

Running Head: THIRD WAVE MINDFULNESS-BASED CBT FOR OLDER PEOPLE

A meta-analysis of third wave mindfulness-based cognitive behavioral therapies for older  
people

Naoko Kishita

University of East Anglia

Yuko Takei

University of Miyazaki Hospital

Ian Stewart

National University of Ireland Galway

#### Author Note

Naoko Kishita, PhD, Department of Clinical Psychology, Norwich Medical School, University of East Anglia, Norwich, UK, [N.Kishita@uea.ac.uk](mailto:N.Kishita@uea.ac.uk); Yuko Takei, PhD, Faculty of Medicine, University of Miyazaki Hospital, [yuko\\_takei@med.miyazaki-u.ac.jp](mailto:yuko_takei@med.miyazaki-u.ac.jp); Ian Stewart, PhD, School of Psychology, National University of Ireland Galway, [ian.stewart@nuigalway.ie](mailto:ian.stewart@nuigalway.ie).

Correspondence concerning this article should be addressed to Dr Naoko Kishita, Department of Clinical Psychology, Norwich Medical School, University of East Anglia, Norwich, NR4 7TJ, UK. Email: [N.Kishita@uea.ac.uk](mailto:N.Kishita@uea.ac.uk).

The word count of the body text: 3,482

Keywords: acceptance and commitment therapy; mindfulness; mindfulness-based cognitive therapy; depression; anxiety.

Key points:

- Third wave mindfulness-based CBT for late life depression is moderately effective.
- Observed efficacy of third wave mindfulness-based CBT on late life anxiety may not be robust.
- There is an urgent need to conduct RCTs comparing ACT and MBCT with other types of psychotherapy in older people to provide up-to-date evidence on psychological treatment options for older clients.

### **Abstract**

**Objectives:** To review the effectiveness of third wave mindfulness-based cognitive behavioral therapies (CBT) for depressive or anxiety symptomatology in older adults across a wide range of physical and psychological conditions.

**Methods:** Electronic literature databases were searched for articles and random-effects meta-analysis was conducted.

**Results:** Ten studies met the inclusion criteria, of which nine reported the efficacy of interventions on depressive symptoms and seven on anxiety symptoms. Effect-size estimates suggested that mindfulness-based CBT is moderately effective on depressive symptoms in older adults ( $g = 0.55$ ). The results demonstrated a similar level of overall effect size for anxiety symptoms ( $g = 0.58$ ). However, there was a large heterogeneity and publication bias was evident in studies reporting outcomes on anxiety symptoms and thus this observed efficacy for late-life anxiety may not be robust. The quality of the included studies varied.

Only one study used an active psychological control condition. There were a limited number of studies that used an intent-to-treat (ITT: last observation carried forward method) analysis and reported appropriate methods for clinical trials (e.g., treatment-integrity reporting).

**Conclusions:** Third wave mindfulness-based CBT may be robust in particular for depressive symptoms in older adults. We recommend that future studies a) conduct RCTs with ITT to compare mindfulness-based CBT with other types of psychotherapy in older people; and b) improve study quality by using appropriate methods for checking treatment adherence, randomization, and blinding of assessors.

(230/250 words)

### Introduction

Most countries in the world today face rapidly ageing populations, and growth in numbers of older individuals is projected to be even faster in coming decades (United Nations, 2015). Generally, affective disorders, such as depression and anxiety, are less prevalent among older than younger people (e.g., Kessler *et al.*, 2010; Scott *et al.*, 2008). However, certain subgroups of older people such as those with Parkinson's disease (e.g., Pontone *et al.*, 2009) or dementia (e.g., Ballard *et al.*, 2000), or residents of long-term care homes (e.g., Seitz *et al.*, 2010) are at relatively greater risk of developing psychological difficulties. With increased longevity, there will be an increasingly large population of older adults needing psychological therapies to maintain higher levels of quality of life in the face of age-related challenges.

