model D3* showed a significant between-person variance in initial status ( $\sigma^2_0$ ) with an estimate of 6.334 ( $p < .01$ ). This indicates that there is significant between-person

variance in initial status to be explained in the model. The increase of 1.050 units from *Model D1* to *Model D3* indicates that the additional variable of time explains a smaller degree of between-person variance in initial status in *Model D2* and *Model D3* compared to *Model D1* and that this reduction is more pronounced when allowing both intercepts and rates of change to vary across participants. According to Pseudo  $R^2$  statistics, the addition of time in *Model D3* explains 14.2% less between-person variance in initial status compared to *Model D2*.

Additionally, *Model D3* shows a significant between-person variance in time ( $\sigma^2_1$ ) with an estimate of 0.099 ( $p < .05$ ). Despite  $\sigma^2_1$  being relatively small, this indicates that the rate of change in depression over time significantly varies across people (i.e., that peoples' depression severity changes at significantly different rates) and that this significant between-person variance in average rate of change in PHQ-9 scores may be explained by additional variables, some of which will be explored later. Moreover, the population covariance ( $\sigma^2_{01}$ ) of variance components  $\sigma^2_0$  and  $\sigma^2_1$  was -0.324 and non-significant. This indicates that there is insufficient evidence to conclude that those with higher PHQ-9 scores at intake (i.e., greater depression severity) experience slower or faster rates of recovery over time.

***Model goodness-of-fit.*** According to Pseudo  $R^2$  statistics, the increases in  $R^2_e$  from 0.246 in *Model D2* to 0.384 in *Model D3* highlights that the additional parameter of allowing rates of change (as well as intercepts) to vary across participants represents a greater model fit in *Model D3* compared to *Model D2*. This is further supported by decreases in BIC values, with a decrease of 10.246 units from *Model D2* to *Model D3*. In order to test whether such changes are significant, Deviance values were compared. Subsequently, Deviance statistics show similar findings to BIC values, with a significant  $\chi^2$ Change of 21.399 ( $p < .01$ ) between *Model D2* and *Model D3*. These results indicate that it is important to model the variability of both intercepts and rate of changes across participants, for when these parameters are accounted for the model is subsequently significantly improved.

Table 9

*Results from Fitting a Multilevel Model for Depression (PHQ-9) Over Time*

	Parameter	Model D1	Model D2	Model D3
<b>Model dependant variable</b>		Depression	Depression	Depression
<b>Model predictor variable</b>		None	Time	Time
<b>Fixed effects</b>				
Intercept (initial status)	$\gamma_{00}$	<b>5.879***</b> (0.515)	<b>8.129***</b> (0.574)	<b>8.129***</b> (0.587)
Time (rate of change)	$\gamma_{10}$	-	<b>-0.419***</b> (0.047)	<b>-0.419***</b> (0.077)
<b>Variance components</b>				
Residual (within-persons)	$\sigma^2\epsilon$	<b>11.762***</b> (1.074)	<b>8.866***</b> (0.809)	<b>7.245***</b> (0.697)
Intercept (between-persons)	$\sigma^2_0$	<b>5.284**</b> (1.837)	<b>5.547**</b> (1.836)	<b>6.334**</b> (2.392)
Time (between-persons)	$\sigma^2_1$	-	-	<b>0.099*</b> (0.041)
Covariance	$\sigma^2_{01}$	-	-	-0.324 (0.250)
<b>Pseudo <math>R^2</math> and Goodness-of-fit</b>				
Pseudo $R^2$ for residual variance	$R^2\epsilon$	-	0.246	0.384
Pseudo $R^2$ for intercept variance	$R^2_0$	-	-	-0.142
-2 Log Likelihood	Deviance	1442.687	1374.861	1353.462
Chi-squared difference in Deviance	$\chi^2\text{Change}$	<b>55.189**</b>	<b>67.826**</b>	<b>21.399**</b>
Bayesian information criterion	BIC	1459.415	1397.164	1386.918

*Note.* \*  $p < .05$ , \*\*  $p < .01$ , \*\*\*  $p < .0001$ . Standard errors are in parentheses. Statistically significant values are in bold.

## The Intervention – Anxiety Relationship Over Time

The following section explores the secondary research question, investigating whether the intervention results in significant reductions in anxiety severity ratings amongst community dwelling older adults.

**Anxiety over time model description.** *Model A1* represents the unconditional means model without the variable of time, while allowing the intercept to vary by participant. *Model A2* fits a linear model for change in GAI scores over time while allowing only the intercept to vary by participant. *Model A3* fits a linear model for change in GAI scores over time while allowing both the intercept *and* rate of change of time to vary by participant. Given this, there is a greater research focus given to *Model A3*. Results from *Model A1*, *A2*, and *A3* and presented in Table 10.

### Anxiety over time model results.

**Model fixed effects.** The fixed effects of intercept ( $\gamma_{00}$ ) and rate of change ( $\gamma_{10}$ ) estimate the average change trajectory in anxiety severity over time. As in Table 10, the fixed effect intercept estimate ( $\gamma_{00}$ ) in *Model A3* is 9.940 and the fixed effect rate of change estimate ( $\gamma_{10}$ ) is -0.511. Both  $\gamma_{00}$  and  $\gamma_{10}$  were significant at the  $p < .001$  level. Therefore, the results provide evidence to support a significant effect of time on anxiety, whereby for every unit of time increase (e.g., per week from intervention intake), on average participants show a decrease in anxiety severity on the GAI of 0.511 units.

**Model variance components.** *Model A3* shows a significant within-person residual variance ( $\sigma^2\epsilon$ ) with an estimate of 6.729 ( $p < .001$ ). This indicates that there is significant within-person residual variance to be explained in the model. The decrease of 2.096 units from *Model A1* to *Model A3* indicates that the reduction in within-person residual variance can be explained by the addition of time in the model. This decrease also indicates that a greater proportion of within-person residual variance can be explained when allowing both intercepts and rates of change to vary across participants. According to Pseudo  $R^2$  statistics, 32.8% of within-person residual variance can explained by the addition of time in *Model A3* compared to *Model A1*.

*Model A3* showed a significant between-person variance in initial status ( $\sigma^2_0$ ) with an estimate of 11.234 ( $p < .01$ ). This indicates that there is significant between-person variance in initial status to be explained in the model. The decrease of 2.075 units

from *Model A1* to *Model A3* indicates that the additional variable of time explains a greater degree of between-person variance in initial status in *Model A3* compared to *Model A1*. According to Pseudo  $R^2$  statistics, the addition of time in *Model A3* explains 18.0% more between-person variance in initial status compared to *Model A2*.

Additionally, *Model A3* shows a significant between-person variance of time ( $\sigma^2_1$ ) with an estimate of 0.127 ( $p < .01$ ). This indicates that the rate of change in anxiety over time significantly varies across people (i.e., that peoples' anxiety severity changes at significantly different rates) and that this significant between-person variance in average rate of change in GAI scores may be explained by additional variables, some of which will be explored later. Moreover, the population covariance ( $\sigma^2_{01}$ ) of variance components  $\sigma^2_0$  and  $\sigma^2_1$  was -0.094 and non-significant. This indicates that there is insufficient evidence to conclude that those with higher GAI scores at intake (i.e., greater anxiety severity) experience slower or faster rates of recovery over time.

***Model goodness-of-fit.*** According to Pseudo  $R^2$  statistics, the increases in  $R^2$  from 0.328 in *Model A2* to 0.487 in *Model A3* highlight that the additional parameter of allowing rates of change (as well as intercepts) to vary across participants represents a greater model fit in *Model A3* compared to *Model A2*. This is further supported by decreases in BIC values, with a decrease of 34.803 units from *Model A2* to *Model A3*. In order to test whether such changes are significant, Deviance values were compared. These were consistent with the BIC values, with a significant  $\chi^2$ Change of 34.803 ( $p < .01$ ) between *Model A2* and *Model A3*. The results indicate that it is important to model the variability of both intercepts and rate of changes across participants, for when these parameters are accounted for the model is subsequently significantly improved.

Table 10

*Results from Fitting a Multilevel Model for Anxiety (GAI) Over Time*

	Parameter	Model A1	Model A2	Model A3
<b>Model dependant variable</b>		Anxiety	Anxiety	Anxiety
<b>Model predictor variable</b>		None	Time	Time
<b>Fixed effects</b>				
Intercept (initial status)	$\gamma_{00}$	<b>7.197***</b> (0.777)	<b>9.940***</b> (0.818)	<b>9.940***</b> (0.737)
Time (rate of change)	$\gamma_{10}$	-	<b>-0.511***</b> (0.047)	<b>-0.511***</b> (0.083)
<b>Variance components</b>				
Residual (within-persons)	$\sigma^2_{\epsilon}$	<b>13.126***</b> (1.198)	<b>8.825***</b> (0.806)	<b>6.729***</b> (0.648)
Intercept (between-persons)	$\sigma^2_0$	<b>13.309**</b> (4.188)	<b>13.700**</b> (4.187)	<b>11.234**</b> (3.763)
Time (between-persons)	$\sigma^2_1$	-	-	<b>0.127**</b> (0.049)
Covariance	$\sigma^2_{01}$	-	-	-0.094 (0.310)
<b>Pseudo <math>R^2</math> and Goodness-of-fit</b>				
Pseudo $R^2$ for residual variance	$R^2_{\epsilon}$	-	0.328	0.487
Pseudo $R^2$ for intercept variance	$R^2_0$	-	-	0.180
-2 Log Likelihood	Deviance	1488.843	1393.549	1358.746
Chi-squared difference in Deviance	$\chi^2$ Change		<b>95.294**</b>	<b>34.803**</b>
Bayesian information criterion	BIC	1505.570	1415.852	1392.202

Note. \*  $p < .05$ , \*\*  $p < .01$ , \*\*\*  $p < .0001$ . Standard errors are in parentheses. Statistically significant values are in bold.



### The Intervention – Quality of Life Relationship Over Time

The following section explores the research's secondary research question, investigating whether the intervention results in significant improvements in quality of life ratings amongst community dwelling older adults.

**Quality of life over time model description.** *Model Q1* represents the unconditional means model without the variable of time, while allowing the intercept to vary by participant. *Model Q2* fits a linear model for change in Q-LES-Q-SF scores over time while allowing only the intercept to vary by participant. *Model Q3* fits a linear model for change in Q-LES-Q-SF scores over time while allowing both the intercept *and* rate of change of time to vary by participant. Given this, there is a greater research focus given to *Model Q3*. Results from *Model Q1*, *Q2*, and *Q3* and presented in Table 11.

#### Quality of life over time model results.

**Model fixed effects.** The fixed effects of intercept ( $\gamma_{00}$ ) and rate of change ( $\gamma_{10}$ ) estimate the average change trajectory in quality of life over time. The fixed effect intercept estimate ( $\gamma_{00}$ ) in *Model Q3* is 44.171 and the fixed effect rate of change estimate ( $\gamma_{10}$ ) is 0.513 (Table 11). Both  $\gamma_{00}$  and  $\gamma_{10}$  in both models were significant at the  $p < .001$ . Therefore, the results provide evidence of a significant effect of time on quality of life, whereby for every unit of time increase (e.g., per week from intervention intake), on average participants show an increase in quality of life on the Q-LES-Q-SF of 0.513 units.

**Model variance components.** *Model Q3* showed a significant within-person residual variance ( $\sigma^2\epsilon$ ) with an estimate of 21.179 ( $p < .001$ ). This indicates that there is significant within-person residual variance to be explained in the model. The decrease of 8.303 units from *Model Q1* to *Model Q3* indicates that the reduction in within-person residual variance can be explained by the addition of time in the model. This also indicates that a greater proportion of within-person residual variance can be explained when allowing both intercepts and rates of change to vary across participants. According to Pseudo  $R^2$  statistics, 28.2% of within-person residual variance can explained by the addition of time in *Model Q3* compared to *Model Q1*.

*Model Q3* showed a significant between-person variance in initial status ( $\sigma^2_0$ ) with an estimate of 27.205 ( $p < .01$ ). This indicates that there is significant between-

person variance in initial status to be explained in the model. The decrease of 9.725 units from *Model Q1* to *Model Q3* indicates that the additional variable of time explains a greater degree of between-person variance in initial status in *Model Q3* compared to *Model Q1*. According to Pseudo  $R^2$  statistics, the addition of time in *Model Q3* explains 27.1% more between-person variance in initial status compared to *Model Q2*.

*Model Q3* shows a significant between-person variance ( $\sigma^2_1$ ) with an estimate of 0.241 ( $p < .05$ ). This indicates that the rate of change in quality of life over time significantly varies across people (i.e., that peoples' quality of life changes at significantly different rates) and that this significant between-person variance in average rate of change in Q-LES-Q-SF scores may be explained by additional variables, some of which will be explored later. The population covariance ( $\sigma^2_{01}$ ) of variance components  $\sigma^2_0$  and  $\sigma^2_1$  was 0.330 and non-significant. This indicates that there is insufficient evidence to conclude that those with higher Q-LES-Q-SF scores at intake (i.e., higher quality of life) experience slower or faster rates of quality of life improvement over time.

***Model goodness-of-fit.*** According to Pseudo  $R^2$  statistics, the increases in  $R^2_e$  from 0.147 in *Model Q2* to 0.282 in *Model Q3* highlights that the additional parameter of allowing rates of change (as well as intercepts) to vary across participants, represents a greater model fit in *Model Q3* compared to *Model Q2*. This is further supported by decreases in BIC values, with a decrease of 9.507 units from *Model Q2* to *Model Q3*. In order to test whether such changes are significant, Deviance values were compared. Subsequently, Deviance statistics show similar findings to BIC values, with a significant  $\chi^2$ Change of 20.639 ( $p < .01$ ) between *Model Q2* and *Model Q3*. These results indicate that it is important to model the variability of both intercepts and rate of changes across participants, for when these parameters are accounted for the model is subsequently significantly improved.

Table 11

*Results from Fitting a Multilevel Model for Quality of Life (Q-LES-Q-SF) over Time*

	Parameter	Model Q1	Model Q2	Model Q3
<b>Model dependant variable</b>		Quality of Life	Quality of Life	Quality of Life
<b>Model predictor variable</b>		None	Time	Time
<b>Fixed effects</b>				
Intercept (initial status)	$\gamma_{00}$	<b>46.924***</b> (1.285)	<b>44.171***</b> (1.354)	<b>44.171***</b> (1.170)
Time (rate of change)	$\gamma_{10}$	-	<b>0.513***</b> (0.080)	<b>0.513***</b> (0.124)
<b>Variance components</b>				
Residual (within-persons)	$\sigma^2\epsilon$	<b>29.482***</b> (2.691)	<b>25.147***</b> (2.296)	<b>21.179***</b> (2.038)
Intercept (between-persons)	$\sigma^2_0$	<b>36.930**</b> (11.437)	<b>37.324**</b> (11.436)	<b>27.205**</b> (9.493)
Time (between-persons)	$\sigma^2_1$	-	-	<b>0.241*</b> (0.107)
Covariance	$\sigma^2_{01}$	-	-	0.330 (0.718)
<b>Pseudo <math>R^2</math> and Goodness-of-fit</b>				
Pseudo $R^2$ for residual variance	$R^2\epsilon$	-	0.147	0.282
Pseudo $R^2$ for intercept variance	$R^2_0$	-	-	0.271
-2 Log Likelihood	Deviance	1707.154	1668.983	1648.344
Chi-squared difference in Deviance	$\chi^2$ Change	<b>149.759**</b>	<b>38.171**</b>	<b>20.639**</b>
Bayesian information criterion	BIC	1723.882	1691.287	1681.780

Note. \*  $p < .05$ , \*\*  $p < .01$ , \*\*\*  $p < .0001$ . Standard errors are in parentheses. Statistically significant values are in bold.

### **The Moderating Effect of Out-of-Class Engagement on the Relationship Between the Intervention with Depression Over Time**

In exploring the first three primary research questions, the models indicates that participants' ratings of depression, anxiety, and quality of life significantly improved over the course of the intervention (i.e., the effect of time). However, given that engagement has been shown to be influential in affecting treatment outcomes in CBT self-help (see Chapter 5), this study also explores whether out-of-class engagement can explain further differences in the effect of time. As such, the following section explores whether participants' reported out-of-class engagement with *Living Life To The Full* materials moderate the relationship between the effect of the intervention over time and participants' reported symptoms of depression.

**Model D4 description.** In *Model D4* the effect of engagement and the interaction between engagement and time was added to *Model D3*. *Model D4* fits a linear model for change in PHQ-9 scores over time while allowing the time intercept and rate of change to vary by participants (Table 12).

#### **Results from Model D4.**

***Model D4 fixed effects, variance components, and goodness-of-fit statistics.*** The fixed effect intercept estimate ( $\gamma_{00}$ ) in *Model D4* is 7.428 and the fixed effect rate of change estimate ( $\gamma_{10}$ ) is -0.339. Both  $\gamma_{00}$  and  $\gamma_{10}$  were significant at the  $p < .001$ , indicating that, over and above the effect of engagement, there is a significant effect of time on depression, whereby for every unit of time increase (e.g., per week from intervention intake), on average participants show a decrease in depression severity on the PHQ-9 of 0.339 units.

*Model D4* showed a non-significant fixed effect of engagement ( $\gamma_{01} = -0.010$ ) and engagement did not interact with time ( $\gamma_{11} = < -0.001$ ) to predict changes in depression. This provides no evidence that individuals' engagement levels predicted different depression rates across the intervention period (fixed effect of engagement), nor does it suggest that individuals have different trajectories of depression over time based on their level of engagement (interaction between time and engagement).

This model's variance components, Pseudo  $R^2$ , and Goodness-of-fit are not reported as the engagement x time statistic (i.e.,  $\gamma_{11}$ ) failed to show significance, there

are no additional varying parameters in *Model D4* in comparison to *Model D3*, and the population covariance statistic ( $\sigma^2_{01}$ ) failed to show statistical significance.

Table 12

*Results from Fitting a Multilevel Model for Depression (PHQ-9) Over Time and the Moderating Effect of Engagement*

	Parameter	Model D4
<b>Model dependant variable</b>		Depression
<b>Model predictor variables</b>		Time, Engagement, and Time x Engagement
<b>Fixed effects</b>		
Intercept (initial status)	$\gamma_{00}$	<b>7.428***</b> (0.502)
Time (rate of change)	$\gamma_{10}$	<b>-0.339***</b> (0.068)
Engagement	$\gamma_{01}$	-0.010 (0.007)
Engagement x Time	$\gamma_{11}$	<-0.001 (0.001)
<b>Variance components</b>		
Residual (within-persons)	$\sigma^2\epsilon$	<b>6.385***</b> (0.709)
Intercept (between-persons)	$\sigma^2_0$	2.817 (1.819)
Time (between-persons)	$\sigma^2_1$	0.049 (0.037)
Covariance	$\sigma^2_{01}$	0.021 (0.208)
<b>Pseudo <math>R^2</math> and Goodness-of-fit</b>		
Pseudo $R^2$ for residual variance	$R^2\epsilon$	0.457
Pseudo $R^2$ for intercept variance	$R^2_0$	0.492
Pseudo $R^2$ for time variance	$R^2_1$	0.505
-2 Log Likelihood	Deviance	1073.591
Chi-squared difference in Deviance	$\chi^2\text{Change}$	<b>279.871**</b>
Bayesian information criterion	BIC	1116.593

*Note.* \*  $p < .05$ , \*\*  $p < .01$ , \*\*\*  $p < .0001$ . Standard errors are in parentheses. Statistically significant values are in bold.

### **The Moderating Effect of Out-of-Class Engagement on the Relationship Between the Intervention with Anxiety Over Time**

The following section explores whether participants' reported out-of-class engagement with *Living Life To The Full* materials moderate the relationship between the effect of the intervention over time and participants' reported symptoms of anxiety.

**Model A4 description.** In *Model A4* the effect of engagement and the interaction between engagement and time was added to *Model A3*. *Model A4* fits a linear model for change in GAI scores over time while allowing the time intercept and rate of change to vary by participants (Table 13).

#### **Results from Model A4.**

##### ***Model A4 fixed effects, variance components, and goodness-of-fit statistics.***

The fixed effect intercept estimate ( $\gamma_{00}$ ) in *Model A4* is 9.989 and the fixed effect rate of change estimate ( $\gamma_{10}$ ) is -0.523. Both  $\gamma_{00}$  and  $\gamma_{10}$  were significant at the  $p < .001$ , indicating that, over and above the effect of engagement, there is a significant effect of time on anxiety, whereby for every unit of time increase (e.g., per week from intervention intake), on average participants show a decrease in depression severity on the GAI of 0.523 units.

*Model A4* showed a non-significant fixed effect of engagement ( $\gamma_{01} = 0.002$ ) and engagement did not interact with time ( $\gamma_{11} = -0.002$ ) to predict changes in anxiety. These results indicate that there is no evidence that individuals' engagement levels predicted different anxiety rates across the intervention period (fixed effect of engagement), nor do individuals have different trajectories of anxiety over time based on their level of engagement (interaction between time  $\times$  engagement).

As with *Model D4*, this model's variance components, Pseudo  $R^2$ , and Goodness-of-fit are not reported as the engagement  $\times$  time statistic (i.e.,  $\gamma_{11}$ ) failed to show significance, there are no additional varying parameters in *Model A4* in comparison to *Model A3*, and the population covariance statistic ( $\sigma^2_{01}$ ) failed to show statistical significance.

Table 13

*Results from Fitting a Multilevel Model for Anxiety (GAI) Over Time and the Moderating Effect of Engagement*

	Parameter	Model A4
<b>Model dependant variable</b>		Anxiety
<b>Model predictor variables</b>		Time, Engagement, and Time x Engagement
<b>Fixed effects</b>		
Intercept (initial status)	$\gamma_{00}$	<b>9.989***</b> (0.8045)
Time (rate of change)	$\gamma_{10}$	<b>-0.523***</b> (0.063)
Engagement	$\gamma_{01}$	0.002 (0.007)
Engagement x Time	$\gamma_{11}$	-0.002 (0.001)
<b>Variance components</b>		
Residual (within-persons)	$\sigma^2_{\epsilon}$	<b>6.797***</b> (0.752)
Intercept (between-persons)	$\sigma^2_0$	<b>12.113**</b> (4.505)
Time (between-persons)	$\sigma^2_1$	0.031 (0.032)
Covariance	$\sigma^2_{01}$	0.226 (0.265)
<b>Pseudo <math>R^2</math> and Goodness-of-fit</b>		
Pseudo $R^2$ for residual variance	$R^2_{\epsilon}$	0.482
Pseudo $R^2$ for intercept variance	$R^2_0$	0.116
Pseudo $R^2$ for time variance	$R^2_1$	0.756
-2 Log Likelihood	Deviance	1108.520
Chi-squared difference in Deviance	$\chi^2$ Change	<b>250.226**</b>
Bayesian information criterion	BIC	1151.522

*Note.* \*  $p < .05$ , \*\*  $p < .01$ , \*\*\*  $p < .0001$ . Standard errors are in parentheses. Statistically significant values are in bold.



### **The Moderating Effect of Out-of-Class Engagement on the Relationship Between the Intervention with Quality of Life Over Time**

The following section explores whether participants' reported out-of-class engagement with *Living Life To The Full* materials moderate the relationship between the effect of the intervention over time and participants' reported quality of life.

**Model Q4 description.** In *Model Q4* the added effect of engagement and the interaction between engagement and time was included in *Model Q3*. *Model Q4* fits a linear model for change in Q-LES-Q-SF scores over time while allowing the time intercept and rate of change to vary by participants (Table 14).

#### **Results from Model Q4.**

**Model Q4 fixed effects.** The fixed effect intercept estimate ( $\gamma_{00}$ ) in *Model Q4* is 44.079 ( $p < .001$ ) and the fixed effect rate of change estimate ( $\gamma_{10}$ ) of 0.517 ( $p < .01$ ). Both  $\gamma_{00}$  and  $\gamma_{10}$  were significant and, therefore, results from *Model Q4* reveal that, over and above the effect of engagement, there is a significant effect of time on quality of life, whereby for every unit of time increase (e.g., per week from intervention intake), on average, participants show an increase in quality of life on the Q-LES-Q-SF of 0.517 units.

*Model Q4* shows a significant fixed effect of engagement ( $\gamma_{01}$ ) with an estimate of 0.055 ( $p < .001$ ). This reveals that over and above the effect of quality of life, there is a significant effect of engagement, whereby for every unit of engagement increase, on average participants show an increase of 0.055 units in quality of life. *Model Q4* shows a significant interaction effect between engagement and time ( $\gamma_{11}$ ) with an estimate of -0.005 ( $p < .001$ ). This indicates, that for every unit of increase in engagement, the rate of change in quality of life per week is 0.005 lower in comparison to those whose engagement does not increase. Thereby, the rate of change in quality of life over time was slightly less for participants who showed increased engagement over time.

**Model Q4 variance components.** *Model Q4* shows a significant within-person residual variance ( $\sigma^2\epsilon$ ) with an estimate of 16.946 ( $p < .001$ ). This indicates that, over and above the effect of engagement, there remains significant within-person residual variance to be explained in the model. The decrease of 4.233 units from *Model Q3* to *Model Q4* indicates that the additional variable of engagement explains a greater degree

of within-person residual variance in *Model Q4* compared to *Model Q3*. According to Pseudo  $R^2$  statistics, 42.5% of within-person residual variance can explained by the addition of time and engagement in *Model Q3* compared to *Model Q1*.

*Model Q4* shows a significant between-person variance in initial status ( $\sigma^2_0$ ) with estimates of 39.899 ( $p < .01$ ). This indicates that, over and above the effect of engagement, there remains significant between-person variance in initial status to be explained in the model. The increase of 12.694 units from *Model Q3* to *Model Q4* indicates that the additional variable of engagement explains a smaller degree of between-person variance in initial status in *Model Q4* compared to *Model Q3*. According to Pseudo  $R^2$  statistics, the addition of engagement in *Model Q4* explains 6.9% less between-person variance in initial status compared to *Model Q2*.

*Model Q4* shows a significant between-person variance in time ( $\sigma^2_1$ ) with an estimate of 0.241 ( $p < .05$ ). This indicates that in addition to the effect of engagement, there remains significant between-person variance in participants' rate of change to be explained in the model. That is, after taking into account participants' levels of engagement, participants' rate of change in quality of life over time significantly varies across people and this significant between-person variance in average rate of change in Q-LES-Q-SF scores may be explained by additional variables other than engagement.

The population covariance ( $\sigma^2_{01}$ ) of variance components  $\sigma^2_0$  and  $\sigma^2_1$  was -1.634 and non-significant. This indicates that there is insufficient evidence to conclude that those with higher Q-LES-Q-SF scores at time 0 (i.e., greater quality of life) experience slower or faster rates of quality of life improvement over time.

***Model Q4 goodness-of-fit.*** According to Pseudo  $R^2$  statistics, the increases in  $R^2_e$  from 0.282 in *Model Q3* to 0.425 in *Model Q4* highlights that the additional parameter of engagement, represents a greater model fit in *Model Q4* compared to *Model Q3*. This is further supported by decreases in BIC values, with a decrease of 307.247 units from *Model Q3* to *Model Q4*. In order to test whether such changes are significant, Deviance values were compared. These are consistent with BIC values and have a significant  $\chi^2$ Change of 316.813 ( $p < .01$ ) between *Model Q3* and *Model Q4*. The results indicate the importance of including engagement as an additional predictor variable, as the addition of engagement provides a greater amount of model information as to the

moderating effect of engagement on the relationship between the intervention with quality of life over time, while also leading to a model that is a superior model fit compared to *Model Q3*.

Table 14

*Results from Fitting a Multilevel Model for Quality of Life (Q-LES-Q-SF) Over Time and the Moderating Effect of Engagement*

	Parameter	Model Q4
<b>Model dependant variable</b>		Quality of Life
<b>Model predictor variables</b>		Time, Engagement, and Time x Engagement
<b>Fixed effects</b>		
Intercept (initial status)	$\gamma_{00}$	<b>44.079***</b> (1.421)
Time (rate of change)	$\gamma_{10}$	<b>0.517**</b> (0.170)
Engagement	$\gamma_{01}$	<b>0.055***</b> (0.012)
Engagement x Time	$\gamma_{11}$	<b>-0.005*</b> (0.002)
<b>Variance components</b>		
Residual (within-persons)	$\sigma^2_{\epsilon}$	<b>16.946***</b> (1.893)
Intercept (between-persons)	$\sigma^2_0$	<b>39.899**</b> (14.444)
Time (between-persons)	$\sigma^2_1$	<b>0.528*</b> (0.230)
Covariance	$\sigma^2_{01}$	-1.634 (1.424)
<b>Pseudo <math>R^2</math> and Goodness-of-fit</b>		
Pseudo $R^2$ for residual variance	$R^2_{\epsilon}$	0.425
Pseudo $R^2$ for intercept variance	$R^2_0$	-0.069
Pseudo $R^2$ for time variance	$R^2_1$	-1.191
-2 Log Likelihood	Deviance	1331.531
Chi-squared difference in Deviance	$\chi^2_{\text{Change}}$	<b>316.813**</b>
Bayesian information criterion	BIC	1374.533

*Note.* \*  $p < .05$ , \*\*  $p < .01$ , \*\*\*  $p < .0001$ . Standard errors are in parentheses. Statistically significant values are in bold.

## Supplementary Analysis

**The effect of attendance, use of antidepressant medication, and living status on the relationship between the intervention with primary outcome variables: Model D5, A5, Q5, D6, A6, Q6, D7, A7, and Q7.** As a supplementary check for potential variables that may account for differences in participants' outcomes during the intervention period, the added fixed effects and interaction effects of (a) attendance, (b) use of antidepressant medication, and (c) living status was investigated. These variables were included in *Models D3, A3, and Q3* to compute new models that controlled for attendance (*Model D5, A5, and Q5*), use of antidepressant medication (*Model D6, A6, and Q6*), and living status (*Model D7, A7, and Q7*).

### **Results from Model D5, A5, Q5, D6, A6, Q6, D7, A7, and Q7.**

Of the nine models, no variables interacted with time to predict depression, anxiety, or quality of life with one exception (Table 15). *Model A7* was the only model to show a significant fixed effect. Results demonstrated that, over and above the effect of anxiety, there was a significant effect of living status by time ( $\gamma_{11}$ ) with an estimate of -0.406 ( $p < .05$ ). This, along with significant fixed effects of intercept (with an estimate of 9.658,  $p < .001$ ) and time (with an estimate of -0.342,  $p < .01$ ), indicates that individuals who were living with others experienced a significantly greater reduction in anxiety over time in comparison to those living alone.

Table 15

*Results from Fitting a Multilevel Model for Anxiety, Depression, and Quality of Life (PHQ-9, GAI, Q-VAS-Q-SF) Over Time and Controlling for Living Status*

	Parameter	Model D7	Model A7	Model Q7
Model dependant variable		Depression	Anxiety	Quality of Life
Model predictor variables		Time, Living Status, and Living status $\times$ Time	Time, Living Status, and Living status $\times$ Time	Time, Living Status, and Living status $\times$ Time
<b>Fixed effects</b>				
Intercept (initial status)	$\gamma_{00}$	<b>8.617***</b> (0.752)	<b>9.658***</b> (0.960)	<b>42.141***</b> (1.390)
Time (rate of change)	$\gamma_{10}$	<b>-0.334**</b> (0.097)	<b>-0.342**</b> (0.096)	<b>0.401*</b> (0.159)
Living status	$\gamma_{01}$	-1.171 (1.166)	0.676 (1.488)	<b>4.872*</b> (2.154)
Living status $\times$ Time	$\gamma_{11}$	-0.205 (0.151)	<b>-0.406*</b> (0.148)	0.270 (0.246)
<b>Variance components</b>				
Residual (within-persons)	$\sigma^2\epsilon$	<b>7.245***</b> (0.697)	<b>6.729***</b> (0.648)	<b>21.179***</b> (2.038)
Intercept (between-persons)	$\sigma^2_0$	<b>6.001**</b> (2.296)	<b>11.123**</b> (3.731)	<b>21.434**</b> (7.831)
Time (between-persons)	$\sigma^2_1$	<b>0.088*</b> (0.038)	<b>0.087*</b> (0.037)	<b>0.223*</b> (0.102)
Covariance	$\sigma^2_{01}$	-0.382 (0.245)	-0.027 (0.268)	0.010 (0.649)
<b>Pseudo <math>R^2</math> and Goodness-of-fit</b>				
Pseudo $R^2$ for residual variance	$R^2\epsilon$	0.384	0.487	0.282
Pseudo $R^2$ for intercept variance	$R^2_0$	-0.082	0.188	0.426
Pseudo $R^2$ for time variance	$R^2_1$	0.111	0.315	0.075
-2 Log Likelihood	Deviance	1347.242	1352.199	1641.587
Bayesian information criterion	BIC	1391.850	1396.807	1686.195

Note. \*  $p < .05$ , \*\*  $p < .01$ , \*\*\*  $p < .0001$ . Standard errors are in parentheses. Statistically significant values are in bold.

## CHAPTER 9: DISCUSSION

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### Overview and Chapter Outline

The purpose of the current study was to examine the effect of group guided CBT self-help programme LLTTF on community dwelling older adults' ratings of depression, anxiety, and quality of life. Additionally, the relationship between community dwelling older adults' engagement with the LLTTF programme and improvements in their reported ratings on all primary outcome measures was evaluated. Data was analysed using MLM, implementing a multilevel (2 level), repeated measure (11 waves), single group, and longitudinal research design. This chapter includes a description of the study's results in light of previous literature, an author's reflection, and an outline of the study's contribution to literature. Furthermore, study limitations and indications for future work in this research area are discussed.

### Summary of Hypotheses and Study Findings

#### Hypothesis 1

*The LLTTF programme will result in significant reductions in participants' reported symptoms of depression over time.*

Preliminary analysis indicated that, on average, participants demonstrated reductions in depression symptomatology over the course of the intervention and these improvements were maintained at 6-week follow-up. According to scores on the PHQ-9, participants improved from clinical levels of depression at intake to non-clinical levels by the end of the intervention. Further supporting these results, MLM analysis demonstrated that, overall, participants' experienced a statistically significant reduction in self-rated depression over the intervention time. These results provided evidence to support Hypothesis 1, indicating that the LLTTF led to significant reductions in participants' reported depression over time.

The findings are consistent with previous research. For instance, amongst LLTTF efficacy studies with adult populations, Williams et al. (2015) demonstrated statistical improvements in PHQ-9 ratings amongst individuals from baseline to 6-month follow-up, as well as statistically significant improvements between the treatment group and wait-list controls. McClay et al.'s (2015) study demonstrated a non-statistical trend for depression

improvement over the intervention period and at the 3-month, with mean reductions in PHQ-9 ratings that were very similar to those demonstrated in the current study. McClay and colleagues hypothesised that their non-significant finding were likely due to their small sample size, relative to the type of analysis employed. It is noted that the current study also had a relatively small sample size and, despite similar PHQ-9 reductions, in contrast to McClay et al.'s research, the current study demonstrated statistically significant improvements in depression symptoms. This suggests that the MLM and longitudinal approach to analysis used in the current study may have increased sensitivity to change, more than traditional pre- and post-intervention statistical approaches when investigating the efficacy of programmes with small sample sizes. Moreover, in this study, floor effects were observed in participants' PHQ-9 ratings, which may have suppressed and, therefore, underrepresented participants' true rate of depressive mood change over time.

In contrast to the aforementioned studies, Forman's (2015) study of LLTTF with adults in New Zealand did not demonstrate significant differences in PHQ-9 depression scores across the intervention period. However, the author noted that this was likely due to the methodological limitations of the study (i.e., research design and analysis type). Despite this, Forman identified a trend for depression reduction when considering participants' median PHQ-9 score changes. Furthermore, when adjusting analysis to utilise multiple single-case designs, the author found that a number of participants experienced clinically significant changes (via reliable change index) in depression over time. In this way, Forman's trend for depression improvement is consistent with the current study's findings.

In addition to studies utilising the adult version of the LLTTF programme, results from the current study are also consistent with findings from Khatri et al.'s (2015) study of LLTTF with older adults. The authors demonstrated significant improvements in depression over time, which were maintained at a 3-month follow-up. While older adult LLTTF studies are not numerous in literature, the results of the current study alongside Khatri et al.'s results provide good support for the effectiveness of the intervention in reducing depression symptoms amongst community dwelling older adults.

The results of the current study, taken together with those of Khatri et al. (2015), Williams et al. (2015) and McClay et al. (2015), suggests not only is the LLTTF programme an effective intervention for reducing depression symptomology, but its



effectiveness appears to benefit both adult and older adult populations when the programme is delivered using the its age-specific content (i.e., adult versus older adult adaptations).

## **Hypothesis 2**

*The LLTTF programme will result in significant reductions in participants' reported symptoms of anxiety over time.*

Preliminary analysis indicated that, on average, participants demonstrated reductions in anxiety symptomatology over the course of the intervention and these improvements were maintained at 6-week follow-up. According to classifications on the GAI, participants improved from clinical levels of anxiety at intake to non-clinical levels by the end of the intervention. Further supporting these results, MLM analysis demonstrated that, overall, participants' experienced a statistically significant reduction in self-rated anxiety over the intervention time. Taken together, the results provided evidence to support Hypothesis 2, indicating that the LLTTF led to significant reductions in participants' reported anxiety over time.

The results are consistent with previous LLTTF research with both adult and older adult populations. With adult populations, Williams et al. (2015) found significant reductions in anxiety from baseline to 6-month follow-up, and McClay et al. (2015) found significant reductions in anxiety from pre- to post-intervention, which were maintained at the 3-month follow-up. In an older adult population, Khatri et al. (2015) demonstrated significant reductions in anxiety from pre- to post-intervention, which were also maintained at 3-month follow-up. Together, these findings suggest that the LLTTF programme is an effective intervention that leads to reductions in anxiety amongst both adult and older adult samples.

It is noteworthy, that similar to participants' depression rating using the PHQ-9, floor effects were also identified on the GAI. These may have suppressed, and thereby under represented, participants' true rate of anxiety change over time. Additionally, given the current study had a short follow-up period in comparison to the aforementioned studies, the retention of improvement after six weeks post-intervention was undetermined. Despite these limitations, the trend for improvement in anxiety rating at follow-up, taken together with Khatri et al's (2015) results, is promising, suggesting that improvements in anxiety ratings may be maintained for some time after the intervention is completed.

### Hypothesis 3

*The LLTTF programme will result in significant improvements in participants' reported quality of life over time.*

Preliminary analysis indicated that, on average, participants demonstrated improvements in quality of life over the course of the intervention and these improvements were maintained at 6-week follow-up. Further supporting these results, MLM analysis demonstrated that, overall, participants' experienced a statistically significant improvement in self-rated quality of life over intervention time. These findings provide evidence to support Hypothesis 3, indicating that the LLTTF programme led to significant improvements in participants' reported quality of life over time.

The results of the current study differ from Forman's (2015) findings investigating LLTTF amongst adults in New Zealand. Forman's research analysis produced non-significant differences in Q-LES-Q-SF scores across intervention time. However, as with their results regarding depression ratings, this finding was argued to be due to methodological weaknesses in the study's design. Despite limitations, the author identified a trend towards quality of life improvement when considering changes in participants' median Q-LES-Q-SF scores, and also identified a number of participants (via single case analysis) with clinically significant changes in quality of life over time.

Quality of life results from the current study are more similar to those of Khatri et al.'s (2015) older adult study, which demonstrated significant improvements across a range of quality of life domains. Utilising the WHOQOL-BREF (The Whoqol Group, 1998), Khatri and colleagues identified significant improvements in the psychological domain of quality of life (e.g., self-esteem, personal beliefs, and concentration) at intervention completion. Improvements were maintained at 3-month follow-up. Scores in the social domain (e.g., personal relationships and social support) also showed a trend for improvement over the intervention, although this did not reach significance until the 3-month follow-up.

Compared to the WHOQOL-BREF, which measures different quality of life domains, the current study utilised a measure that incorporated information from a number of domains into a single quality of life score. In this way, while the results of the current study provide evidence to support the efficacy of the LLTTF intervention in improving

quality of life, its impact upon specific domains could not be determined. Additionally, as the MLM analysis identified the significant effect when evaluating the combination of all time points including follow-ups, it cannot to be determined whether the effect would be significant immediately after LLTTFs completion, or at 6-week follow-up. Although, as mean ratings on the Q-LES-Q-SF showed only minor improvements from between LLTTF completion and follow-up time points, it could be speculated that significant improvements could have already been apparent earlier than six weeks.

It is also worth noting that, in comparison to the aforementioned discussion of depression and anxiety results, Williams et al. (2015) and McClay et al. (2015) did not measure quality of life. William et al.'s (2015) though, did investigate social functioning, with significant improvements found at baseline to 6-month follow-up. However, as mentioned above, this represents just one domain of quality of life. Thus, there is limited other research with which to compare the quality of life results obtained in the current study.

#### **Hypotheses 4 and 5**

*Participants' reported out-of-class engagement with LLTTF materials will, on average, moderate the relationship between the effect of the intervention and reported symptoms of depression and anxiety over time.*

MLM analysis revealed that time did not interact with engagement to predict changes in either depression or anxiety. That is, there was no evidence of significantly different trajectories of either depression or anxiety over time based on participants' level of engagement. These findings were not in line with the study's expectations, and results did not provide evidence to support Hypothesis 4 or Hypothesis 5. The results appear to be contrary to previous research suggesting that engagement (and related concepts; see Chapter 6) contributes to treatment outcomes in CBT (Holdsworth et al., 2014; Tetley et al., 2011) and CBT self-help (MacLeod et al., 2009). A moderating relationship of engagement with materials on intervention effectiveness is not ruled out, however, it may rather be that there was insufficient evidence to identify this. Possible explanations for why are as follows.