Standard Cognitive Behavior Therapy (CBT) is an acceptable treatment for older people with depressive and anxiety disorders and is significantly more effective than treatment as usual or being on a waiting list (Gould *et al.*, 2012a; Gould *et al.*, 2012b; Krishna *et al.*, 2011). However, the between-group difference favoring CBT for older adults is not statistically significant when CBT is compared with an active control condition (e.g., pharmacotherapy or other psychotherapies) (Gould *et al.*, 2012a; Gould *et al.*, 2012b; Krishna *et al.*, 2011). A recent review of a series of meta-analyses (Cuijpers *et al.*, 2011) demonstrated that all psychotherapies (e.g., CBT, psychodynamic therapy, interpersonal psychotherapy) are more or less equally effective in treating depression, and although there may be small differences, such differences are not very stable. This suggests we need to investigate other psychological approaches that may augment CBT to increase the efficacy of interventions for older clients.

Previous meta-analyses of CBT with older adults also indicated methodological limitations of included studies such as inadequate randomization and completer samples

suggesting the potential risk of selection bias. In addition, considering that most evidence on CBT with older people is from the United States (Krishna *et al.*, 2011) and that early studies recruited relatively younger-old participants (i.e., individuals at 55 years and over) (Gould *et al.*, 2012a; Gould *et al.*, 2012b), it is unclear to what extent findings are generalizable to countries under a different health care system or to the current cohort of older people.

There is growing evidence that so-called 'third wave' mindfulness-based CBT approaches have positive effects on a wide range of physical conditions and psychological disorders. These approaches include Acceptance and Commitment Therapy (ACT; Hayes *et al.*, 1999), Mindfulness-Based Cognitive Therapy (MBCT; Segal *et al.*, 2002), and Dialectical Behavior Therapy (DBT; Linehan, 1993) (Hayes, 2004).

The focus of ACT is to help clients develop psychological flexibility—the ability to contact the present moment more fully as a conscious human being, and to change or persist in behavior when doing so serves valued ends (Hayes *et al.*, 2006). ACT interventions focus around three main processes: 1) facilitating nonjudgmental present-focused awareness in interacting with private experiences (i.e., thoughts, images, emotions, memories) which are out of personal control, 2) facilitating detachment from negative or critical self-thoughts, and greater acceptance and kindness toward oneself, and 3) discovering what is most important to one's true self and building larger patterns of effective action based on such values.

MBCT is a group intervention recommended by the National Institute for Health and Care Excellence (NICE, 2009) as an intervention to prevent relapse in people who have experienced three or more episodes of depression. MBCT combines elements of mindfulness practice with techniques drawn from cognitive therapy (Segal *et al.*, 2002). It focuses on helping individuals to become more aware of thoughts and feelings and to relate to them in a wider, decentered perspective as "mental events" rather than as aspects of the self or reflections of reality (Teasdale *et al.*, 2000).

Although distinct approaches, ACT and MBCT share common processes. Both pay greater attention to the context and functions of private events and emphasize helping individuals respond to them with greater flexibility through strategies such as acceptance and mindfulness rather than directly modifying or removing them *per se*. These approaches may offer particular utility for older people given the types of issues (e.g., loss of family and physical independence) they face as they age (Karlson *et al.*, 2013). A traditional CBT approach that might challenge the validity of older people's thoughts concerning loss or disablement, may be less beneficial because such thoughts, while excessive and maladaptive, may not be unrealistic (Petkus and Wetherell, 2013). An acceptance approach in which individuals learn to focus on their remaining resources may be better. Furthermore, Geiger *et al.* (2016) note that interventions emphasizing the willingness to accept and experience the present moment may be consistent with older adults' natural emotion regulation strategies as they tend to demonstrate greater emotional resilience and are likely to be more accepting than younger adults when faced with emotional conflicts (e.g., Charles and Carstensen, 2010).