The study may have lacked the statistical power to detect an effect. Despite the use of a robust statistical approach, the size of the sample may have limited the statistical power

of the results, making it difficult to appropriately detect an engagement interaction effect, particularly if the effect was not strong. Another factor explaining limited power may have been measurement error. For instance, the PEQ was purpose-made for this study and was constructed using only three items that were intended to target three aspects of engagement (reading self-help material, thinking and reflecting on self-help material, and actively applying self-help material). Given that engagement is a complex construct (Tetley et al., 2011), it is possible that the PEQ lacked sufficient construct validity to accurately capture participants' true levels of engagement. Furthermore, the PEQ emphasised participant's *satisfaction* with their time spent reading, thinking, and applying self-help materials. While there was good rationale for measuring satisfaction as opposed to an absolute measure of time on these aspects of engagement, the measure may have been subject to biases such as recall or social desirability bias. Likewise, the term *satisfaction* may have been too abstract for participants to accurately rate, and a more definitive measure of *actual* time spent may have been a more successful representation of participants' engagement. However, accurately measuring time spent thinking about or applying skills would also be subject to biases and inaccuracy. It must also be considered that there was no moderating effect of out-of-class engagement, or that the combination of both in- and out-of-class engagement must be accounted for in order to produce an effect.

### **Hypothesis 6**

*Participants' reported out-of-class engagement with LLTTF materials will, on average, moderate the relationship between the effect of the intervention and reported ratings of quality of life over time.*

MLM analysis revealed that, over and above the effect of quality of life, there was a significant interaction effect between time and engagement. The direction of this effect was not as anticipated, and indicated that the rate of change in quality of life over time was slightly less for participants who showed greater engagement over time. This interaction technically supports Hypothesis 6, indicating that participants' reported out-of-class engagement with LLTTF materials moderated the relationship between the effect of the intervention and reported ratings of quality of life over time. However, it was expected that participants with higher levels of out-of-class engagement (i.e., those who engaged with the LLTTF self-help materials to a greater degree between classes), would demonstrate greater

treatment outcomes and thereby more pronounced improvements in quality of life in comparison to those with lower levels of engagement. Instead, the interaction effect suggests that those who have higher levels of engagement experience lower rates of improvement in quality of life.

The above finding raises a number of questions, particularly around possible individual differences between those with low and high levels of engagement. For example, individuals with low levels of engagement may have had higher or lower levels of quality of life at intake in comparison to those with high levels of engagement. It may be that participants with lower quality of life at intake were more self-critical, held more negative views about themselves (see Westbrook et al.'s 2001 model in Chapter 1), or had higher expectations of themselves in comparison to those with high quality of life at intake. Consequently, they may have rated their engagement (i.e., satisfaction with their time spent thinking, reading, and applying self-help) more negatively than others. For some participants, this tendency could result in high efforts towards change, which contribute to improvements in quality of life, but also lead to low self-rated engagement ratings. It could be similarly argued that those with a higher quality of life at intake may have over-estimated their satisfaction with their level engagement and therefore may have actually been more complacent about engaging with the course content outside of class time.

While these results warrant further investigation, a number of factors are considered that suggest that this finding should be interpreted with caution. That is, the variable of engagement in this study was found to be non-significant when evaluating alternative models that included engagement with either depression or anxiety. Additionally, the observed effect was in the opposite direction than expected. These factors in the context of the study's sample size raise questions as to whether the effect may have been due to influences such as measurement error or an unknown variable (see Limitations of the Current Study). As such, generalisations should not be made based on this finding alone. Rather, future research would benefit from replicating this finding before conclusions are made.

### **Supplementary Analysis**

MLM analysis revealed that, over and above the effect of anxiety, there was a significant effect of time on living status. That is, older adults who were living with others

experienced a significantly greater reduction in anxiety over time compared to those living alone. The findings support previous research indicating that, in general, living with others in older adulthood is more beneficial to one's wellbeing than living alone (e.g., Gaymu et al., 2012; Wright-St Clair et al., 2017). Potential explanations for this relationship are explored below.

It may be that some of the disadvantages that are associated with living alone in older age (e.g., functional and financial limitations or fewer social connections; Gaymu et al., 2012; Golden et al., 2009), in some way inhibit and thereby limit the effect of the LLTTF programme in reducing anxiety in older adults. Another hypothesis is that living with others enhances the intervention's effect in reducing anxiety over time. For example, older adults who live with others have been shown to experience higher levels of social support than those who do not (Melchiorre et al., 2013). As such, individuals may have more opportunities to share their leanings with others that could allow for a greater consolidation of their learning, they may receive more support or encouragement to engage with the self-help content, and they may have more opportunities to practice implementing self-help skills with others (e.g., minimising social avoidance). Alternatively, the effect may have been influenced by a further, unknown variable. Regardless, at this time, what mechanisms within the social component of living with others, and how these enhance improvements in anxiety is still unknown.

### **Author's Reflection**

In addition to the results outlined above, the following reflections are provided. First, it is noted that the study had very low attrition rates. That is, of the 26 participants included in the study's final sample, two dropped out after Week 1 (citing conflicts with the designated class time), and all other participants remained for the entirety of the intervention, including up until the 6-week follow-up. These attrition rates were lower than similar studies with adult populations (e.g., McClay et al., 2015) and are consistent with previous studies with older adults, indicating that older adults are more likely to remain in treatment than younger populations (Birrer & Vemuri, 2004). Low attrition rates suggest that, while uptake to self-help interventions amongst community dwelling older adults can be slow (e.g., Shandro, 2010), older adults who participate in the LLTTF interventions tend to remain involved for the full duration.

This study's results did not indicate a significant interaction between class attendance and changes in outcomes. However, this non-significant finding may have been influenced by the high attendance rates observed, thereby, reducing the range of data to examine differences between those who did and did not attend group sessions. Instead, it is speculated that the tendency for participants to attend the full duration of the intervention may have contributed to improved treatment outcomes. For instance, previous CBT interventions with older adults have demonstrated that attendance is a positive predictor of improved treatment outcomes (e.g., Areán et al., 2005; Glenn et al., 2013; Hundt et al., 2014). It may be beneficial that future research that incorporates a larger sample size investigate whether attendance may be predictive of improved treatment outcomes or whether there may be a dose-response relationship amongst participants who attend group guided LI-CBT interventions (e.g., a relationship between outcome measures and different levels of exposure to intervention).

It is worth noting the similarity between VAS data and their equivalent primary outcome measures. This was reflected in the preliminary analysis, which indicated high correlations as well as very similar data shape and change during visual analysis (once converted to standardised z scores) between VASs and their equivalent measures of the same construct. Additionally, there did not appear to be any pronounced differences between the measures ability to capture changes over time. As such, VAS data was not used in the final MLM analysis. Although an advantage of VASs is that they can finely discriminate subjective phenomena (Hasson & Arnetz, 2005), single-item scales are typically considered less reliable and more prone to both biases and random measurement errors in comparison to multiple-item scales (Hoeppner, Kelly, Urbanoski, & Slaymaker, 2011). As such, it was expected that there would be greater differences between scores on both measures. The observed similarities in self-report beg the question of whether single-item scales are truly comparable in detecting psychological phenomena and symptom severity to alternative multi-item measure of depression, anxiety, or quality of life amongst community dwelling older adults. However, further research is required to adequately address such questions.

While this study's results demonstrate statistically significant improvements across the aforementioned areas, anecdotal qualitative information spontaneously provided by



participants suggested that the intervention was helpful to participants in other ways. For example, at the end of the intervention, many of the participants expressed their remorse that the weekly meetings had come to an end. Of their own initiative, a large number of the individuals shared contact details and began a fortnightly social/coffee group, which they titled *The Wellbeing Group*. While no data was formally collected from this group, it came to the author's attention that some members of the group continued to gather in this group for more than one year after the intervention's completion. This suggests that, in addition to the intervention being effective, for a number of older adults, the social connection facilitated by weekly group contact during the intervention was meaningful and worth continuing.

Furthermore, one participant reported that she had felt isolated since immigrating to New Zealand approximately five years prior to the intervention. At the end of the intervention, this participant expressed that the LLTTF programme had provided her with skills and confidence, which enabled her to actively work towards personal change. She reported that, during the intervention, she initiated an ethnic cooking class for others, which she ran out of her home. At the time of this disclosure, she had held two cooking classes. The participant expressed the belief that her cooking initiative had further contributed to her improved mood as well as provided her with a sense of meaning and social connection.

Another participant was reported to be experiencing a number of health difficulties, which were impacting on her ability to live alone. Early in the intervention she expressed her anxiety about moving out of her family home; she felt this was the best option for her health. The participant reported that, as a result of the intervention, she had developed the skills to manage her anxiety and confront her avoidance, and she committed to moving into an independent living village. She expressed that she was much happier after participating in LLTTF and moving into the village. Additionally, her daughter emailed the LLTTF facilitator and low intensity practitioner six months after the intervention, stating that the participant "attributed much of the house transfer to finding her voice within your weekly group and practising articulating what she needed".

Anecdotal data from participants indicated that, in addition to improvements in outcome ratings, the LLTTF programme appeared to reflect meaningful life change for a number of participants. While participants' experience of depressive and anxiety symptoms



and quality of life showed significant improvements, anecdotal data provided broader and somewhat richer information, indicating that some participants showed improvements in their sense of purpose in life, improved social connectedness, living situations, and decisions regarding their health.

Contrary to positive feedback, a small number of older adults reported that they found it difficult to relate to some of the examples used within the LLTTF workbooks. These reports are similar to findings from Equally Connected Lothian (2011). In their study, the Equally Connected Lothian (2011) group investigated the adult version of the LLTTF programme amongst ethnic minority community members in Scotland. Qualitative reports from participants indicated that some examples provided in the LLTTF content were not relevant to participant's cultures or backgrounds. With this in mind, it is acknowledged that older adults are a heterogeneous age group (American Psychological Association, 2014), and one limitation of pre-formulated self-help programmes is that, in comparison to traditional CBT, self-help content is typically less able to be tailored to the idiosyncratic presentations of individuals (Johansson et al., 2012). In this way, not all examples will be equally relevant to all group members; rather, generic examples are intended to illustrate the use of evidence-based skills. However, it is in the author's opinion that, despite the use of the older adult version of the LLTTF programme, there was very little content specifically related to older adulthood (e.g., themes such as health, aging, technology, retirement, or grand-parenting). The LLTTF programme may benefit from future revisions adapting content to encompass a wider range of older adult related themes.

While anxiety is considered to be a supplementary target of the LLTTF intervention (Williams, 2007), notwithstanding the relaxation scripts (provided in the programme's content), none of the class sessions primarily focused on anxiety and/or panic. This is noteworthy for three reasons. First, consistent with findings from Forman (2015), informal reports from many of the research participants in the current study indicated that the relaxation audio scripts were a very valuable component of treatment that contributed to reduced anxiety and improved wellbeing. Second, a common theme raised by participants during class discussions was their experience of anxiety in regards to health, family interactions, and technology. Third, depression in older adulthood is associated with high rates of comorbid anxiety (Gum & Cheavens, 2008). As such, upon reflection of the

intervention, the programme's low intensity practitioner (i.e., this study's author) felt that the programme material was insufficient to adequately address this salient issue. It is important to note that despite these factors, the current study's results demonstrated significant reductions in anxiety over intervention time. Thereby, the LLTTF intervention does appear to be effective in reducing anxiety, however, the programme may be *further* improved by including more specific anxiety related components. That is, the LLTTF programme may benefit from incorporating a specific anxiety-based class, which, may do well to cover issues relevant to older adults.

Finally, the LLTTF sessions are structured so as to cover a specific set of material in a limited time period in each class. During some classes, however, participants reported that certain topics (e.g., altered thinking) were too brief. They reflected that they might have benefited from more time on this topic to allow them to better understand the content before progressing to the next session. The structure and pace (i.e., the content that is required to be covered as part of programme protocol) during sessions in the older adult version of LLTTF appears to be identical to that of the adult version. This is important as literature regarding the application of traditional CBT for older adults typically suggests that treatment should progress at a slower pace in order to compensate for factors such as normative cognitive or sensory decline in areas such as information processing, working memory, sight, or hearing (Qualls & Knight, 2007). This allows older adults more time to process information and facilitates a better integration of new learning (Palazzolo, 2015). It may be beneficial for future revisions of the older adult version of the LLTTF programme to consider expanding the number or length of sessions available to deliver content. Alternatively, it may be beneficial to reduce the amount of content delivered over the duration of the programme, which, if delivered over a similar session time length, may facilitate opportunities for further social connections to develop.

In summary, the LLTTF programme appeared to benefit the participants in the current study in more ways than those investigated using the primary outcome measures. However, despite the many benefits, reports from participants suggest that further age-related changes to the course content may be beneficial. While preliminary research investigating older adult's perspective of the usefulness of LLTTF's age specific content has shown promising results (Age Concern Yorkshire and Humber, 2009), these results

were limited. That is, the authors employed a basic and predominantly qualitative investigation, the study involved a small sample, and with a broad age-range (i.e., 53-94 years). To the writer's knowledge, no attempts have been made to replicate the findings. Therefore, it may be useful for future research to evaluate how materials can be further adapted for this age group in order to improve its effectiveness amongst this age group.

### **Contributions to Literature and Clinical Psychology**

This study contributes to the developing research field of LI-CBT self-help, and in particular, the very small research base pertaining to group-guided LI-CBT self-help. It provides further empirical support concerning the general efficacy of the LLTTF programme, and, more specifically, it leverages evidence from international LLTTF research amongst adolescents and adults and provides preliminary support for the programme's efficacy in reducing depression and anxiety symptomatology, as well as improving overall quality of life amongst community dwelling older adults.

The promising results demonstrated in this study are consistent with the emerging body of guided LI-CBT literature and reflect a recent trend in mental health treatment delivery. This study demonstrates a novel and effective way of delivering evidence-based treatment beyond that of traditional high intensity CBT. The study's findings provide further evidence for low intensity interventions in general and group guided LLTTF specifically, as a viable alternative treatment option for individuals with mild to moderate depression and anxiety.

Such findings expand the currently limited number of evidence-based treatment choices available to individuals. This is particularly important given that individuals have different preferences in the way in which they access, engage, and respond to mental health treatment (Bennett-Levy et al., 2010). Moreover, the availability of alternatives to traditional one-to-one CBT may be particularly important in older adults, for whom treatment barriers such as inaccurate perceptions of mental health procedures, perceived stigma related to seeking help, or the fear of loss of independence can adversely affect their decisions to seek care (American Psychological Association, 2014; Mechanic, 2006; Mohr et al., 2006). The availability of multiple treatment modalities may mitigate some of these barriers and consequently improve treatment access and engagement, which is a fundamental goal of low intensity interventions.

Whilst this research makes a valuable contribution to the LI-CBT literature in general, it is one of only a few guided CBT self-help interventions to have been investigated within a New Zealand context. It builds on previous New Zealand self-help research (e.g., ManageMyHealth, 2011; Scheibmair, 2010; Shepherd et al., 2015; Wyllie, 2011) and, importantly, on LLTTF research in New Zealand from authors such as Forman (2015) and Lee (2014). Together, these studies suggest that the LLTTF programme is a promising guided self-help programme for depression and anxiety when delivered to some New Zealand populations. It also provides a substantial basis on which further research can be conducted with alternative New Zealand populations (e.g., Māori, Pacific, and Asian samples).

In the current study, a sample of community dwelling older adults was recruited using a moderately unrestrictive screening process. As such, participants represented a wide range of socioeconomic backgrounds, varying levels of symptom severity, medical histories and medication requirements, and previous psychological treatment. This pragmatic approach to recruitment is likely to have attracted participants more reflective of real-life referrals, therefore mitigating a common criticism of tightly controlled academic research, that clinical samples often lack diversity reflective of the general population (Rothwell, 2006). As such, the use of this method allows for greater generalisability and findings are often more easily reproduced in clinical practice (Kukull & Ganguli, 2012). Finally, this less restrictive approach is in keeping with principles of low intensity interventions to increase access for a greater number of individuals who may benefit from treatment.

Amidst existing literature on guided LI-CBT self-help, there is a paucity of research that has utilised longitudinal or hierarchical research approaches when evaluating treatment processes and outcomes. The use of both hierarchical and longitudinal analysis allowed the current research to account for both between and intra-individual variability. In contrast to traditional pre-post research designs, MLM analysis over multiple time points allowed for the evaluation of within- and between-person differences in rate of change (Heck et al., 2014). Having the ability to observe such individual and group differences over time is important as people respond to treatment in different ways and at different rates. Individual variation is not typically reflected in group averages amongst pre-post designs and such variability can signify important changes during the therapeutic processes which may help

in better understanding when and how an intervention can influence change (Hayes et al., 2007; Nezlek, 2008). Additionally, by evaluating change over multiple time points, as opposed to pre- and post-treatment, longitudinal analysis can lead to more confident conclusions regarding the stability of change over time (Avey, Luthans, & Mhatre, 2008). This approach provided valuable longitudinal insights into the effect the LLTTF programme had on community dwelling older adults over time and provided more confidence in the conclusions pertaining to the significant improvements that were observed.

As adults age, many prefer to remain living in their own homes and communities (Wiles et al., 2012). However, the adverse effects of difficulties such as depression and anxiety can necessitate a move away from family, friends, and communities of their choice (Alpass & Neville, 2003; Blazer, 2003). As both living at home and maintaining independence are considered important factors to older adults' wellbeing (Wiles et al., 2012), moves into care can perpetuate mental health difficulties. In the current study, there was an emphasis on promoting older adults' self-efficacy to manage their difficulties in their own time and in their place of choosing. As such, evidence pertaining to the group guided LLTTF programme can be used as one possible intervention that can support the New Zealand Ministry of Health's (2012) aim to encourage older adults to manage their wellness where possible. By providing older adults treatment options to manage their wellness in a time and place of their choosing, this intervention may minimise common barriers to treatment seeking (e.g., fear of being stigmatised; Gonçalves et al., 2009) and could support older adults whom experience depression to address their difficulties earlier, and thereby reduce the likelihood of exacerbated symptomatology that may require more highly intensive treatment. In this way, access to this intervention and the self-help skills based on evidence-based CBT principals, may enable community dwelling older adults to apply their skills where necessary and remain active, for longer, in decisions that affect their health and independence.

Finally, in a climate of economic restraint, group guided CBT self-help interventions may have positive economic implications. Depression, if left untreated, can lead to increased utilisation of hospital and outpatient medical services compared to healthy controls (Goldney et al., 2004). As such, early access to the LLTTF programme may aid

national health services by reducing the service burden and allowing healthcare resources to be used more efficiently (Bower & Gilbody, 2005; Williams et al., 2015).

### **Limitations of the Current Study**

The first limitation of the current study was the relatively small sample size for the chosen method of analysis. Although recruitment rates were in accordance with expectations (see Methods), and either comparable or higher in comparison to similar LI-CBT studies in New Zealand (e.g., Forman, 2015; Lee, 2014; Montagu, 2015; Scheibmair, 2010), the total sample was at the low end of minimum sample size required for MLM analysis (see Sample size in Methods). Recruitment sizes were likely influenced, at least in part, by the self-referral approach to applications (requiring self-motivation by applicants who were experiencing low mood and, thus, likely low motivation), the duration of recruitment time, and the small age range sought (60-75 years). Low sample sizes can have consequences such as over or underestimating the magnitude of existing effects or, conversely, reducing the statistical power to detect true differences (and thereby statistical effects) between participants, particularly at higher levels of hierarchical analysis (Button et al., 2013; Kwok et al., 2008). In this way, the small sample size may contribute to an increase statistical error and limit the validity of conclusions that can be drawn. Whilst this suggests that the current study's results should be interpreted with caution, the author employed the most appropriate statistical methods in order to ensure the most valid and reliable analysis. Of further assurance, is that the findings are consistent with previous LLTTF research. However, researchers in this area are encouraged to recruit larger samples to improve the reliability of the results, minimise the potential error inherent in small sample data, and improve generalisability.

The study's sample was further limited by a lack of diversity. Despite recruitment attempts to be culturally inclusive, the vast proportion of the study's final sample identified as New Zealand European and were predominantly from the North Shore region of Auckland, New Zealand. Given that older adults are a highly heterogeneous age group (American Psychological Association, 2014), this study's sample was unlikely to reflect the broad sociodemographic, ethnic, and cohort diversity of the larger New Zealand older adult population. Similarly, the majority of participants (87.5%) included in the study were female. While this limits the degree to which conclusions could be drawn as to the LLTTF

programme's efficacy with men, the current study's gender bias was consistent with previous LI-CBT studies. Previous LLTTF studies have also failed to recruit balanced gender samples, with total samples ranging between 11% and 35% males (Blue Wave Foundation, 2014; Collins, 2012; Forman, 2015; Khatri et al., 2015; McClay et al., 2015). This appears to reflect a trend for lower treatment seeking behaviour in men across all age groups amongst group guided LI-CBT studies targeting depression and relying on self-referrals. Future research would benefit from expanding the current study's findings to populations less represented in previous studies, such as males and those of New Zealand Māori, Pacific, and Asian descent.

In common with many other LI-CBT self-help studies, recruitment required participants to proactively initiate their interest in participating in the study through recruitment advertisement campaigns. Such self-selected samples may not accurately reflect members of the broader population, in that recruitment may target certain sub-groups of people, namely, those with sufficient levels of motivation and readiness to change. While this method of recruitment may inadvertently narrow the heterogeneity of the sample, this limitation should be considered alongside the benefits of utilising a community based recruitment process with a moderately unrestrictive screening process (outlined earlier in this chapter). Additionally, while there was large variability in symptom severity at intake, the self-selected community sample in addition to criteria that excluded individuals who were already experiencing active treatment for depression, may have contributed to sample's low average symptom severity and may account for the floor effects observed. As such, it may be beneficial for future research to replicate the study's findings with both clinical and non-clinical populations using more rigorous participant selection procedures.

A significant limitation of the current study is that there was no control group for comparison. While MLM analysis of longitudinal data provides many advantages in comparison to alternative analysis methods (e.g., allowing the investigation of both within- and between-subject variables) without a separate control group, the observed effects cannot strictly be attributed to that of the LLTTF intervention. The possibility then of factors outside of treatment influencing results (e.g., via measurement reactivity, maturation, or regression to the mean; Dimitrov & Rumrill, 2003) cannot be ruled out.



Despite this possibility, the results of preliminary LLTTF efficacy studies (e.g., McClay et al., 2015; Williams et al., 2015) suggest that the intervention is effective at reducing depression amongst a variety of age-groups. These previous findings lend support to the interpretation that the results of the current study provide evidence of the efficacy of the LLTTF intervention. Regardless, future research would benefit from utilising control groups in their research design, particularly in evaluating this intervention with older adults. This is especially so, given that LLTTF randomised controlled trials have previously been conducted with adult samples, but not with older adults or adolescents.

A further limitation was the inconsistency in measuring time at intake. In describing the requirements for MLM, Singer and Willett (2003) argue that there must be a sensible metric for time that meaningfully reflects the different time points. In the current study, this was true for all but one time point. In this way, Time 1-14 represented a 14 week time period, however, Time 0 did not represent one week less than Time 1. The intervention start date was only confirmed after a sufficient number of individuals were deemed eligible to participate. Consequently, intake information was collected over a five week period and the dates at which participants completed and returned this data were not recorded by the researcher. Thus, intake information (Time 0) does not reflect a single time point but rather a five week period. This limitation was identified prior to the analysis of results, and various options to address the limitation were explored. One option to address this was to only include data from Class 1 (Time 1) onwards for analysis, however, it was considered that this would be a less accurate measure of participants' true baseline level of depression and anxiety. For example, participants' mood ratings may have been impacted by their acceptance into the study or by the expectation that they would experience improvements from the first class (prior to completing Time 1 measures; i.e., expectation effect; Dew & Bickman, 2005). Therefore, Time 0 data was considered to be a more accurate baseline measure than data from Time 1. As such, intake data was included in the analysis and recorded as Time 0. All other data collection points were coded to meaningfully and accurately reflect the spacing of time. In the future, this could be pre-empted by either dating all intake data, or including an alternative baseline measure prior to the start of intervention.



A further practical constraint of this study was the short duration of follow-up, which was restricted by an external timeframe. Depression and its associated symptomatology has a high rate of recurrence (Burcusa & Iacono, 2007), however, the current study did not follow-up participants past six weeks post intervention. As psychological treatments are typically designed to promote long-term changes and facilitate coping skills to prevent relapse in the future (Martin Pinquart & Sörensen, 2001), it would be interesting to see if improvements in outcome measures were maintained at a longer follow-up. Of particular interest would be depression ratings, as this was the only variable that showed mean declines (although only slightly) from one week to 6-week follow-up. Employing a longer follow-up period would also have allowed for greater comparisons with alternative LLTTF research with longer follow-up periods, for example six months. Additionally, it would have been useful to evaluate whether engagement with self-help materials became more important once weekly class contact had ceased. It would be advantageous for future research to assess longer-term outcomes, at least to three and six months post intervention.

### **Final Summary and Conclusion**

The results from this study provided preliminary support for the efficacy of LLTTF at improving symptoms of depression and anxiety, and quality of life amongst community dwelling older adults. Results did not, however, provide evidence to support a moderating relationship between engagement and depression or anxiety. Unexpectedly though, there was some evidence to suggest that less out-of-class engagement (in comparison to high engaging) with LLTTF self-help content was related to greater improvements in quality of life. However, taking into consideration the direction of the interaction effect that indicated this finding, the fact that no other significant engagement interactions were identified in alternative MLM models, and the study's relatively small sample size, it is in the writer's opinion that this finding remains inconclusive. There was also evidence to suggest that older adults who were living with others experienced a significantly greater reduction in anxiety over time compared to those living alone. Further research is needed to replicate this finding in order to draw more definitive conclusions as to the effect of living status on treatment outcomes. Finally, anecdotal feedback from participants indicated that, while there were areas for refinement in LLTTF content and delivery for the older adult

population, overall, the majority of participants experienced improvements beyond that of the measured outcome variables. Participants described improvements in areas such as social connectedness, living status, and decisions regarding their health.

Considering the aforementioned results, this study contributes to established literature, providing further empirical support concerning the general efficacy of the LLTTF programme as an evidence-based treatment alternative to high intensity therapy that is both cost- and time-efficient. Importantly, this study promotes LLTTF as a viable and effective low intensity treatment option for older adults. If utilised, the LLTTF could increase treatment access and choice, contribute to the reduction of secondary mental health service load, minimise treatment barriers, and support older adults' self-efficacy to support themselves and either remain in or enter communities of their choosing. The outcomes of this research also support the New Zealand Ministry of Health's (Ministry of Health, 2012) objective of increasing the uptake of evidence-based low intensity self-help programmes for common mental health difficulties (such as depression) by providing evidence for the effective use of guided LI-CBT self-help interventions in New Zealand as an early treatment option (prior to high intensity therapy) for symptoms of depression. Overall, this study represents a significant contribution promoting the efficacy of the LLTTF programme, in order to improve mental health outcomes for older adult in New Zealand.

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## APPENDICIES

### Appendix A

Table A-1

#### *Participant Depression Scores and Classifications at Intake*

Participant ID	PHQ-9 score	PHQ-9 score classification	D-VAS to PHQ-9 equivalent scores
2	11	Moderate	N/A
4	6	Mild	N/A
5	17	Moderately Severe	N/A
6	6	Mild	N/A
7	6	Mild	N/A
9	10	Moderate	N/A
10	7	Mild	N/A
11	9	Mild	N/A
12	3	Minimal	12 (Moderate)
13	8	Mild	N/A
14	13	Moderate	N/A
15	19	Moderately Severe	N/A
16	13	Moderate	N/A
17	12	Moderate	N/A
18	8	Mild	N/A
19	5	Mild	N/A
20	11	Moderate	N/A
21	3	Minimal	9 (Mild)
22	10	Moderate	N/A
23	10	Moderate	N/A
25	3	Minimal	9 (Mild)
26	11	Moderate	N/A
27	15	Moderately Severe	N/A
28	6	Mild	N/A

*Note.* D-VAS to PHQ-9 scores have been rounded to the nearest whole number. N/A indicates Not Applicable.

## Appendix B

The following information was provided in the study's information pack used during recruitment. This included the study's information document, consent form, eligibility questionnaire, outcome measures (including the PHQ-9, GAI, Q-LES-Q-SF), Visual Analogue Scales (VASs) relating to each outcome measure (i.e., D-VAS, A-VAS, and Q-VAS), and eligibility questionnaire.

### Document B-1

#### *Study Information Pack Provided During Recruitment*

**INTRODUCTION**

## Wellbeing in Later Years

WELCOME

to the research programme using guided self-help aimed at improving common personal issues such as low mood and stress.



Welcome to 'Wellbeing in Later Years', a FREE research programme using guided self-help aimed at improving common personal issues such as low mood and stress.

Thank you for requesting further information about the study, we would love to have you take part. But before we can move ahead, there are just a few brief things we would like for you to do that will help us with the process.

**Step 1. Read over the Information Sheet:** This gives you all the information that you need before deciding whether you may like to take part. If you have any further questions, feel free to contact us (using the contact details at the bottom of the page) and we can talk through any queries you have.

**Step 2. Read over the Participant Consent Form:** If you agree to take part in the study, it is important you read over the consent form and provide consent by signing the form.

**Step 3. Fill in the Participant Questionnaires:** Please then fill out the participant questionnaire forms. This usually takes around 20 minutes to complete. It is important you answer all the questions available. If you have a query about any question asked, please feel free to contact us (using the contact details at the bottom of the page) or provide your best guess.

**Step 4. Return the information using the pre-paid envelope:** Please place the Participant Consent Form and the Participant Questionnaires into the envelope provided and mail the letter at your earliest convenience. Because the envelope is pre-paid, there will be no cost to you.

**Well done, that's it.** We will contact you once we have received the information.

**Any further questions?** Feel free to contact us at any time using the contact details below:

**Study co-ordinator/facilitator:** James Martyn  
**Study phone number:** 0800 526 371  
**Study website:** <http://wellbeing.massey.ac.nz>  
**Study email address:** [wellbeinginlateryears@gmail.com](mailto:wellbeinginlateryears@gmail.com)

**STEP 1.****Information Sheet****Wellbeing in Later Years: Low Intensity CBT Therapy Research Study**

You are invited to take part in research involving group classes that work to teach individuals the necessary skills to improve their wellbeing and deal with difficulties. While classes have a primary focus on low mood, they can also be beneficial for the treatment of stress, worry, and/or anxiety. Before deciding whether you wish to be involved in the research, please read the following information carefully to ensure you fully understand the basis of the research project and your rights should you choose to participate.

**What is the study about?**

Cognitive Behaviour Therapy (CBT) is a talking psychotherapy that research has shown to be effective for many different problems (e.g., low mood, stress, and worry). CBT emphasises the importance of how you think about yourself, situations, the world, and other people.

During times of distress, people think differently about themselves, others and the world. CBT practitioners help each person identify and change their unhelpful thinking and behaviour. The end result is often that the person feels better about themselves, for example less depressed or anxious.

Low intensity CBT and the use of CBT self-help materials is an innovative intervention that is being used with successful results in England, Scotland, and Canada. It is different to traditional CBT as the emphasis is on the self-help materials themselves, and support for working through the materials is provided by a low intensity worker. Low intensity CBT provides helpful strategies that can be used by most people to help them overcome their difficulties with symptoms of mild depression and anxiety.

This research aims to examine the usefulness of a group guided CBT self-help programme called 'Living Life to the Full' with an older adult population. As such, this study is interested in knowing if peoples' thoughts, feelings, and behaviours change as a result of participating in a low intensity CBT intervention. In addition, the study would like to know if these changes impact on peoples' quality of life. Finally, the research is also interested in whether the extent of peoples' engagement with self-help materials can lead to better outcomes.

**Who is able and not able to take part?**

To participate in this research, you need to complete the screening questionnaire provided. This will ask you a brief number of questions to help determine your eligibility for the study. You may be eligible if you are between the ages of 60 and 75 years, and be experiencing at least some symptoms of low mood or a combination of low mood and stress/worry/anxiety. You must also be living in an independent situation. For instance, this may be in a flat, home, or an independent living village, but without the current use of ongoing full-time assistance. Unfortunately, the study cannot include individuals that have serious concerns about their cognitive functioning/ability compared to peers their age. As such, you will be unable to attend if your doctor or anyone else has expressed any serious concerns about your cognitive functioning. You will also need to have sufficient (e.g., high school level) skills in reading, writing, and speaking English, and you must not have a current diagnosis for alcohol abuse, substance abuse, psychosis, or borderline personality disorder.



You will not be asked to participate in the study if you fail to meet the eligibility criteria outlined above or if you present with very high (severe) levels of depression. You will also not be asked to participate if you are currently already receiving psychotherapy or counselling for low mood or anxiety, or if you feel you are unable to keep yourself safe from self-harm or harm to others throughout the duration of the study.

### **How will the study be beneficial?**

CBT is an effective therapy for individuals with low mood, stress, worry, and anxiety because it teaches how your thoughts affect your behaviours, and how some simple techniques can help you gain control over these issues. During the Living Life to the Full course, each week participants will receive a free unique workbook that provides easy to read CBT content. The content is purposefully design to help teach you to apply evidence-based life skills to help overcome low mood as well as other common difficulties. Additionally, the low intensity worker will utilise PowerPoint slides, lecture notes, and worksheets throughout each class in order to help guide, advise, and support you to thoroughly understanding the CBT workbook content so you can apply the skills to your own life. One of the main benefits then is that the programme may help you gain a greater self-awareness of how to deal with issues that lead to depression and anxiety and how to deal with them more effectively. In terms of research benefits, the fulfilment of this study will help evaluate the effectiveness of the Living Life to the Full programme with older adults in New Zealand, as well as contribute to the attainment of the lead researcher's Doctorate of Clinical Psychology degree.

### **What will you receive?**

In addition to the benefits outlined above, this is a free service and there will be no charge involved. As such, there will be no cost for attending the course and all course materials (valued at \$45 each) will be provided for free. You will be able to keep any of the materials you are given, so that upon the course completion, or if you are unable to complete the full duration of the course, you will still be able to keep all the provided materials for your own benefit in the future. Finally, those participants who complete and return the final questionnaires at the end of the programme will receive a free \$20 petrol or grocery voucher.

### **What do you have to do before you can take part?**

In order to be eligible for the free low intensity group CBT self-help course, you are required to carefully read this information sheet and the consent form (provided). If you then wish to participate in the study you should give consent by signing your name on the consent form in the designated area. Once you have completed the consent form, you are asked to read and complete the brief screening questionnaire (provided). The screening questionnaire will take about five minutes to complete and provides the researcher with general contact information and demographic information about you. It also asks some questions regarding your suitability for the study, as described in the "Who is able and not able to take part" section above. Finally, you are asked to fill in the additional questionnaires (provided) concerning mood and behaviour. These may take around 15 minutes to complete. Once you have signed your consent form and completed all questionnaires, you are asked to return these using the pre-paid envelope provided. You may call to discuss any questions you may have concerning the study, the consent form, or any of the questionnaires at any time using the contact details outlined below.





### **What would you have to do once you are accepted into the study?**

The course will be provided within the Albany psychology clinic by a facilitator who will be a trained low intensity worker and clinical psychology trainee in the Doctoral programme working under supervision. During the first class however, the session will also be observed by the facilitator's supervisor (a registered clinical psychologist). This is to ensure that the best quality of care and communication is provided during the classes. The group will consist of 20-40 participants and will run for eight weeks. You will also be asked to complete some questionnaires should you choose to take part. The first instalment of questionnaires were sent to you (along with this information sheet) when you registered your interest in participating in the study and should be returned with the completed consent form at your earliest convenience. You will then be required to complete a small number of questionnaires prior to each session throughout the eight-week programme. Finally, you will be asked to complete one final set of questionnaires approximately eight weeks after the final class to monitor whether improvements have been maintained over time. Questionnaires should take no longer than 15 minutes to complete.

### **What if something goes wrong?**

It is emphasised that participation in any and all parts of this study is completely voluntary and classes do not involve any physical activity other than that of attending the class. However, if you were injured in this study, which is unlikely, you may be eligible for compensation from ACC just as you would be if you were injured in an accident at work or at home. This does not mean that your claim will automatically be accepted. You will have to lodge a claim with ACC, which may take some time to assess. If your claim is accepted, you will receive funding to assist in your recovery.

If you have private health or life insurance, you may wish to check with your insurer that taking part in this study won't affect your cover.

### **Will your information remain confidential and private?**

- Yes. All your information will remain confidential at all times as part of standard procedures within the Centre for Psychology.
- Research data will only be accessed by researchers and clinical supervisors directly related to this study.
- Clinical data will only be available to those involved in your therapy.
- No materials that could personally identify you will be used in any reports on this study.
- All data will be kept locked.
- Files will be stored in a separate location from the identifying information.
- You will not be personally identifiable in any research publications (e.g. in scientific journals) that result from this research.

It is important to note that any information you supply will only be used for the purpose of the study. All information will be treated confidentially within the Centre, subject to the ethical guidelines on the limits of confidentiality provided by the Psychological Society of New Zealand's Code of Ethics, as per the Privacy Act (1993).





### **Your rights as a participant:**

If you choose to take part in the research, you have the right to:

- Withdraw from the study at any time.
- Decline to take part in this study, knowing this will not have any impact on what services you receive.
- Decline to answer any particular question.
- Ask any question about the study at any time during your participation.
- Be given a summary of the findings of the study once it has been completed if you request it.

### **Questions or concerns:**

If at any time you have questions or concerns about this study, you are welcome to contact James Martyn (the low intensity worker and clinical psychology trainee) on **0800 526 371** or email at [wellbeinginlateryears@gmail.com](mailto:wellbeinginlateryears@gmail.com)

If you have any questions about any issues pertaining to Māori in this study, regardless of your own ethnicity, you are welcome to discuss this with James Martyn who has cultural supervision with Nephi Skipwith, a recognised Kaumātua in Albany School of Psychology.

If you have any queries or concerns regarding your rights as a participant in this study you may wish to contact a Health and Disability Advocate, telephone 0800 555 050.

### **What happens from here:**

After you return your consent form and questionnaires, if you are selected for the study, the low intensity worker (James Martyn) who will be running the programme will contact you via telephone. At this time, you will have the opportunity to ask us any questions about the study before you agree to continue. While the study hopes to be as inclusive as possible, it is important to note that not everybody who returns the questionnaires and consent form will be invited to participate in the course. If you are not selected to continue with the study, the researchers will notify you by mail and send you some information concerning where you may find appropriate resources (used in the study) or contacts that may be helpful to your situation.

This study has received ethical approval from the Health and Disability Northern B Ethics Committee, Ref # 15/NTB/51.

Thank you for reading this information sheet.



**MASSEY UNIVERSITY**  
 TE KUNENGA KI PŪREHUROA  
 UNIVERSITY OF NEW ZEALAND

**STEP 2.**

**Participant Consent Form**

**Wellbeing in Later Years: Low Intensity CBT Therapy Research Study**

**This consent form will be held for a period of ten (10) years**

I have read the information sheet for this study and have had the details explained to me. I understand that while the study attempts to be as inclusive as possible to all those who are interested in participating, not everybody who applies will be invited to participate in the programme.

My questions about the research have been answered to my satisfaction, and I understand that I may ask further questions at any time. I have been given contact details to use in case I have future questions about the study. I have also had the opportunity to use whānau / family support or a friend to help me ask questions and understand the study.

I understand that taking part in this study is voluntary (my choice) and that I may withdraw from the study at any time.

I agree to provide information to the researchers and understand that this will be confidential (private). The information I supply will only be used for the purpose of the study. All information will be treated confidentially, subject to the ethical guidelines on the limits of confidentiality provided by the Psychological Society of New Zealand's Code of Ethics, as per the Privacy Act (1993).

I have had adequate time to consider whether or not to take part in this study. I agree to participate in this study under the conditions set out in the Information Sheet.

Full Name (printed).....

Signature..... Todays Date .....

**STEP 3.****Participant Questionnaires**

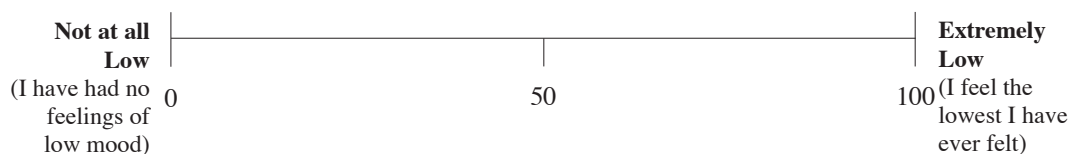
The following pages ask you a number of questions. Please turn the page and answer all the questions to the best of your ability.

### *Mood Questionnaire*

**A. Instructions:** Over the LAST WEEK, how often have you been bothered by any of the following problems? Circle a single number to indicate your answer.

	Not at all	Several days	More than half the days	Nearly every day
Little interest or pleasure in doing things	0	1	2	3
Feeling down, depressed, or hopeless	0	1	2	3
Trouble falling or staying asleep, or sleeping too much	0	1	2	3
Feeling tired or having little energy	0	1	2	3
Poor appetite or overeating	0	1	2	3
Feeling bad about yourself — or that you are a failure or have let yourself or your family down	0	1	2	3
Trouble concentrating on things, such as reading the newspaper or watching television	0	1	2	3
Moving or speaking so slowly that other people could have noticed? Or the opposite — being so fidgety or restless that you have been moving around a lot more than usual	0	1	2	3
Thoughts that you would be better off dead or of hurting yourself in some way	0	1	2	3

**B. Instructions:** Please rate (by marking anywhere on the line below) how LOW (*on average*) you have felt over the PAST WEEK.

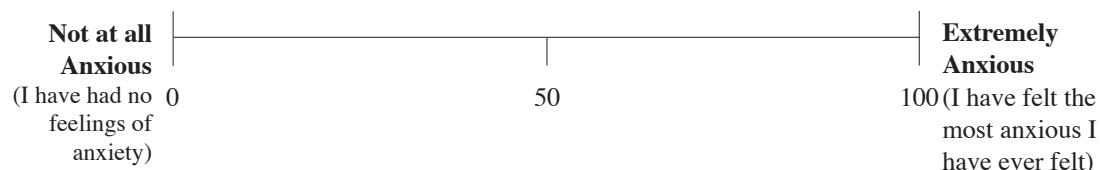


*Stress/Anxiety Questionnaire*

**C. Instructions:** Please answer the items according to how you've felt in the LAST WEEK. Circle AGREE if you mostly agree that the item describes you; alternatively circle under DISAGREE if you mostly disagree that the item describes you.