Despite growing interest in third wave mindfulness-based CBT for older adults, no previous review has examined efficacy in this context. The current meta-analysis, therefore, aims to provide evidence on the effectiveness of mindfulness-based CBT (i.e., ACT and MBCT) on depressive and anxiety symptoms in older adults. DBT was excluded from the current review as this approach has been mainly tested in RCTs for the treatment of borderline personality disorder (Panos *et al.*, 2014). The current study also reviews the methodological quality of the protocols used, to identify directions for future research.

## **Methods**

### **Inclusion and Exclusion Criteria**

We included studies that (a) examined the pre-post or controlled effects of a manualized mindfulness-based CBT (i.e., ACT, MBCT) for depressive or anxiety symptoms with a wide range of physical and psychological conditions; (b) recruited participants aged 60 and older (e.g., through health care services for older people); (c) reported sufficient information to compute an effect size; (d) were published in peer-reviewed journals; and (e) were written in English. Studies were excluded if they (a) included participants with severe cognitive impairments; (b) did not aim to examine treatment effects; or (c) reported data that overlapped with data from other included studies (e.g., secondary analysis of existing data).

### **Search Strategies**

We searched electronic databases MEDLINE (all text), PsycINFO (all text), Scopus (title, abstracts, keywords), and Cochrane Central Register of Controlled Trials (title, abstracts, keywords) on March 7, 2016. We used terms for mindfulness-based CBT (acceptance and commitment therapy, acceptance-based, acceptance based, mindfulness, mindfulness-based, MBCT), and the older adult population (older adult\* [people, person], old adult\* [people, person], elder\*, late-life, geriat\*, senior\*). We also examined a list of publications relevant to mindfulness-based interventions on the website of the Association for Contextual Behavioral Science (<https://contextualscience.org/publications>). Manual searches of references of individual empirical trial papers were also completed to detect any potential missing references.

### **Coding Procedure**

Information was extracted independently by two authors (NK and YT) using an electronic data extraction sheet purposely designed for the current meta-analysis. Agreement between the two coders was 94%. Disagreements were resolved through discussion and consensus was obtained.

For each included study, information was recorded on (a) the country where research was conducted; (b) the main treatment target (e.g., chronic pain); (c) the type of sample collected (e.g., nursing care home residents); (d) participants' age range and mean age; (e) type of treatment condition (i.e., ACT or MBCT); (f) the treatment manual used; (g) ACT or MBCT training experiences of therapists; (h) gerontological training experiences of therapists; (i) age-specific modifications made to the standard treatment protocol; (j) format of therapy (i.e., individual or group); (k) number of sessions; (l) outcome measure of depressive and/or anxiety symptoms used; and (m) means, standard deviations, and sample size for the outcome measures in the treatment condition at pre- and post-test. For randomized controlled trials (RCT), we also extracted data on (n) the type of control condition (e.g., waiting list); and (o) means, standard deviations, and sample size for the outcome measures in the control condition at pre- and post-test.

Means and standard deviations were extracted from intent-to-treat (ITT: last observation carried forward method) samples when available. We chose symptom-specific anxiety scales as the primary outcome measures of anxiety symptoms (e.g., the Pain Anxiety Symptoms Scale for studies targeting chronic pain, the Penn State Worry Questionnaire for studies targeting generalized anxiety disorder). General measures of anxiety symptoms (e.g., Depression Anxiety Stress Scales) were chosen as the main outcome measure for studies without a symptom-specific anxiety scale.

For the purpose of assessing quality of each included study, the following information was also extracted: (a) method of treatment adherence reporting; (b) administration of measures at follow-up; and (c) use of validated mindfulness or acceptance measures (e.g., Mindfulness Attention and Awareness Scale). For controlled studies, we also extracted data on (d) type of data analyses (i.e., intention-to-treat, completers only); (e) randomization



method; (f) whether assessors were blind regarding allocation to group; and (g) whether amount of time in treatment was equal across groups.

### **Statistical Methods**

All data were analyzed using Comprehensive Meta-Analysis software (Borenstein and Rothstein, 1999). Using means and standard deviations, we calculated the effect size (Hedge's  $g$ ), its 95% confidence interval, and the associated  $z$  and  $p$  values for each included study. In pre-post studies, when correlations between pre- and post-treatment outcomes were not available, a conservative estimate ( $r = .7$ ) recommended by Rosenthal (1993) was used. As indicators of heterogeneity, the  $Q$ -statistic and the  $I^2$ -statistic were computed.

Duval and Tweedie's trim-and-fill approach, which allows imputation of missing studies, was used to calculate the adjusted effect size estimate, allowing publication bias. Rosenthal's Fail-safe  $N$  was used to compute the number of missing studies needed to be retrieved and incorporated in the analysis to reduce the overall effect size to a non-significant level. If only a few studies are required to nullify the observed effect, this suggests that the observed overall effect may not be robust.

## **Results**

### **Study Selection**

Figure 1 presents a flow diagram illustrating the study selection process. Our search yielded 489 citations and the abstracts of 329 were examined after removing duplicate publications. The first author excluded 307 articles based on abstract as clearly irrelevant to the present research question. Two authors (NK and YT) reviewed the remaining 22 full articles independently. Applying the inclusion criteria resulted in the identification of 10 studies. One study which recruited participants through health care services for older people (Splevins et al., 2009) included four individuals aged under 65; however, the majority of

participants (81%) were over the age of 65 and thus we decided to retain this study. There were no disagreements on the included studies.

### **Characteristics of Included Studies**

Characteristics of the studies included in the meta-analysis are presented in Table 1 and 2. A total of 330 older adults participated in mindfulness-based CBT studies (Treatment  $n = 248$ , Control  $n = 82$ ). Five ACT studies (RCT  $n = 3$ , pre-post study  $n = 2$ ) and five MBCT studies (RCT  $n = 2$ ; pre-post study  $n = 3$ ) were identified. Of the five RCTs, one study compared the efficacy of treatment condition (i.e., ACT) with an active psychological control treatment (i.e., standard CBT). The other four studies used either a waitlist control condition or a non-psychological treatment condition.

Nine studies reported the mean age of participants; this was above 70 in seven studies and 64 in the remaining two. Most studies recruited community-dwelling individuals and only three included nursing home and aged care service residents. The primary treatment target in included studies was psychological distress (anxiety, depression, stress, bereavement) with only three addressing efficacy for physical distress (i.e., chronic pain).

Two ACT studies delivered interventions in an individual format, but all others used a group format. Eight studies reported that all therapists involved had received training in ACT or MBCT. Only three studies employed therapists with training in geriatric psychology. Five studies indicated that they made some age-specific modifications to the standard treatment manual to meet the needs of older people. These amendments were mainly procedural such as shortening the session length, providing the option of sitting on a chair to do an exercise rather than lying on the floor, and simplifying walking meditation to avoid compromising balance. Two studies reported employing additional treatment components based on a gerontological theory (i.e., selective optimization with compensation) to overcome barriers in

taking committed actions toward one's values when faced with age-related losses (e.g., of physical independence).

### **Synthesis of Results**

***Effect on late-life depression.*** Nine studies included a measure of depressive symptoms among the outcome measures. Effect sizes varied among these studies from not effective ( $g = 0.14$ ) to large and positive ( $g = 1.63$ ) (Figure 2). The random effect model showed an overall effect size of  $g = 0.55$  (95% CI = 0.34-0.75). This indicates a significant moderate effect of mindfulness-based CBT for depressive symptoms among older adults ( $Z = 5.26, p < .01$ ). There was significant moderate heterogeneity between study effect sizes ( $Q(8) = 16.82, p < .05; I^2 = 52.48$ ). Subgroup analysis showed no significant difference in controlled effect size between ACT and MBCT ( $p = 0.15$ ).