1. I worry a lot of the time.	Agree / Disagree
2. I find it difficult to make a decision.	Agree / Disagree
3. I often feel jumpy.	Agree / Disagree
4. I find it hard to relax.	Agree / Disagree
5. I often cannot enjoy things because of my worries.	Agree / Disagree
6. Little things bother me a lot.	Agree / Disagree
7. I often feel like I have butterflies in my stomach.	Agree / Disagree
8. I think of myself as a worrier.	Agree / Disagree
9. I can't help worrying about even trivial things.	Agree / Disagree
10. I often feel nervous.	Agree / Disagree
11. My own thoughts often make me anxious.	Agree / Disagree
12. I get an upset stomach due to my worrying.	Agree / Disagree
13. I think of myself as a nervous person.	Agree / Disagree
14. I always anticipate the worst will happen.	Agree / Disagree
15. I often feel shaky inside.	Agree / Disagree
16. I think that my worries interfere with my life.	Agree / Disagree
17. My worries often overwhelm me.	Agree / Disagree
18. I sometimes feel a great knot in my stomach.	Agree / Disagree
19. I miss out on things because I worry too much.	Agree / Disagree
20. I often feel upset.	Agree / Disagree

**D. Instructions:** Please rate (by marking anywhere on the line below) how ANXIOUS, e.g., stressed or worried) you have felt (on average) over the PAST WEEK.

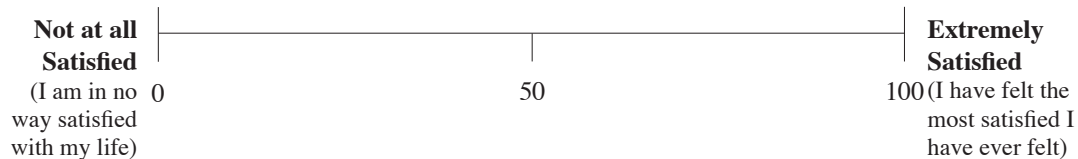


*Quality of Life Satisfaction Questionnaire*

**E. Instructions:** Taking everything into consideration, during the PAST WEEK how satisfied have you been with your...

	<b>Very Poor</b>	<b>Poor</b>	<b>Fair</b>	<b>Good</b>	<b>Very Good</b>
.....physical health?	1	2	3	4	5
.....mood?	1	2	3	4	5
.....work?	1	2	3	4	5
.....household activities?	1	2	3	4	5
.....social relationships?	1	2	3	4	5
.....family relationships?	1	2	3	4	5
.....leisure time activities?	1	2	3	4	5
.....ability to function in daily life?	1	2	3	4	5
.....sexual drive, interest and/or performance?	1	2	3	4	5
.....economic status?	1	2	3	4	5
.....living/housing situation?	1	2	3	4	5
.....ability to get around physically without feeling dizzy or unsteady or falling?	1	2	3	4	5
.....your vision in terms of ability to do work or hobbies?	1	2	3	4	5
.....overall sense of well being?	1	2	3	4	5

**F. Instructions:** Please rate (by circling the number the best represents your response) how SATISFIED you were with your overall QUALITY OF LIFE (i.e., life satisfaction and contentment) has been (on average) over the PAST WEEK.



**Screening Questionnaire**

**G. Instructions:** The information you provide in this questionnaire helps the research team to identify whether you meet criteria for the free Living Life to the Full classes. All information provided will be kept confidential, private, and secure. Please answer as best you can.

**Contact Details:**

Name: \_\_\_\_\_

Gender: \_\_\_\_\_

Date of Birth: \_\_\_\_\_

Ethnicity (please tick the boxes of as many that may apply):

- ☐ NZ European
- ☐ Māori
- ☐ Samoan
- ☐ Cook Island Māori
- ☐ Tongan
- ☐ Niuean
- ☐ Chinese
- ☐ Indian
- ☐ Other(s) (please specify) \_\_\_\_\_

What is your current employment status?

- ☐ Unemployed
- ☐ Employed full-time
- ☐ Employed part-time
- ☐ Retired
- ☐ Other (please specify): \_\_\_\_\_

Email address: \_\_\_\_\_

Phone Number: \_\_\_\_\_

Postal Address: \_\_\_\_\_

\_\_\_\_\_  
\_\_\_\_\_

**Emergency Contact Details:**

Emergency Contact Name: \_\_\_\_\_

Relationship to you: \_\_\_\_\_

Contact phone number: \_\_\_\_\_

**H. Instructions:** For each of the following question, please tick only *ONE* box that best applies to you.

**Study Specific Information:**

Currently, the available programme is only for individuals aged between 60 and 75 years of age.

Are you between 60 and 75 years old?

☐ Yes

☐ No

Would you be confident taking part in a programme which is conducted in English, and is largely reading and writing based?

☐ Yes

☐ No

Are you living in an independent situation? For instance, this may be in a flat, home, or an independent living village, but without the current need for ongoing part-time or full-time assistance.

☐ Yes

☐ No

☐ Other (please specify): \_\_\_\_\_

Which of the following would most accurately describe your living situation?

☐ Live with spouse only

☐ Live with husband/wife and other family

☐ Live with other family without husband/wife

☐ Live with friends or acquaintances without any family

☐ Live alone

**Health Information:**

The 'Living Life to the Full' programme is suitable for those experiencing a wide range of life circumstances. However, for the purposes of the current study, we would like to know if you are currently, or have recently been experiencing low mood?

☐ Yes

☐ No

Are you currently taking any prescribed medication for low mood or anxiety (please tick the box of the answer that best applies)?

☐ Yes

☐ No

If yes, please specify \_\_\_\_\_

\_\_\_\_\_



Have you ever been to the doctor regarding an addiction or psychological/mental health difficulty?

☐ Yes

☐ No

If yes, please specify \_\_\_\_\_

Are you currently receiving mental health support (i.e., counselling, cognitive behaviour therapy, or other) for any mental health or addiction problem?

☐ Yes

☐ No

If yes, please specify \_\_\_\_\_

Has your doctor or anyone else ever expressed any serious concerns about your cognitive or mental functioning?

☐ Yes

☐ No

If yes, please specify \_\_\_\_\_

**Safety Information:**

It is important that we make sure that you and the other participants remain safe throughout this programme with regards to harm to your self (e.g., self-harm) or harm to others. Do you think either of these safety concerns will be a problem for you throughout the programme?

☐ Yes

☐ No

**Thank you very much for taking the time to fill these details out.** Please check to see if you missed any questions, then place these answers as well as your signed Consent Form into the pre-paid envelope and mail it at your earliest convenience. Otherwise, please contact us about any questions using our contact details.

## Appendix C

Table C-1

*Percentage of Missing Data Across Measurement Time Points According to Little's MCAR Test*

Measurement time	Measure	Percentage range of missing data	Significance
Intake	PHQ-9	4.2-8.3%	Non-significant
	D-VAS	4%	Significant (p < .001)
	GAI	4.2-8.3%	Non-significant
	A-VAS	4%	Significant (p < .001)
	Q-LES-Q-SF	4.2-25%	Non-significant
	Q-VAS	4%	Significant (p < .001)
	PEQ	Not Collected	Not Collected
Class 1	PHQ-9	8%	Significant (p < .001)
	D-VAS	8%	Significant (p < .001)
	GAI	8.3-12.5%	Non-significant
	A-VAS	8%	Significant (p < .001)
	Q-LES-Q-SF	8.3-25%	Non-significant
	Q-VAS	8%	Significant (p < .001)
	PEQ	Not Collected	Not Collected
Class 2	PHQ-9	0-4.2%	Non-significant
	D-VAS	0%	Non-significant
	GAI	0-8.3%	Non-significant
	A-VAS	0%	Non-significant
	Q-LES-Q-SF	0-16.7%	Non-significant
	Q-VAS	0%	Non-significant
	PEQ	8%	Significant (p < .001)
Class 3	PHQ-9	0%	Non-significant
	D-VAS	0%	Non-significant
	GAI	0-4.2%	Non-significant
	A-VAS	4%	Significant (p < .001)
	Q-LES-Q-SF	0-20.8%	Non-significant
	Q-VAS	0%	Non-significant
	PEQ	0%	Non-significant
Class 4	PHQ-9	0-4.2%	Non-significant
	D-VAS	0%	Non-significant
	GAI	0-4.2%	Non-significant
	A-VAS	0%	Non-significant
	Q-LES-Q-SF	0-20.8%	Non-significant
	Q-VAS	4%	Significant (p < .001)
	PEQ	0%	Non-significant
Class 5	PHQ-9	0-4.2%	Non-significant
	D-VAS	0%	Non-significant
	GAI	0-4.2%	Non-significant
	A-VAS	8%	Significant (p < .001)
	Q-LES-Q-SF	0-12.5%	Non-significant
	Q-VAS	0%	Non-significant
	PEQ	4%	Significant (p < .001)

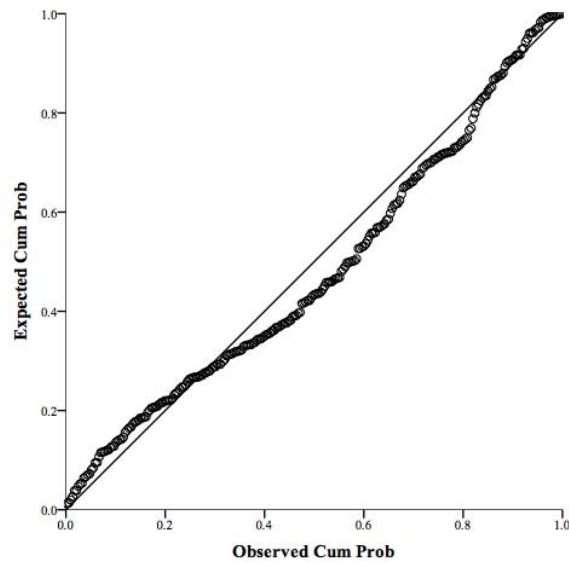
Table C-1 (continued)

Measurement time	Measure	Percentage range of missing data	Significance
Class 6	PHQ-9	0-8.3%	Non-significant
	D-VAS	4%	Significant (p < .001)
	GAI	0-4.2%	Non-significant
	A-VAS	0%	Non-significant
	Q-LES-Q-SF	0-20.8%	Non-significant
	Q-VAS	0%	Non-significant
	PEQ	0%	Non-significant
Class 7	PHQ-9	0-4.2%	Non-significant
	D-VAS	0%	Non-significant
	GAI	0%	Non-significant
	A-VAS	4%	Significant (p < .001)
	Q-LES-Q-SF	0-16.7%	Non-significant
	Q-VAS	0%	Non-significant
	PEQ	0%	Non-significant
Class 8	PHQ-9	0-4.2%	Non-significant
	D-VAS	0%	Non-significant
	GAI	0-4.2%	Non-significant
	A-VAS	4%	Significant (p < .001)
	Q-LES-Q-SF	0-12.5%	Non-significant
	Q-VAS	0%	Non-significant
	PEQ	0%	Non-significant
1 Week Follow-up	PHQ-9	0-4.2%	Non-significant
	D-VAS	0%	Non-significant
	GAI	0-4.2%	Non-significant
	A-VAS	0%	Non-significant
	Q-LES-Q-SF	0-20.8%	Non-significant
	Q-VAS	4%	Significant (p < .001)
	PEQ	0%	Non-significant
6 Week Follow-up	PHQ-9	0%	Non-significant
	D-VAS	0%	Non-significant
	GAI	0-4.2%	Significant (p < .001)
	A-VAS	0%	Non-significant
	Q-LES-Q-SF	0-12.5%	Non-significant
	Q-VAS	0%	Non-significant
	PEQ	0-4.2%	Non-significant

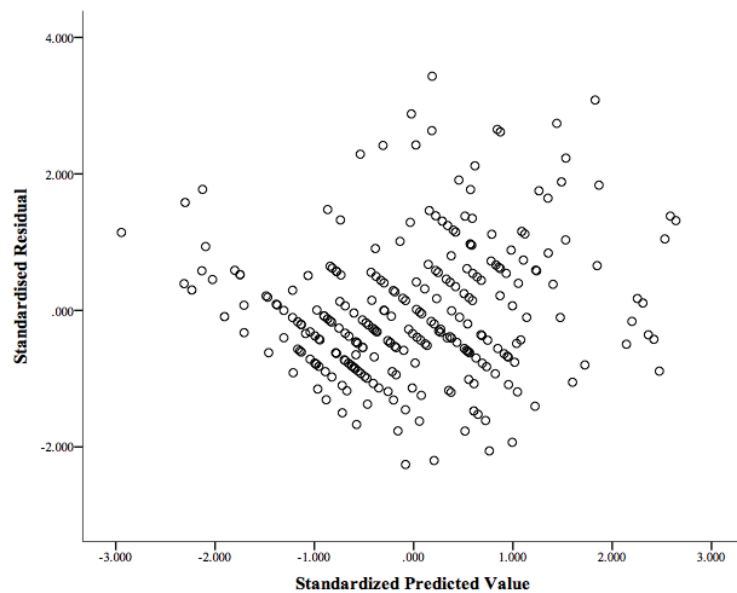
*Percentage of Missing Data Across Measurement Time Points According to Little's MCAR Test*

## Appendix D

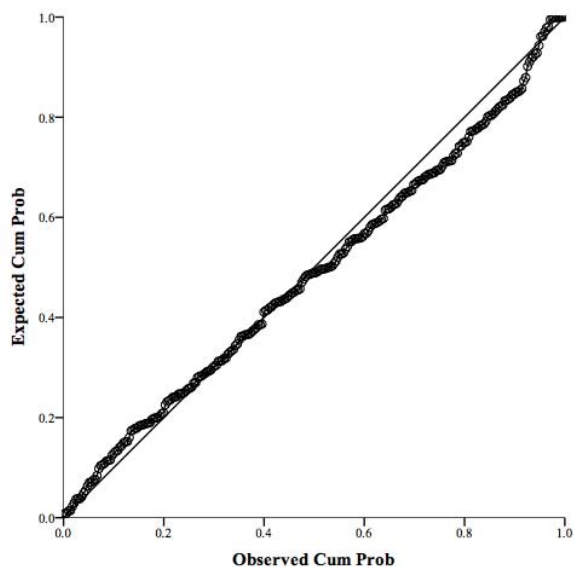
Standardised residual normal P-P plots and standardised residual scatterplots (based on residuals from *Model D3*, *Model A3*, and *Model Q3*) for the primary outcome measures of depression (as measured by PHQ-9), anxiety (as measured by GAI), and quality of life (as measured by Q-LES-Q-SF) over time.



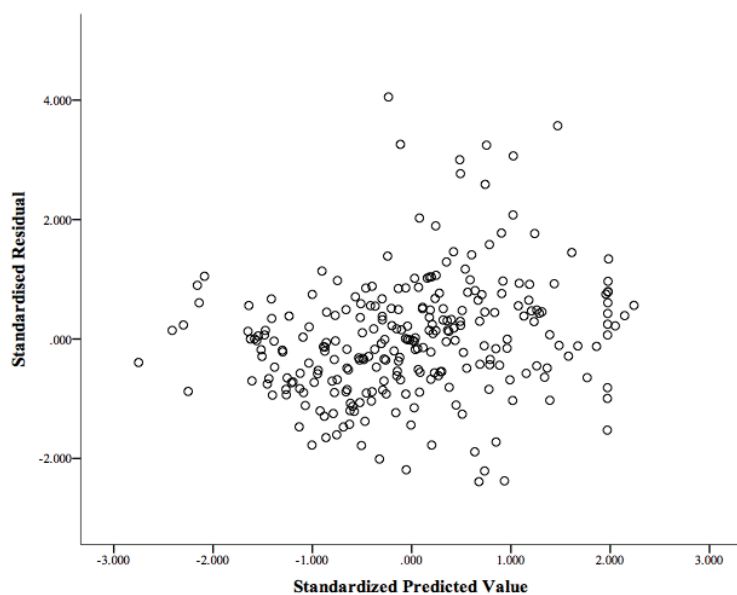
*Figure D-1.* Standardised residual plot of depression severity scores (PHQ-9 change) utilising data from Model D3.



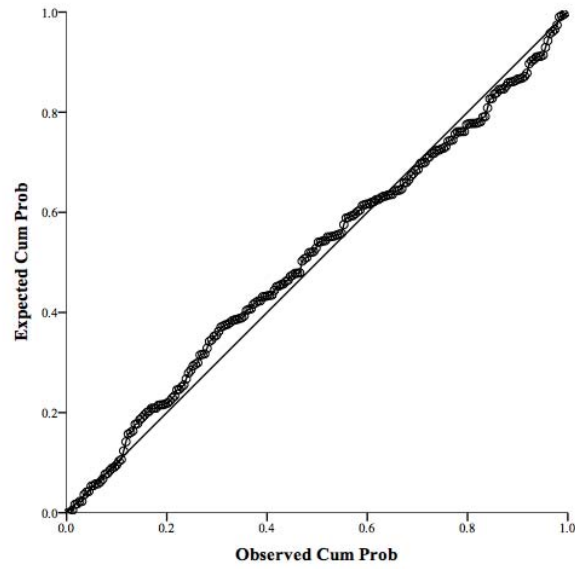
*Figure D-2.* Standardised residual scatterplots for depression severity scores (PHQ-9 change) utilising data from Model D3.



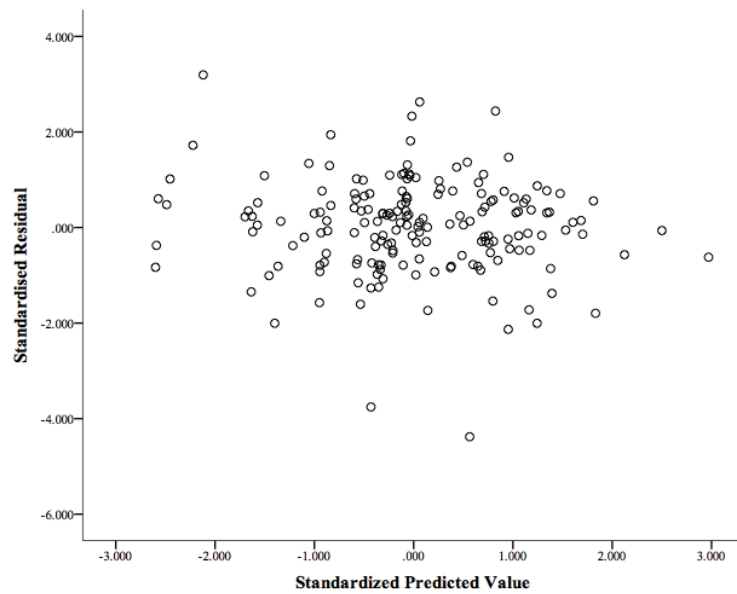
*Figure D-3.* Standardised residual plot of anxiety severity scores (GAI change) utilising data from Model A3.



*Figure D-4.* Standardised residual scatterplots for anxiety severity scores (GAI change) utilising data from Model A3.



*Figure D-5.* Standardised residual plot of quality of life scores (Q-LES-Q-SF change) utilising data from Model Q3.



*Figure D-6.* Standardised residual scatterplots for quality of life scores (Q-LES-Q-SF change) utilising data from Model Q3.

## Appendix E

Table E-1

*Geriatric Anxiety Index (GAI) Reliability for All Participants Across Each Measurement Time Point*

Measurement time	$\alpha$	$M$	Variance	$SD$
Intake	.777	9.633	16.561	4.069
Class 1	.779	9.822	16.702	4.087
Class 2	.838	10.369	22.813	4.776
Class 3	.842	8.565	22.854	4.781
Class 4	.880	8.612	28.108	5.302
Class 5	.827	6.559	19.204	4.382
Class 6	.874	6.054	23.875	4.886
Class 7	.878	5.968	24.998	5.000
Class 8	.903	4.864	25.876	5.087
1 Week Follow-up	.886	4.456	21.328	4.618
6 Week Follow-up	.932	4.286	27.456	5.240

## Appendix F

Table F-1

Quality of Life Enjoyment and Satisfaction Questionnaire Short Form (Q-LES-Q-SF)  
*Reliability for All Participants Across Each Measurement Time Point*

Measurement time	$\alpha$	$M$	Variance	$SD$
Intake	.858	43.462	56.955	7.547
Class 1	.793	45.596	45.294	6.730
Class 2	.831	44.381	52.136	7.221
Class 3	.820	46.891	46.002	6.782
Class 4	.850	44.106	65.550	8.096
Class 5	.873	46.541	66.221	8.138
Class 6	.898	48.286	66.789	8.172
Class 7	.894	48.132	64.587	8.037
Class 8	.897	48.753	65.802	8.112
1 Week Follow-up	.897	49.620	66.649	8.164
6 Week Follow-up	.935	50.399	109.639	10.471



## Appendix G

Table G-1

*Participant Engagement Questionnaire (PEQ) Reliability for all Participants Across Each Measurement Time Point*

Measurement time	$\alpha$	$M$	Variance	$SD$
Intake	N/A	N/A	N/A	N/A
Class 1	N/A	N/A	N/A	N/A
Class 2	.804	179.721	3564.901	59.707
Class 3	.816	178.208	3087.824	55.568
Class 4	.929	153.208	4849.303	69.637
Class 5	.904	188.171	3621.293	60.177
Class 6	.859	176.167	3381.623	58.152
Class 7	.862	172.792	3804.694	61.682
Class 8	.920	176.750	5092.543	71.362
1 Week Follow-up	.917	173.000	6796.609	82.442
6 Week Follow-up	.847	164.000	6292.783	79.327

*Note. N/A indicates data was not applicable, as the PEQ was not implemented until Class 2.*

## Appendix H

Table H-1

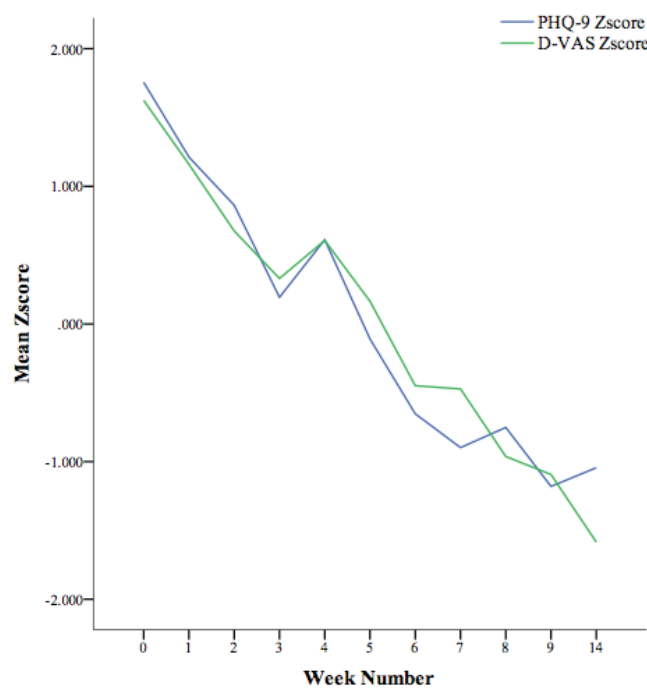
### *Convergent Validity of Visual Analogue Scales and Their Equivalent Primary Outcome Measures Across Time Points*

Measurement relationship	Measurement time	<i>r</i>	Standard error	95% Confidence interval
PHQ-9/D-VAS	Intake	.484*	.125	.237 – .727
	Class 1	.452*	.183	.074-.763
	Class 2	.700**	.110	.427-.871
	Class 3	.321	.191	-.043-.679
	Class 4	.568**	.145	.240-.794
	Class 5	.679**	.086	.485-.836
	Class 6	.377	.172	.007-.681
	Class 7	.319	.198	-.100-.674
	Class 8	.602**	.164	.278-.900
	1 Week Follow-up	.782**	.050	.700-.897
GAI/A-VAS	6 Week Follow-up	.869**	.099	.558-.960
	Intake	.304	.187	-.066-.643
	Class 1	.554**	.159	.196-.843
	Class 2	.699**	.144	.352-.901
	Class 3	.595**	.125	.322-.805
	Class 4	.793**	.092	.567-.943
	Class 5	.673**	.117	.432-.881
	Class 6	.667**	.116	.458-.897
	Class 7	.709**	.105	.466-.874
	Class 8	.842**	.062	.699-.935
Q-LES-Q-SF/Q-VAS	1 Week Follow-up	.906**	.026	.856-.959
	6 Week Follow-up	.885**	.066	.720-.970
	Intake	.468*	.133	.194-.714
	Class 1	.300	.190	-.087-.669
	Class 2	.105	.195	-.255-.493
	Class 3	.461*	.156	.110-.722
	Class 4	.583**	.130	.278-.781
	Class 5	.422*	.169	.062-.717
	Class 6	.623**	.117	.409-.860
	Class 7	.394	.180	.105-.766
	Class 8	.558**	.103	.381-.791
	1 Week Follow-up	.526**	.123	.286-.794
	6 Week Follow-up	.708**	.083	.552-.872

*Note.* \* Correlation is significant at the .05 level (2-tailed). \*\* Correlation is significant at the .01 level (2-tailed). N/A indicates Not Applicable.

## Appendix I

Participants' mean ratings on both VASs and their equivalent primary outcome measures of the same construct, standardised (converted to Z-scores), and plotted for visual analysis.



*Figure I-1.* Comparing participants' mean scores on measures of depression, plotting PHQ-9 and D-VAS Z-scores over time.

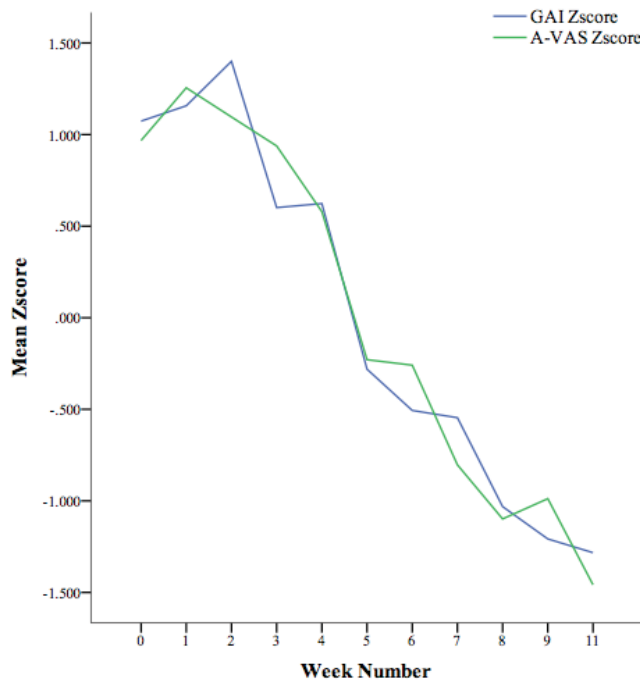


Figure I-2. Comparing participants' mean scores on measures of anxiety, plotting GAI and A-VAS Z-scores over time.

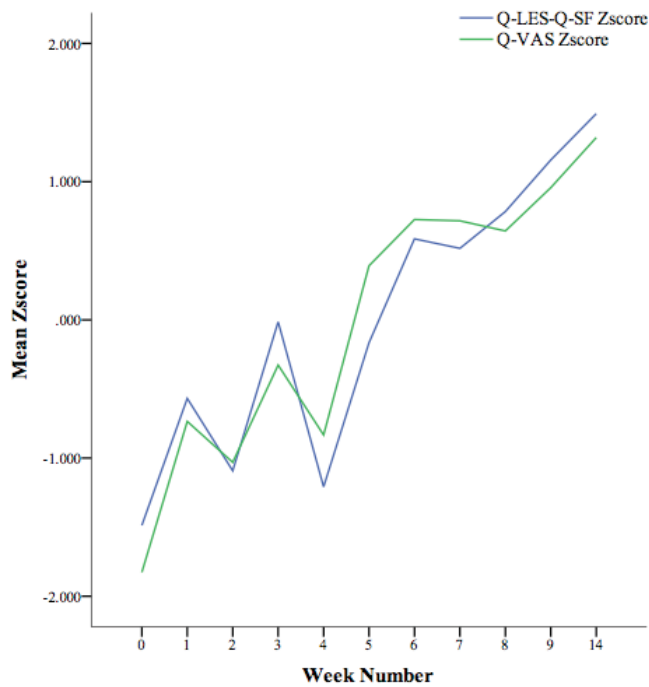
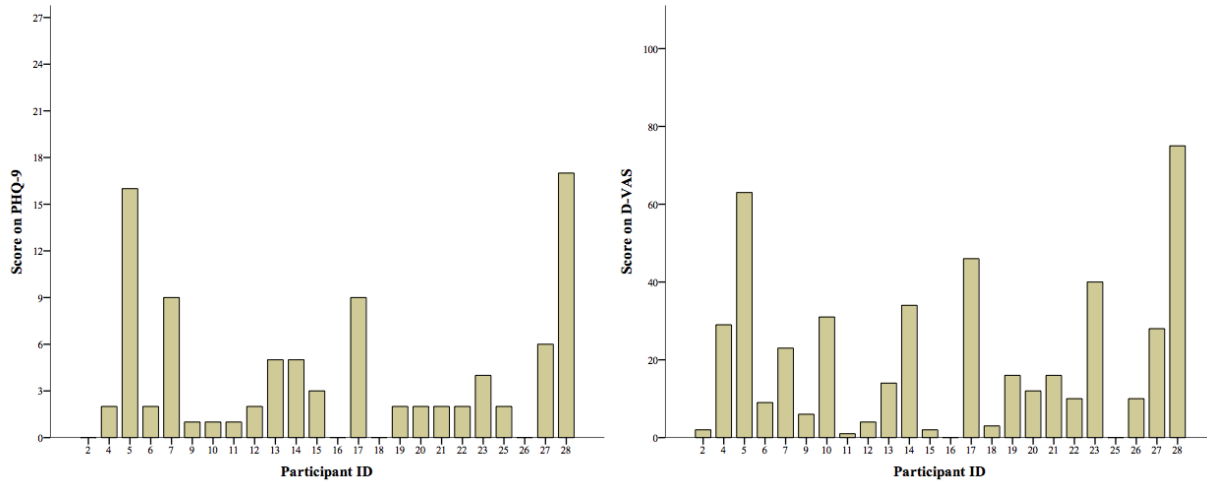


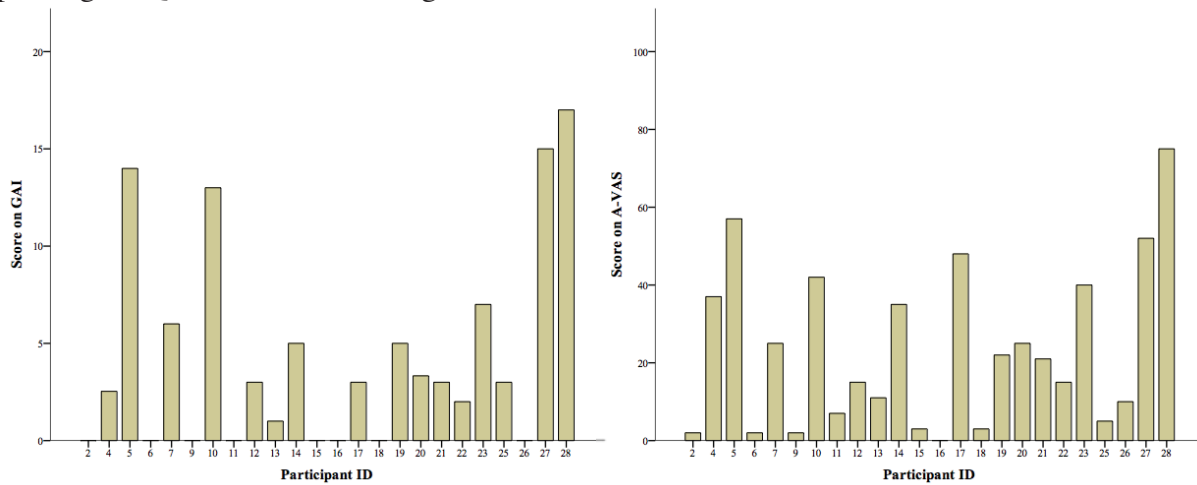
Figure I-3. Comparing participants' mean scores on measures of quality of life, plotting Q-LES-Q-SF and Q-VAS Z-scores over time.

## Appendix J

Plotted bar graphs of individual participant scores on depression and anxiety measures at Week 14.



*Figures J-1 and J2.* Comparing individual participant scores on measures of depression, plotting PHQ-9 and D-VAS ratings at Week 14.



*Figures J-3 and J-4.* Comparing individual participant scores on anxiety, plotting GAI and A-VAS ratings at Week 14.

## Appendix K

Table K-1

*Within-Individuals Exploratory Ordinary Least Squares (OLS) Regression Model Data for PHQ-9 Data as a Function of Linear Time*

Participant ID	<u>Initial status</u>		<u>Rate of change</u>		$R^2$
	Estimate	Error	Estimate	Error	
2	11.080	1.517	-.964	.229	.662
4	9.476	1.377	-.690	.208	.550
5	14.502	1.242	-.161	.188	.076
6	3.895	1.139	-.116	.172	.048
7	6.551	1.356	.219	.205	.113
9	7.703	1.525	-.623	.231	.448
10	7.451	.732	-.489	.111	.684
11	6.906	1.644	-.525	.249	.331
12	3.269	.998	-.135	.151	.081
13	7.173	.598	-.219	.090	.394
14	11.978	1.177	-.403	.178	.362
15	12.760	2.089	-1.108	.316	.577
16	11.556	2.347	-.985	.355	.461
17	8.939	.909	-.027	.137	.004
18	6.244	1.515	-.435	.229	.286
19	5.715	.770	-.252	.117	.342
20	7.773	1.110	-.619	.168	.602
21	3.269	.332	-.135	.050	.444
22	9.400	.978	-.600	.148	.646
23	8.539	1.690	-.694	.256	.450
25	7.227	1.716	-.381	.259	.193
26	7.784	1.644	-.843	.249	.561
27	10.730	1.528	-.424	.231	.272
28	5.174	1.518	.540	.230	.381

## Appendix L

Table L-1

*Within-Individuals Exploratory OLS Regression Model Data for GAI Data as a Function of Linear Time*

Participant ID	<u>Initial status</u>		<u>Rate of change</u>		$R^2$
	Estimate	Error	Estimate	Error	
2	10.518	1.138	-.775	.172	.693
4	8.522	1.081	-.611	.163	.608
5	13.063	.871	-.048	.132	.014
6	3.442	.771	-.354	.117	.505
7	10.955	1.288	-.144	.195	.057
9	7.724	2.233	-.779	.338	.372
10	17.743	.743	-.494	.112	.683
11	8.651	2.105	-.901	.318	.471
12	9.272	.990	-.457	.150	.509
13	7.687	.688	-.481	.104	.704
14	7.479	.580	-.254	.088	.482
15	12.937	2.632	-1.399	.398	.578
16	5.036	1.100	-.487	.166	.487
17	10.690	1.695	-.263	.256	.104
18	2.316	.433	-.229	.066	.576
19	8.700	.893	-.239	.135	.259
20	8.660	.774	-.541	.117	.704
21	12.002	1.289	-.882	.195	.695
22	10.420	.883	-.756	.134	.781
23	15.208	1.284	-.914	.194	.711
25	8.981	1.143	-.505	.173	.487
26	13.864	2.269	-1.299	.343	.614
27	15.744	.601	.065	.091	.053
28	8.939	1.479	.476	.224	.335

## Appendix M

Table M-1

*Within-Individuals Exploratory OLS Regression Model Data for Q-LES-Q-SF Data as a Function of Linear Time*

Participant ID	Initial status		Rate of change		$R^2$
	Estimate	Error	Estimate	Error	
2	37.281	3.911	1.412	.591	.388
4	37.793	1.795	1.417	.271	.752
5	35.636	1.508	-.004	.228	.000
6	44.672	2.340	.189	.354	.031
7	37.955	1.863	.076	.282	.008
9	5.873	4.006	.702	.606	.130
10	53.483	1.373	.334	.208	.223
11	52.823	2.427	.753	.367	.318
12	45.497	1.523	.954	.230	.656
13	45.005	1.508	.304	.228	.165
14	44.059	1.014	.216	.153	.181
15	42.789	1.513	.607	.229	.439
16	46.208	4.853	1.114	.734	.204
17	29.608	2.513	-.003	.380	.000
18	4.490	2.538	.772	.384	.310
19	46.339	1.818	.677	.275	.403
20	46.066	1.097	.767	.166	.704
21	53.308	.456	.112	.069	.225
22	41.089	1.407	1.509	.213	.848
23	48.156	2.037	-.519	.308	.240
25	45.818	4.205	1.542	.636	.395
26	43.122	1.878	-.297	.284	.109
27	42.881	1.195	.395	.181	.347
28	49.154	1.954	-.709	.295	.390



**APPENDIX N**

## Document N-1

Doctorate of Clinical Psychology students are required to complete six clinical case studies during their internship year as part of course requirements. Five case studies are developed based on either client assessment or treatment cases during the internship year and one case study is developed based on a portion of the student's doctoral research in psychology. As part of thesis regulations, the research case study is required to be bound into the doctorate thesis as an appendix. On the following page, Appendix N outlines the student's research case study presented as part of course requirements on 28<sup>th</sup> of November 2016.

Massey University  
Clinical Psychology

## CASE STUDY

Group-guided Self-help for Depression: Low-intensity CBT for Community Dwelling Older  
Adults

Candidate: James Martyn  
Clinical Psychology Programme Massey University  
Student ID: 02139448  
Setting: Child and Adolescent Community Mental Health  
Clinical Supervisor: Dianne Lees (Senior Clinical Psychologist)

Primary Research Supervisor: Associate Professor Paul Merrick  
Secondary Research Supervisor: Janet Leathem  
Tertiary Research Supervisor: Dr Peter Canon

This case was completed during internship at Bay of Plenty Child and Adolescent  
Community Mental Health in 2016 and represents the work of the candidate. It was  
presented as part of course requirements on 28<sup>th</sup> of November 2016.

**Primary Research Supervisor**

Dr Paul Merrick  
Associate Professor

**Student**

James Martyn  
Intern Clinical Psychologist

## Abstract

Depression is amongst the most common non-dementing health issues affecting older adults, however, access to evidence based treatments such as Cognitive Behaviour Therapy (CBT) remains limited. Subsequently, in recent years, low intensity CBT interventions have been developed in order to improve treatment access. Recently, such interventions have utilised the advantages of CBT guided self-help within a group or class setting. In doing so, group guided low intensity CBT self-help has emerged as a cost-effective and time-efficient treatment alternative to traditional high intensity one-to-one therapy. Of these approaches, *Living Life to the Full* (LLTTF) is the only such intervention that has undergone randomised effectiveness testing. While early evidence lends support for the efficacy of the LLTTF programme, further research is needed to extend the findings to different populations and age groups, particularly older adults. The proposed study sought to examine the effect of group-guided CBT self-help programme *Living Life to the Full* on community dwelling older adults' ratings of depression. A longitudinal research design was implemented, whereby 24 older adult participants (aged 60-75) presenting with symptoms of depression were recruited from a New Zealand community setting. Participants completed the *Living Life to the Full* programme over eight sessions and results were analysed using Multilevel Modelling. Results indicated significant reductions in participants' reported symptoms of depression, which were maintained after one and six week follow-ups. As such, the study provides preliminary support for the programme's efficacy in reducing depression symptomatology amongst community dwelling older adults in New Zealand. Moreover, the study provides support for group-guided CBT self-help as an effective alternative to traditional high intensity one-to-one therapy for the treatment of depression. Thereby, such interventions may support mental health services by improving treatment choice and access to treatment options, therefore reducing treatment wait times.

## **Literature Review**

### **Introduction**

The growing proportion of New Zealand older adults reflects a global trend, with data indicating that the population of those aged 65 years increased from 11% to 13% between the 1991 and 2009 (Statistics New Zealand, 2009). Projections also indicate that this population growth will continue to expand, reaching 21% by the year 2031 (Statistics New Zealand, 2009). Consequently, this changing population demographic has major health ramifications both now and in the future.

### **Depression**

Depression is a prominent psychological health concern for older adults. In New Zealand, depression is considered to be the most common non-dementing mental health disorder affecting older adults (Tynan, 2008) with serious implications such as increased rates of suicide, functional impairment, and reduced quality of life (Blazer, 2003). It is difficult to accurately determine its current prevalence in New Zealand, given the lack of epidemiological data concerning the elderly. However, The New Zealand Mental Health Survey conducted in 2006 (Oakley Browne, Wells, & Scott, 2006) estimate New Zealand older adults (aged 65 years and older) have a lifetime prevalence of 9.8% and a 12-month prevalence of 1.7%.

### **Treatment and Treatment Barriers**

Over time a substantial body of evidence has emerged supporting Cognitive Behaviour Therapy (CBT) as the most effective non-pharmacological treatment for depression (Hofmann, Asnaani, Vonk, Sawyer, & Fang, 2012; Schoevers, Beekman, Deeg, Jonker, & Tilburg, 2003). However, despite reports of CBTs efficacy, wide use, and initiatives to broaden its dissemination, there are a wide variety of barriers that can limit older adults' access to treatment services (Cuijpers, van Straten, & Smit, 2006; Mackin & Areán, 2005). Examples of barriers include the limited number of CBT therapists, long mental health waiting lists, high treatment costs, and the potential stigma often associated with seeking mental health care (Bennett-Levy et al., 2010; Mohr et al., 2006).

### **Addressing Mental Health Needs for Older Adults in New Zealand**

Recently in New Zealand, steps have been taken address the aforementioned barriers and the increased demand for mental health services that accompany the current

demographic growth. This is evident in the Ministry of Health's plan outlining the direction for mental health and addiction service delivery for the period 2012-2017 (Ministry of Health, 2012). In this paper, the Ministry of Health (2012) proposed to improve outcomes for older people with high-prevalence conditions such as depression. To do this, a number of key priorities were outlined. In broad terms, the Ministry of Health (2012) sought to decrease current service waiting times and increase treatment access by facilitating earlier and more effective mental health services for older adults. Additionally, they sought to support and assist older adult's to manage their own wellness where possible (Ministry of Health, 2012). Furthermore, recognising the importance of supporting older adult's to live independently, they also seek to optimise older adult's "ability to live in the home and community of their choice and to contribute positively to that community" (Ministry of Health, 2012, p. 54). Thus, it appears the Ministry of Health have identified older adult mental health as a key area for development in New Zealand, and therefore appear to be taking steps to facilitate an increase to access to evidence-based treatment, reduce treatment waiting lists, and support older adults to find ways of supporting themselves (e.g., self-help) and live independently where possible.