***Effect on late-life anxiety.*** Seven studies included a measure of anxiety symptoms among the outcome measures. Effect sizes varied from not effective ( $g = 0.23$ ) to large and positive ( $g = 1.90$ ) (Figure 3). The random effect model showed an overall effect size of  $g = 0.58$  (95% CI = 0.27-0.88), indicating a significant medium effect of mindfulness-based CBT for anxiety symptoms among older adults ( $Z = 3.69, p < .01$ ). There was significant high heterogeneity between study effect sizes ( $Q(6) = 23.06, p < .01; I^2 = 73.98$ ). Subgroup analysis demonstrated no significant difference in controlled effect size between ACT and MBCT ( $p = 0.25$ ).

### **Publication Bias**

***Studies on late-life depression.*** Duval and Tweedie's trim-and-fill approach suggested one potentially missing study which, if imputed, would increase overall effect size to  $g = 0.59$  (95% CI = 0.47-0.71). Rosenthal's Fail-safe N approach indicated 143 failed trials would be needed before the combined two-tailed p-value would exceed .05, suggesting the observed effect sizes may be robust.

*Studies on late-life anxiety.* Duval and Tweedie's trim-and-fill approach suggested two potentially missing studies which, if imputed, would decrease the overall effect size to  $g = 0.56$  (95% CI = 0.43-0.70). Rosenthal's Fail-safe N approach indicated 86 failed trials would be needed before the combined two-tailed p-value would exceed .05, suggesting the observed effect sizes may not be robust.

### **Study Quality**

Only three of 10 studies conducted a treatment adherence check by using video or audio recordings of treatment sessions. Five studies administered measures at follow-up. The follow-up period varied between one and six months. Of these five studies, four conducted a statistical analysis on the follow up data and demonstrated that the effects were maintained over time. These maintenance effects were observed in both anxiety and depressive symptoms. Five studies used validated measures of acceptance or mindfulness for evaluating the process of change in mindfulness-based CBT. All studies demonstrated statistically significant improvements in process measures either from pre to post intervention or pre to follow-up time periods.

For controlled studies, two of five studies used ITT. Two studies performed randomization using an appropriate method (e.g., a random number table generated by an independent researcher) and the assessors were blind to participant allocation in two studies. Two studies showed time equalization across treated and untreated conditions.

### **Discussion**

The current meta-analysis found mindfulness-based CBT to be an effective treatment for depressive symptoms among older people ( $g = 0.55$ ). Results showed a similar level of overall effect size for late-life anxiety ( $g = 0.58$ ). However, there was a large heterogeneity

and publication bias for studies reporting outcomes on anxiety symptoms and thus the observed overall effect on late-life anxiety may not be robust.

A recent meta-analysis of RCTs on the efficacy of ACT involving adults of all ages demonstrated that ACT was significantly superior to control conditions (e.g., waitlist, psychological placebo) for anxiety/depression ( $g = 0.37$ ), addiction ( $g = 0.40$ ), somatic complaints ( $g = 0.58$ ), and other mental disorders ( $g = 0.92$ ) (A-Tjak *et al.*, 2015). A meta-analysis of RCTs on the efficacy of MBCT for all ages demonstrated that MBCT for depression was significantly superior to treatment as usual when measured using the Hamilton Rating Scale for Depression (weighted mean difference:  $WMD = -4.31$ ) and Beck Depression Inventory ( $WMD = -7.33$ ) (Galante *et al.*, 2012). In the study of Galante *et al.* (2012) between group differences were not significant for anxiety symptoms.

The current meta-analysis did not focus on RCTs only due to the limited number of relevant studies and comparing the efficacy of treatments using separate meta-analyses is problematic given variances in methodology and levels of heterogeneity. However, the results suggest that there is a potential benefit from mindfulness-based CBT in older adults which warrants further investigation to provide a more definite conclusion.