### **Shifts in Mental Health Treatment Delivery**

In response to the to aforementioned concerns regarding treatment needs and access, Bennett-Levy, Richards, and Farrand (2010) describe a 'paradigm shift' in mental health treatment delivery away from the sole reliance on traditional high intensity CBT delivery (i.e., high volume, face-to-face treatment by a specialist therapist). In contrast, the authors argue that there has been a shift that has broadened the focus from high intensity CBT delivery to that of low intensity CBT prevention and treatment options (Bennett-Levy et al., 2010). Low intensity interventions were developed to provide treatment content that minimises specialist therapist time or uses therapist time cost-effectively (Rodgers et al., 2012). CBT self-help is a form of low intensity intervention whereby CBT is provided to individuals using a range of different delivery methods congruent with personal consumption (e.g., books, video, computers, and audio; Bennett-Levy et al., 2010). There are two broad levels of support provided within a structured self-help framework; guided self-help and 'pure' self-help. Guided self-help refers to treatment where a facilitator guides

the individual through the material, while pure indicates the presence of no additional support (Rodgers et al., 2012).

### **Evidence and Advocacy for Guided LI-CBT Self-help**

Over the last 10 to 15 years, a moderate but growing body of research has emerged in support of the efficacy of low intensity CBT (LI-CBT) self-help, particularly that of guided LI-CBT self-help for the treatment of depression and some anxiety disorders (Gellatly et al., 2007). For example, several systematic and meta-analytic reviews suggest that guided LI-CBT self-help results in greater treatment gains (with strong associations found between level of support and treatment effectiveness) compared with unguided LI-CBT self-help (e.g., Baumeister et al., 2014; Gellatly et al., 2007; Hirai & Clum, 2006; Spek et al., 2007). Moreover, in some cases, guided LI-CBT self-help has been shown to be equally as effective as traditional high intensity CBT (Cuijpers, Donker, van Straten, Li, & Andersson, 2010). As a result, guided LI-CBT self-help has been implemented into a number of international stepped care health care models as a first line of treatment for symptoms of depression (Williams & Martinez, 2008). Similarly, the Ministry of Health (Ministry of Health, 2009, 2012) has stated that New Zealand also intends to introduce a stepped care model of treatment delivery in the to improve both service provision and outcomes for individuals in primary and specialist services. Furthermore, the Ministry of Health (2012) also proposed that there should be an uptake of evidence-based low intensity self-help options (such as computer-based therapy options) to prevent or manage mild to moderate mental health and addiction difficulties.

### **Group-guided LI-CBT Self-help**

As LI-CBT guided self-help has received more research attention, other interventions have been developed that utilise CBT self-help materials along with the benefits of supportive guidance within a group or class setting (Chellingsworth, Williams, McCreath, Tanto, & Thomlinson, 2010). Group guided LI-CBT self-help is a unique category of intervention, as it can provide cost-effective and time-efficient low intensity intervention content to multiple individuals at one time. In group guided LI-CBT self-help the focus is less on specific in-class intervention techniques to facilitate therapy as with traditional group CBT; less on solely communicating psychological concepts as with strictly didactic psycho-education classes; and more on facilitating the engagement of members to

provided self-help materials (based on CBT principles) with the focus on members applying this information to their unique situations (Williams & Chellingsworth, 2010).

### **Evidence for Group Guided LI-CBT Self-help**

Despite the potential advantages of group guided LI-CBT self-help, currently there are few interventions within this category identified in literature and even fewer that have been adequately tested regarding their efficacy (McClay et al., 2013). An examination of literature highlights that with the exception of a single day stand-alone depression and self-confidence class (Brown, Elliott, Boardman, Ferns, & Morrison, 2004) and a six session anxiety course (White & Keenan, 1990), there are few groups that provide both CBT self-help resources (i.e., bibliotherapy) alongside ongoing guidance from a support person with a primary focus on depression. In fact, the only intervention that fits the classification of group guided LI-CBT self-help that has undergone efficacy trials is that of Williams's (2007) *Living Life to the Full* classes.

Following a successful pilot, Williams et al. (2015) sought to investigate the efficacy and cost effectiveness of the *Living Life to the Full* classes amongst an adult population ( $N=142$ ) with a mean age 46.6 years. In a pre-post randomised controlled trial at a 6-month follow-up, the authors compared the results from a treatment versus wait-list control in a sample of community dwelling self-referred individuals presenting with low mood. Analysis indicated both statistical and clinical between-group improvements across all outcome measures of depression, anxiety, and social functioning. Results thereby suggest the course was effective in improving the targeted symptoms. Moreover, economic analysis indicated a high cost-effectiveness probability, with measures of cost-per-quality adjusted life estimated likely to be under the threshold recommended by the National Collaborating Centre for Mental Health (2010).

At the time of the current study's inception (i.e., early 2014), there was no indication within literature that any study had attempted to examine (using rigorous empirical methodology) the group-guided *Living Life to the Full* programme using an older adult population. However in 2015, Khatri, Hynie, Hardy, Zhang, and Mitchell released a report showing preliminary findings of an older adult pilot study. In their study, the authors sought to evaluate the group guided *Living Life to the Full* programme (older adult version) with Canadian older adults. Participants ( $N = 222$ ) aged 50 years of above (89% female) took

part in 30 separate programmes across multiple locations. Results indicated significant improvements in symptoms of both depression and anxiety, in addition to quality of life and mental well-being both at the end of the course and at a three month follow-up. Consequently, Khatri et al. (2015) concluded that the group-guided *Living Life to the Full* course may be an effective method for enhancing older adult's quality of life and overall wellbeing, as well as improving depression and anxiety symptomatology. However, it is noteworthy that the report only presents limited information to the reader. Given older adults are such a heterogeneous group with significant differences between early and late stages of older adulthood, it would be beneficial to have included information concerning the age range and the proportion of older adults who fall across the ages. Moreover, the study offers no information as to inclusion or exclusion criteria for participants, nor how the clinical sample was allocated. As such, the true extent of advantages and limitations of the study as well as its ability to generalise to the general population remains unclear.

### **Rationale for Research**

While the challenge of improving outcomes for older adults suffering from depression and integrating low intensity self-help interventions into the New Zealand health system appear to be important priorities the Ministry of Health (e.g., Ministry of Health, 2009, 2012; Te Pou o te Whakaaro Nui., 2012), there is a growing need to examine the efficacy of such interventions in a New Zealand context. Developing specific forms of LI-CBT self-help to reflect New Zealand culture is important, however, a more beneficial and pragmatic approach is to consider the use and efficacy of programmes that have been developed in other countries. Of the evidence-based low intensity research, group guided LI-CBT self-help is uniquely helpful, in that it provides both cost-effective and time-efficient therapeutic content. As such, it has the potential to provide broader access to evidence-based treatment for mild to moderate depression, potentially contribute to the reduction of secondary mental health service load, and importantly support older adults' self-efficacy to support themselves while continuing to live and to contribute positively to their community.

Of the interventions that can be classified as group guided LI-CBT self-help, *Living Life to the Full* is the only group that has a predominant focus on depression and has undergone empirical testing (i.e., Williams et al., 2015). However, despite early evidence



for the effectiveness and cost-effectiveness of *Living Life to the Full* classes in an adult population (Williams et al., 2015), a greater empirical base is needed to more confidently draw conclusions as to outcome replicability and to further extend its findings to different populations and settings. In particular, since the programme's delivery protocol is categorised into three distinct age groups (i.e., adolescents, adults, and older adults), *Living Life to the Full* research should be expanded beyond adults to adolescent and older adult samples. Therefore, the proposed study sought to address (Williams et al., 2015) recommendations to investigate what effect the *Living Life to the Full* classes have on community dwelling older adults with mild to moderate depression. Moreover, the study aims to investigate this within a New Zealand community setting. It is noteworthy, that for the purposes of this case study, the research focus, data, and results that are presented in this paper are one smaller component taken from a larger study (as part of a doctorate dissertation) evaluating a broader number of factors such as anxiety, quality of life, and engagement.

### **Research Aim and Hypotheses**

This research aimed to examine the effect that group guided CBT self-help programme *Living Life to the Full* had on community dwelling older adults' ratings of depression. The hypothesis was that on average, the *Living Life To The Full* programme would result in significant reductions in participants' reported symptoms of depression over time.

## **Method**

### **Participants and Recruitment**

The study sample consisted of 24 participants, 3 (12.5%) males and 21 (87.5%) females ranging in age from 60-74 years of age. Of the sample, 18 (75%) identified as New Zealand European and the remaining 6 (25%) identified as either Canadian, English, Indian, Latin American, or South African. Recruitment involved non-direct (awareness) advertising using advertisements in content such as newspapers and community newsletters as well as posters in community locations. Additionally, direct advertising strategies were used, whereby a brief information session describing the study were presented at a number of older adult clubs, organisations, and independent living villages.

### **Participation Eligibility**

Individuals were accepted into the study if they meet the following criteria:

1. Were community dwelling. That is, living independently in a flat, home, or an independent living village without the current use of ongoing part-time or full-time living assistance.
2. Were experiencing subjective symptoms of depression, varying in severity from 5 (reflecting minimal depression symptoms) to 19 (reflecting moderately-severe symptoms of depression) on the Patient Health Questionnaire 9 (PHQ-9).
3. Had sufficient skills (e.g., early high school level) in reading, writing, and spoken English.
4. Had no serious concern (either personally or expressed by others) about their cognitive functioning compared to peers their age.
5. Had no current diagnosis for alcohol abuse, substance abuse, psychosis, or borderline personality disorder.
6. Were not be concurrently receiving psychotherapy or counseling for depression.

Fifty-six individuals expressed interest in participating in the study. Of those, 17 did not meet inclusion criteria and six declined to participate. Of the remaining 33, three participants scored below 5 on the PHQ-9, but were included in the final sample due to substantially elevated scores on a supplementary depression visual analogue scale that indicated a large incongruence with their scores on the PHQ-9. The total of 33 individuals were invited to take part in the study and seven of these declined as they were unable to attend the designated class time. A total of 26 participants began classes with a further two participants withdrawing after the first class. The two whom withdrew noted their circumstances had changed since being accepted into the study and they could no longer make a commitment to the designated class time and duration. A Consort Flow Diagram illustrating the number of participants at each time point is presented in below.

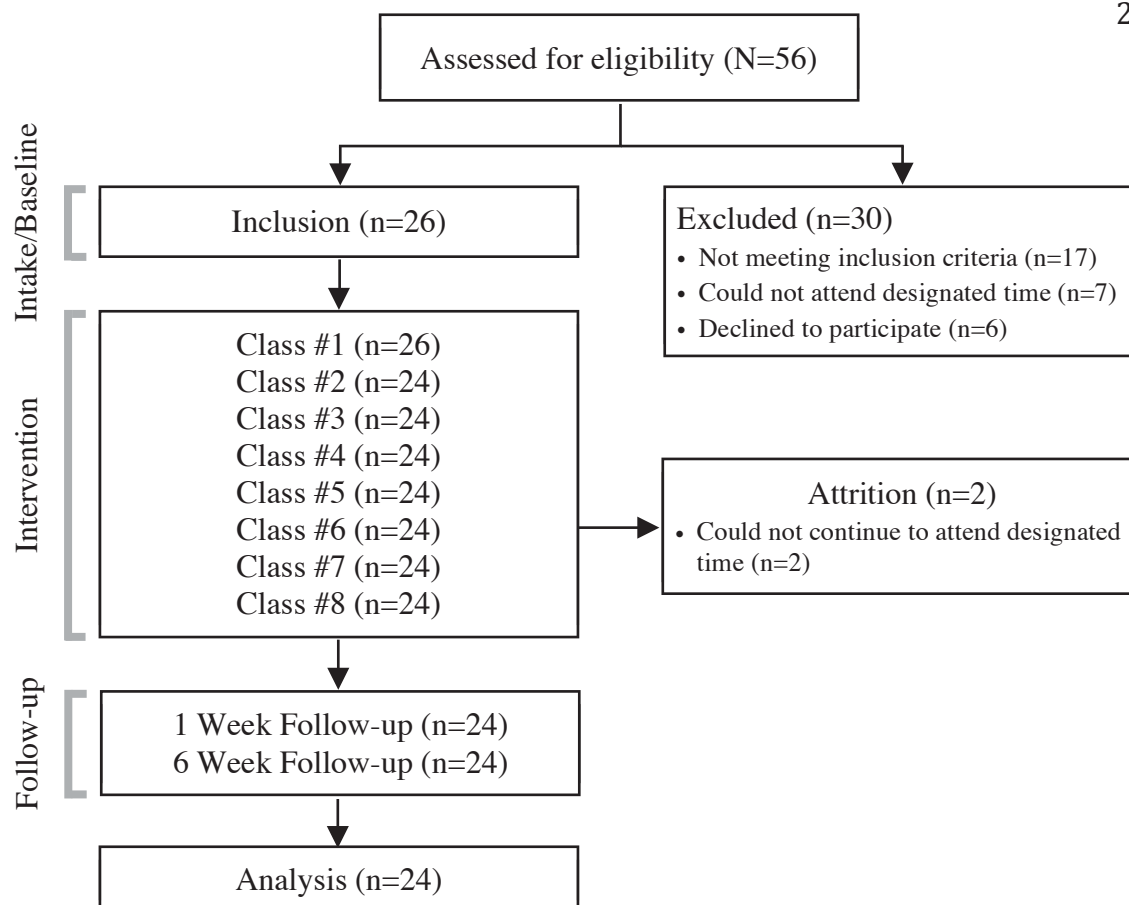


Figure 1. CONSORT Flow Diagram Illustrating the number of participants at each time point.

### Treatment Programme

The group guided LI-CBT self-help intervention used in the current study was the *Living Life to the Full* programme. The programme is based on established CBT principles and techniques and is administered primarily through a series of short manualised self-help workbooks (Williams, 2007). The programme was in a classroom style group format, facilitated by the primary researcher whom was familiar with the *Living Life to the Full* materials, and delivered over eight weekly 1.5 hour sessions. The programme predominantly focuses on the treatment of low mood, but also covered other common mental health difficulties such as anxiety, stress, and anger. Each class is centred on a single self-help workbook and individuals are encouraged to engage with and apply the material both in and out of class. The content of the self-help workbooks are supported by manualised lecture scripts, PowerPoints, worksheets, question and answer time, as well as group- and pair-

based activities. In the current study, the older adult version of *Living Life To The Full* was implemented.

### **Programme Setting and Structure**

The programme was held in the Seminar Room of the School of Psychology at Massey University at the Albany Village Precinct. Each class began with 20 minutes of tea and coffee time. During this time, participants were asked to complete psychometric measures. They were then provided with a self-help workbook and structured class activities commenced. At the first session, participants were provided with a self-help workbook titled 'Write all over the bathroom mirror'. This workbook was designed to orient individuals to the programme and give practical advice about how they could make the most out of the programme (e.g., how to stay motivated and what to do when one feels overwhelmed). Participants were additionally provided with a total of eight core self-help workbooks, one at each of the eight classes. Class topics included: Why do I feel so bad?; I can't be bothered doing anything; Why does everything always go wrong?; I'm not good enough; How to fix almost everything; The things you do that mess you up; Are you strong enough to keep your temper?; and 10 things you can do to feel happier straight away.

### **Measures**

Participants completed a range of pen and paper self-rated psychometric measures throughout the intervention. The primary outcome measures was the Patient Health Questionnaire-9 (PHQ-9) for depression.

**Patient Health Questionnaire-9 (PHQ-9).** The PHQ-9 is a nine-item self-assessment questionnaire designed as a clinical tool to aid in screening, diagnosing, and monitoring the symptoms and severity of depression. The measure's nine items were extracted from the depression module of the Primary Care Evaluation of Mental Disorders (PRIME-MD; Kroenke, Spitzer, & Williams, 2001) with each question directly corresponding to one of the the diagnostic criteria of Major Depressive Disorder outlined in the Forth Edition of the Diagnostic and Statistical Manual (American Psychiatric Association, 2000). Individuals were asked to rate from 0 (not at all) to 3 (nearly every day) how often they were bothered by each of the the nine symptoms of depression over the previous two weeks. Total scores can range from zero to 27 with scores between zero to 4 representing minimal to no depression, five to nine representing mild depression, 10 to 14

representing moderate depression, 15 to 19 representing moderately severe depression, and 20 to 27 representing severe depression.

The PHQ-9 has been extensively validated in clinical and non-clinical samples across a number of countries (Kroenke et al., 2001). For example, in a prominent validity study by Kroenke et al. (2001) the PHQ-9 demonstrated good internal consistency with a Cronbach's  $\alpha$  of 0.89. Likewise, Martin, Rief, Klaiberg, and Braehler (2006) provided support for the measures convergent validity by comparing the PHQ-9 to alternative depression measures of the modified Beck's Depression Inventory (Schmitt & Maes, 2000) and the General Health Questionnaire-12 (Goldberg & Williams, 1988) with correlation coefficients of  $r = 0.73$  and  $r = 0.59$  respectively. Importantly, the PHQ-9 has been validated amongst community samples (e.g., Martin et al., 2006), assessed for its diagnostic accuracy amongst older adult samples (e.g., Phelan et al., 2010), and has been widely used in low intensity CBT research (e.g., Clark et al., 2009), including those which utilised the *Living Life To The Full* intervention (Williams et al., 2015).

### **Data Collection**

All participants included in the study completed psychometric questionnaires at 11 different time points. At each class, measures were administered immediately prior to the class commencing. As questionnaires concerned participants retrospective recollection of their week immediately prior to each measure being administered, a one week follow-up of all measures was required to assess the impact of the final class on participants' symptomatology. Finally, to assess participants' symptom change trajectories after the intervention classes had finished, data was also collected at a 6 week follow-up. Data collection time points are presented in Table 1.

Table 1. *Data Collection Number, Description, and Measurement Time Point in Weeks*

Data collection number	Data collection description	Data time point in weeks
1	Intake	0
2	Class 1	1
3	Class 2	2
4	Class 3	3
5	Class 4	4
6	Class 5	5
7	Class 6	6
8	Class 7	7
9	Class 8	8
10	1 Week Follow-up	9
11	6 Week Follow-up	14

### Research Design

The research project was experimental and quantitative, implementing a multilevel (two levels) repeated measures (11 waves of data) longitudinal research design. The independent variable was the experimental intervention, classified as *Time* (from 0 to 14 weeks). The dependent variable was participants' self-perceived ratings of depression (PHQ-9).

### Analysis Tools

Data was analysed using the Statistical Package for Social Sciences (SPSS) for Mac, Version 22.0.

### Analysis Type

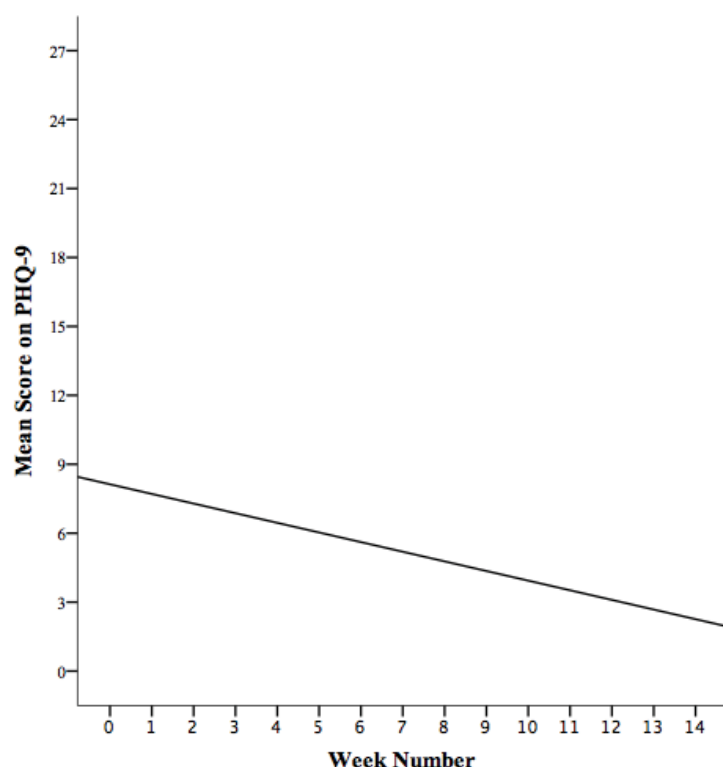
**Multi-level Modelling.** Primary analysis was performed using Multilevel Modelling (MLM; Heck, Thomas, & Tabata, 2014). The use of MLM allowed time to be treated as a continuous variable, separate to that of other individual variables of interest (Hox, Moerbeek, & Schoot, 2010). This enabled different levels of longitudinal data to be simultaneously investigated. That is, in contrast to examining group averages over time (such as in traditional methods like multiple regression), MLM considers time as a separate variable within (or nested in) individuals (Hox et al., 2010). Analysis of time within

individuals allowed the development of individual growth models, whereby individual and group trajectories could be evaluated.

## Results

### Assessment of Variance Within Participants' Ratings on PHQ-9

The study's hypothesis predicted that participants' depression severity scores would on average, decrease over time. Figure 2 demonstrates participants' average change in PHQ-9 ratings (by fitting an average OLS trajectory across all participants' ratings) across time.



*Figure 2.* Average change trajectory of depression severity as measured by the PHQ-9 across time

Figure 2 shows an average estimated intercept of 8.13 and an average estimated slope of -0.42. This indicates that the average participant had an observed PHQ-9 level of 8.13 at intake and that this decreases by an estimated 0.42 units per week. This finding supports the hypothesis that the intervention was effective in reducing participants' depression severity over time.

Table 2 *Percentage of Participant's Change Since Intake Across Time on the PHQ-9*

Participant		Measurement Time Point						
ID	Measure							
		Intake	Class 8		1 Week Follow-up		6 Week Follow-up	
		Score	Score	Percentage of change	Score	Percentage of change	Score	Percentage of change
2	PHQ-9	11	1	90.91%	1	90.91%	0	100.00%
4	PHQ-9	6	3	50.00%	2	66.67%	2	66.67%
5	PHQ-9	17	12	29.41%	11	35.29%	16	5.88%
6	PHQ-9	6	1	83.33%	4	33.33%	2	66.67%
7	PHQ-9	6	13	-116.67%	6	0.00%	9	-50.00%
9	PHQ-9	10	3	70.00%	2	80.00%	1	90.00%
10	PHQ-9	7	4	42.86%	3	57.14%	1	85.71%
11	PHQ-9	9	1	88.89%	1	88.89%	1	88.89%
12	PHQ-9	3	3	0.00%	1	66.67%	2	33.33%
13	PHQ-9	8	6	25.00%	5	37.50%	5	37.50%
14	PHQ-9	13	10	23.08%	6	53.85%	5	61.54%
15	PHQ-9	19	2	89.47%	3	84.21%	3	84.21%
16	PHQ-9	13	2	84.62%	1	92.31%	0	100.00%
17	PHQ-9	12	11	8.33%	7	41.67%	9	25.00%
18	PHQ-9	8	2	75.00%	1	87.50%	0	100.00%
19	PHQ-9	5	5	0.00%	5	0.00%	2	60.00%
20	PHQ-9	11	2	81.82%	2	81.82%	2	81.82%
21	PHQ-9	3	2	33.33%	2	33.33%	2	33.33%
22	PHQ-9	10	3	70.00%	3	70.00%	2	80.00%
23	PHQ-9	10	0	100.00%	2	80.00%	4	60.00%
25	PHQ-9	3	3	0.00%	2	33.33%	2	33.33%
26	PHQ-9	11	0	100.00%	0	100.00%	0	100.00%
27	PHQ-9	15	8	46.67%	10	33.33%	6	60.00%
28	PHQ-9	6	10	-66.67%	7	-16.67%	17	-183.33%
<b>Mean</b>	<b>PHQ-9</b>	<b>9.25</b>	<b>4.46</b>	<b>48.20%</b>	<b>3.63</b>	<b>60.81%</b>	<b>3.88</b>	<b>58.11%</b>

*Note.* Total percentages may not equal 100 due to rounding. Mean values are in bold.



As presented in Table 2, on average participants had a 58.11% decrease in depression severity across time. It was shown that these gains were maintained at both one and six week follow-up. That is, at Time 8 (Class 8) participants had improved 48.20% on average from intake, at Time 9 (one week follow-up) participants had improved 60.81% on average from intake, and at Time 14 (six week follow-up) participants had improved 58.11% on average from intake.

An additional interest in the investigation of how individuals may change over time is the examination of each participants' growth plots as this reveals information about differences in individuals' depression severity at intake and their rate of change over time. Table 3 presents the results of fitting participants' linear-change OLS regression models for PHQ-9 ratings. The table displays OLS-estimated intercepts and slopes for each participant's PHQ-9 ratings along with associated standard errors and  $R^2$  statistics. Additionally, Figure 2 presents individual growth plots for PHQ-9 ratings with fitted individual OLS regression lines.

Table 3 *Results From Fitting the Exploratory OLS Regression Model for PHQ-9 Data as a Function of Linear Time*

Participant ID	Initial status		Rate of change		$R^2$
	Estimate	Error	Estimate	Error	
2	11.080	1.517	-.964	.229	.662
4	9.476	1.377	-.690	.208	.550
5	14.502	1.242	-.161	.188	.076
6	3.895	1.139	-.116	.172	.048
7	6.551	1.356	.219	.205	.113
9	7.703	1.525	-.623	.231	.448
10	7.451	.732	-.489	.111	.684
11	6.906	1.644	-.525	.249	.331
12	3.269	.998	-.135	.151	.081
13	7.173	.598	-.219	.090	.394
14	11.978	1.177	-.403	.178	.362
15	12.760	2.089	-1.108	.316	.577
16	11.556	2.347	-.985	.355	.461
17	8.939	.909	-.027	.137	.004
18	6.244	1.515	-.435	.229	.286
19	5.715	.770	-.252	.117	.342
20	7.773	1.110	-.619	.168	.602
21	3.269	.332	-.135	.050	.444
22	9.400	.978	-.600	.148	.646
23	8.539	1.690	-.694	.256	.450
25	7.227	1.716	-.381	.259	.193
26	7.784	1.644	-.843	.249	.561
27	10.730	1.528	-.424	.231	.272
28	5.174	1.518	.540	.230	.381

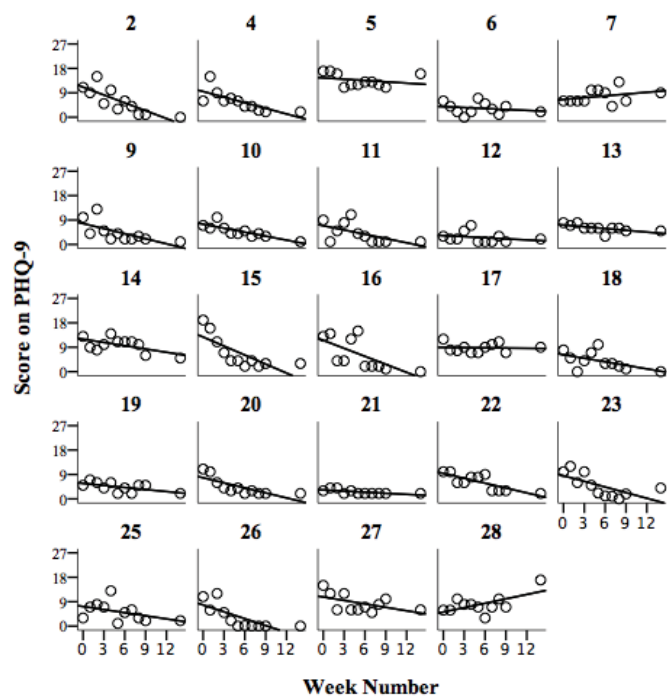


Figure 2. Individual OLS trajectories for participant's PHQ-9 ratings over time

Results from Table 3 and Figure 2 showed that 21 participants had a reduction in depression severity, one participant showed little to no average change, and two participants showed an increase in depression severity across time. Furthermore, visual inspection of each individual trajectory indicates that there is a large proportion of individual variance between initial intake ratings and rates of change in depression severity. Therefore, these analyses provide evidence of substantial within-individual and between-individual variance in PHQ-9 ratings across time. This variability thereby provides support for the study's hypothesis and for subsequent analysis using MLM analysis.

## Presenting the Results from Fitting Multilevel Models for Depression (PHQ-9) over Time

Table 4 Results from Fitting a Multilevel Model for Depression (PHQ-9) over Time

	Parameter	Model D1	Model D2	Model D3
<b>Model dependant variable</b>		Depression (PHQ-9)	Depression (PHQ-9)	Depression (PHQ-9)
<b>Model predictor variable</b>		None	Time	Time
<b>Fixed effects</b>				
Intercept (initial status)	$\gamma_{00}$	<b>5.879***</b> (0.515)	<b>8.129***</b> (0.574)	<b>8.129***</b> (0.587)
Time (rate of change)	$\gamma_{10}$	-	<b>-0.419***</b> (0.047)	<b>-0.419***</b> (0.077)
<b>Variance components</b>				
Residual (within-persons)	$\sigma^2\epsilon$	<b>11.762***</b> (1.074)	<b>8.866***</b> (0.809)	<b>7.245***</b> (0.697)
Intercept (between-persons)	$\sigma^2_0$	<b>5.284**</b> (1.837)	<b>5.547**</b> (1.836)	<b>6.334**</b> (2.392)
Time (between-persons)	$\sigma^2_1$	-	-	<b>0.099*</b> (0.041)
Covariance	$\sigma^2_{01}$	-	-	-0.324 (0.250)
<b>Pseudo R<sup>2</sup> statistics and Goodness-of-fit</b>				
Pseudo R <sup>2</sup> for residual variance	R <sup>2</sup> $\epsilon$	-	0.246	0.384
Pseudo R <sup>2</sup> for intercept variance	R <sup>2</sup> $_0$	-	-	-0.142
-2 Log Likelihood	Deviance	1442.687	1374.861	1353.462
Chi squared difference in Deviance	$\chi^2$ Change	<b>55.189**</b>	<b>67.826**</b>	<b>21.399**</b>
Bayesian information criterion	BIC	1459.415	1397.164	1386.918

*Note.* \* Indicates significance at the .05 level. \*\* Indicates significance at the .01 level. \*\*\* Indicates significance at the .001 level. Standard errors are in parentheses. Significant values are in bold.

### Model D1 (Depression Unconditional Means Model) Description

*Model D1* represents the unconditional means model for depression as measured by the PHQ-9. *Model D1* was developed as a comparison base model, which considers only the dependent variable while allowing the intercept to vary by participant (without the variable of time). Results from *Model D1* are displayed in Table 4 Column 3.

## Describing the Results from Model D1

**Model D1 fixed effects.** The fixed effect intercept estimate  $\gamma_{00}$  in the *Model D1* is 5.879 ( $p < .001$ ) and confirms that the average PHQ-9 score at intake is significantly different from zero.

**Model D1 variance components.** *Model D1* shows significant within-person residual variance ( $\sigma^2\epsilon$ ) with an estimate of 11.762 ( $p < .001$ ). *Model D1* additionally shows significant between-person variance in initial status ( $\sigma^2_0$ ) with an estimate of 5.284 ( $p < .01$ ). Taken together, these results indicate that there is significant residual variance in the model to be explained within-persons and significant initial status variance in the model to be explained between-persons. The significant variance component estimates suggest that there is unexplained variation that could be accounted for by the inclusion of additional variables into the model. This possibility is discussed next.

## Model D2 and Model D3 (Depression and Time Unconditional Growth Models) Description

Given this study's interest in investigating the effect of the intervention on participants' ratings of depression over time, the effect of *time* is included in the unconditional growth models *Model D2* and *Model D3*. In *Model D2*, the added effect of time was included into the base model (unconditional means model for depression) to investigate whether depression scores change significantly over time during the intervention. Thus, *Model D2* fits a linear model for change in PHQ-9 scores over time. *Model D2* also allowed the intercept to vary by participant (thus, making the assumption that participants level of depression at intake were not equal). Results from *Model D2* is displayed in Table 4 Column 4

In *Model D3*, the study investigated whether the effect of time on peoples' depression might be significantly different for people given the premise that participants' rate of change will likely be different across different people (e.g., that potential changes as a result of the intervention maybe faster or slower for different individuals). Thus, *Model D3* expanded on *Model D2* to also include the random effect of time, that is *Model D3* allows the rate of change (i.e., changes in depression) to vary over time *and* across participants. Thus, *Model D3* fits a linear model for change in PHQ-9 scores over time while allowing both the intercept *and* slope of time to vary by participant. Results from *Model D3* are

displayed in Table 4 Column 5.

### **Describing the Results from Model D2 and Model D3**

**Model D2 and Model D3 fixed effects.** The fixed effects of intercept ( $\gamma_{00}$ ) and rate of change ( $\gamma_{10}$ ) in *Model D2* and *Model D3* estimate the average change trajectory in depression severity over time. As Table 4 indicates, the fixed effects in *Model D2* and *Model D3* are identical. In particular, the fixed effect intercept estimate ( $\gamma_{00}$ ) in *Models D2* and *Model D3* are 8.129 and the fixed effect rate of change estimate across both models ( $\gamma_{10}$ ) are -0.419. Both  $\gamma_{00}$  and  $\gamma_{10}$  in both models were significant at  $p < .001$ . Therefore, the results suggest that there is a strong significant effect of time on depression, whereby for every unit of time increase (e.g., per week from intervention intake), on average participants show a decrease in depression severity on the PHQ-9 of 0.419 units. Furthermore, these results are identical regardless of whether the rate of change is allowed to vary across participants.

**Model D2 and Model D3 variance components.** *Model D2* and *Model D3* show significant within-person residual variance ( $\sigma^2\epsilon$ ) with estimates of 8.866 ( $p < .001$ ) and 7.245 ( $p < .001$ ) respectively. This indicates that there is significant within-person residual variance to be explained within the model. The decrease of 2.896 units from *Model D1* to *Model D2* and 4.517 units from *Model D1* to *Model D3* indicates that the reduction in within-person residual variance can be explained by the addition of time within the model. Moreover, this also indicates that a greater proportion of within-person residual variance can be explained when allowing both intercepts and rates of change to vary across participants. According to Pseudo  $R^2$  statistics, 38.4% of within-person residual variance can explained by the addition of time within *Model D3* compared to *Model D1*.

*Model D2* and *Model D3* show significant between-person variance in initial status ( $\sigma^2_0$ ) with estimates of 5.547 ( $p < .01$ ) and 6.334 ( $p < .01$ ) respectively. This indicates that there is significant between-person variance in initial status to be explained within the model. The increase of 0.263 units from *Model D1* to *Model D2* and 1.050 units from *Model D1* to *Model D3* indicates that the additional variable of time explains a smaller degree of between-person variance in initial status in *Model D2* and *Model D3* compared to *Model D1* and that this reduction is more pronounced when allowing both intercepts and rates of change to vary across participants. According to Pseudo  $R^2$  statistics, the addition of time

within *Model D3* explains 14.2% less between-person variance in initial status compared to *Model D2*.

Importantly, *Model D3* shows a significant between-person variance in time ( $\sigma^2_1$ ) with an estimate of 0.099 ( $p < .05$ ). Despite  $\sigma^2_1$  being relatively small, this indicates that the rate of change in depression over time significantly varies across people (e.g., that peoples' depression severity changes at significantly different rates) and that this significant between-person variance in average rate of change in PHQ-9 scores may be explained by additional variables.

The population covariance ( $\sigma^2_{01}$ ) of variance components  $\sigma^2_0$  and  $\sigma^2_1$  was -0.324 and non-significant. This indicates that there is insufficient evidence to conclude that those with higher PHQ-9 scores at intake (i.e., greater depression severity) experience slower or faster rates of recovery over time.

**Model D2 and Model D3 goodness-of-fit.** According to Pseudo  $R^2$  statistics, the increases in  $R^2_e$  from 0.246 in *Model D2* to 0.384 in *Model D3*, highlights that the additional parameter of allowing rates of change (as well as intercepts) to vary across participants represents a greater model fit in *Model D3* compared to *Model D2*. This is further supported by decreases in BIC values, with a decrease of 62.251 units from *Model D1* to *Model D2*, and a further decrease of 10.246 units from *Model D2* to *Model D3*. In order to test whether such changes are significant, Deviance values were compared. Subsequently, Deviance statistics show similar findings to BIC values, with a significant  $\chi^2$ Change of 67.826 ( $p < .01$ ) between *Model D1* and *Model D2* and a significant  $\chi^2$ Change of 21.399 ( $p < .01$ ) between *Model D2* and *Model D3*. These results indicate that it is important to model the variability of both intercepts and slopes across participants, for when these parameters are accounted for the model is subsequently significantly improved.

### Summary of Results

Preliminary evaluation of the current subset of data identified that on average, participants showed a significant decrease in depression severity across time. It was shown that these gains were maintained at both one and six week follow-up. While group averages decreased over time, it was noteworthy that one participant showed little to no average change, and two participants showed an increase in depression severity across time. Secondary analysis using Multilevel Modelling indicated that there was a strong significant

effect of time on depression ( $p < .001$ ), whereby for every unit of time increase (e.g., per week from intervention intake), on average participants showed a decrease in depression severity on the PHQ-9 of 0.419 units. Additionally, results also indicated a significant between-person variance in time with an estimate of 0.099 ( $p < .05$ ), indicating that the rate of change in depression over time significantly varied across people.

### Discussion

The current research considered the effect of group-based CBT self-help programme *Living Life to the Full* for community dwelling older adults' ratings of depression in New Zealand. The data used for evaluation reflects a subset of data collected from a larger study, which in addition to depression, investigated the additional variables of anxiety, quality of life, and engagement.

Overall, results from statistical analysis support the research hypothesis that on average *The Living Life to the Full* programme would result in significant reductions in participants' reported symptoms of depression over time. Moreover, the findings were consistent with other studies that have demonstrated the efficacy of guided LI-CBT self-help (e.g., Gellatly et al., 2007), that of group guided LI-CBT self-help in adults (e.g., Williams et al., 2015), and more recently group guided LI-CBT self-help with older adults (e.g., Khatri et al., 2015)

The results of the current study are encouraging, however, it is important to note that while the vast majority of participants showed improvement, this varied significantly across participants, and a small percentage of participants showed no improvement over time. While it is not possible to accurately determine the reasons for this lack of improvement, as Williams and Chellingsworth (2010) argue, it is likely that some individuals may prefer to work or may respond better to therapeutic content delivered in different ways. That is, some may prefer or responds better to working with CBT content at a slower pace or with one-to-one contact (Williams & Chellingsworth, 2010). Additionally, the structure of group classes or the focus of the low intensity content may be less suitable for individuals who present with more complex, severe, or comorbid forms of mental health needs (Ridgway & Williams, 2011). As such, it may be possible that some participant's needs were not being sufficiently meet in class, and t they may require more high intensity psychological services. Finally, the significant between-person variance suggests that other



factors may also be contributing to individual's outcomes over time. As such, additional factors such as participant's motivation or engagement with therapy content in and out of session may moderate their treatment gains.

### **Limitations**

There are several limitations that are evident in the current study. First, despite the advantages of Multilevel Modelling and its ability to account for both individual and group trajectories, the current participant sample was not compared to control group. As such, overall improvements may represent factors outside of the intervention, although the high significance levels appear to indicate a lower probability of such an error. Regardless, future research would thereby benefit by including a wait-list control to address this.

Another limitation was the high proportion of females to males (e.g., 87.5% to 12.5% respectively) represented in the study sample. While the current study included 24 participants, Kahtri et al.'s (2015) study that consisted of 222 older adults also had a gender bias with 89% identifying as female. While this may reflect a fair representation of the proportion of females that engage with such group interventions, it does not provide sufficient evidence to conclude its efficacy of the intervention with a male sample. Thus, further research should consider incentives to recruit samples with more balanced gender samples.

Furthermore, of those participants who were accepted into the study, the average score on the PHQ-9 at intake was 9.25/27 (classified as mild depression). The consequence of this was that it limited participant's opportunity to demonstrate improvement using the PHQ-9. Thus, the true effect of the intervention may not be meaningfully represented in this study. Additionally, with little room for improvement, visual analysis of data indicated that for some participants, floor effects were apparent. As such, future research may benefit from identifying psychometric measures that more sensitively capture the lower symptom severity inherent in mild depression symptomology.

Lastly, another limitation was the length of the follow-up measurement points. The six week follow-up was helpful in identifying whether improvements were maintained beyond that of classes, however, the time frame did not provide sufficient information to evaluate the longer term implications of outcome changes. Thus, further research should also consider more long-term outcomes over an extended length of time.

### **Contribution to Literature and Implications for Clinical Practice in New Zealand**

Despite the aforementioned limitations, this study contributed provides further empirical support concerning the general efficacy of the *Living Life to the Full* programme, but more specifically, it provides preliminary support for the programme's efficacy in reducing depression symptomatology when applied to a community dwelling older adults in a New Zealand setting. Given both the cost-effective and time-efficient nature of group guided LI-CBT self-help, this contributes to the growing body of literature identifying evidence-based treatment alternatives to high intensity one-to-one therapy. Thus, such interventions may help increase treatment access and choice, contribute to the reduction of secondary mental health service load, minimise potential treatment barriers, and importantly support older adults' self-efficacy to support themselves and remain in the community of their choosing. Additionally, this evidence supports New Zealand's Ministry of Health's (Ministry of Health, 2012) focus on working toward an uptake of evidence-based low intensity self-help options for common mental health difficulties (such as depression), while also supporting the future implementation of guided LI-CBT self-help interventions into a New Zealand stepped health care as an early treatment option (prior to high intensity one-to-one therapy) for symptoms of depression.

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