One of the strengths of the current meta-analysis was that the average age of participants was relatively high; for example, it was above 80 years for three studies and above 70 years for four studies. Three studies recruited participants from residential aged care services. Some earlier studies of traditional CBT recruited older people from the age of 55 into the studies (e.g., Stanley *et al.*, 1996; Wetherell *et al.*, 2003) and participants in such studies tend to be relatively healthy older adults without multimorbidity. These samples may not reflect the characteristics of clients whom therapists typically see in the services today. Because third wave mindfulness-based CBT is an emerging area of research and most of the

studies in the current meta-analysis were conducted within the last five years, participants in these studies are likely more similar to the current cohort of older people.

The quality of the included studies was not optimal. The number of RCTs was limited and only two studies employed ITT analysis which more closely reflects real-life in which not every client fully adheres to treatment (i.e., more realistic estimate of the outcome). Only one study compared the efficacy of interventions with another type of psychological therapy (Whetherell *et al.*, 2011). This study showed a significant large effect of ACT on late-life depression compared to standard CBT ( $g = 1.63$ ). There were no significant group differences for anxiety symptoms ( $g = 0.23$ ). There is little evidence of the superiority of third wave mindfulness-based CBT over traditional CBT or other forms of psychotherapy among older adults and thus no conclusion can be drawn without further research directly comparing treatment options for older clients.

All studies except for one used the standardized treatment manual or a manual developed specifically for the study concerned. However, only three studies used audiotaped or videotaped sessions to monitor treatment adherence. The majority of therapists in the included studies had received training in ACT or MBCT prior to the trial but only three studies recruited therapists experienced in gerontological practices. This is particularly important when working with older clients as psychological problems they experience may be qualitatively different from those of younger people (e.g., physical comorbidity, loss experiences). Karel *et al.* (2012) note that to meet the needs of an aging population, therapists need to become more familiar with methods relevant to geropsychological practice.

Finally, two studies reported that they used treatment components based on a gerontological theory (i.e., selective optimization with compensation: SOC) in addition to the standard mindfulness-based CBT interventions. The SOC model provides a general theoretical framework for understanding processes of developmental regulation over the

entire life span (Baltes and Baltes, 1990). The theory outlines a restriction of involvement in activities in response to lost capacity and how an individual can augment their reserves in order to continue functioning and meet goals by new means (Freund and Baltes, 2002).

Previous studies demonstrated that the use of SOC strategies in the context of illness and disability such as osteoarthritis (e.g., Gignac *et al.*, 2002) and memory decline (e.g., Hahn and Lachman, 2015) may help buffer the negative effects of these chronic conditions on everyday functioning. Whether these theoretical changes can provide additional benefits in the treatment of older people when using mindfulness-based CBT is still unknown; this might be investigated in future studies.

### **Conclusion**

This meta-analysis provided preliminary support for third wave mindfulness-based CBT as an intervention for the treatment of depression or anxiety symptoms among older adults. The findings demonstrated that the effect size of these new forms of CBT may be robust in particular for depressive symptoms in older adults. Although there are a growing number of studies of ACT and MBCT, the empirical evidence favoring its application with older people is still scarce and thus more research is clearly needed. We recommend that future studies a) conduct RCTs involving ITT to compare ACT and MBCT with other types of psychotherapy in older people; b) improve study quality by using appropriate methods for checking treatment adherence, randomization, and blinding of assessors; and c) explore factors that might augment treatment outcomes with older clients such as components of treatment manual and therapist training (e.g., geropsychological training).

### References

- Alonso MA, Lopez A, Losada A, Gonzalez JL. 2013. Acceptance and commitment therapy and selective optimization with compensation for older people with chronic pain: A pilot study. *Behav Psychol / Psicol Conductual* **21**: 59–79.
- Alonso-Fernández M, López-López A, Losada A, González JL, Wetherell JL. 2015. Acceptance and commitment therapy and selective optimization with compensation for institutionalized older people with chronic pain. *Pain Med*: Advanced online publication. DOI: 10.1111/pme.12885
- American Psychological Association. 2009. *Publication manual of the American Psychological Association sixth edition*. American Psychological Association: Washington, DC.
- A-Tjak JG, Davis ML, Morina N, Powers MB, Smits JA, Emmelkamp PM. 2015. A meta-analysis of the efficacy of acceptance and commitment therapy for clinically relevant mental and physical health problems. *Psychother Psychosom* **84**(30): 30–36. DOI: 10.1159/000365764
- Baltes PB, Baltes MM. 1990. Psychological perspectives on successful aging: The model of selective optimization with compensation. In *Successful aging: Perspectives from the behavioral sciences*, Baltes PB, Baltes MM (eds.). Cambridge University Press: Cambridge; 1–34.
- Ballard C, Neill D, O'Brien J, McKeith IG, Ince P, Perry R. 2000. Anxiety, depression and psychosis in vascular dementia: prevalence and associations. *J Affect Disord* **59**: 97–106. doi:10.1016/S0165-0327(99)00057-9.
- Borenstein M, Rothstein H. 1999. *Comprehensive meta-analysis: A computer program for research synthesis*. Biostat: Englewood, NJ.



- Charles S T, Carstensen LL. 2010. Social and emotional aging. *Annu Rev Psychol* **61**: 383–409. DOI: 10.1146/annurev.psych.093008.100448.
- Cuijpers P, Andersson G, Donker T, van Straten A. 2011. Psychological treatment of depression: Results of a series of meta-analyses. *Nord J Psychiatry* **65**: 354–364. DOI: 10.3109/08039488.2011.596570
- Foulk MA, Ingersoll-Dayton B, Kavanagh J, Robinson E, Kales HC. 2014. Mindfulness-based cognitive therapy with older adults: An exploratory study. *J Gerontol Soc Work* **57**(5): 498–520. DOI: 10.1080/01634372.2013.869787
- Freund AM, Baltes PB. 1998. Selection, optimization, and compensation as strategies of life-management: Correlations with subjective indicators of successful aging. *Psychol Aging* **13**: 531–543. DOI: 10.1037//0022-3514.82.4.642
- Galante J, Iribarren SJ, Pearce PF. 2012. Effects of mindfulness-based cognitive therapy on mental disorders: a systematic review and meta-analysis of randomised controlled trials. *J Res Nurs* **18**(2): 133–155. DOI: 10.1177/1744987112466087
- Geiger PJ, Boggero IA, Brake CA, Caldera CA, Combs HL, Peters JR, Baer RA. 2016. Mindfulness-based interventions for older adults: A review of the effects on physical and emotional well-being. *Mindfulness* **7**(2): 296–307. DOI 10.1007/s12671-015-0444-1
- Gignac MAM, Cott C, Badley EM. 2002. Adaptation to disability: Applying selective optimization with compensation to the behaviors of older adults with osteoarthritis. *Psychol Aging* **17**: 520–524. DOI: 10.1037//0882-7974.17.3.520
- Gould RL, Coulson MC, Howard RJ. 2012a. Cognitive behavioral therapy for depression in older people: A meta-analysis and meta-regression of randomized controlled trials. *J Am Geriatr Soc* **60**(10): 1817–1830. DOI: 10.1111/j.1532-5415.2012.04166.x

- Gould RL, Coulson MC, Howard R J. 2012b. Efficacy of cognitive behavioral therapy for anxiety disorders in older people: A meta-analysis and meta-regression of randomized controlled trials. *J Am Geriatr Soc* **60**(2): 218–229. DOI: 10.1111/j.1532-5415.2011.03824.x
- Hahn EA, Lachman ME. 2015. Everyday experiences of memory problems and control: the adaptive role of selective optimization with compensation in the context of memory decline. *Aging, Neuropsychol C* **22**: 25–41.  
<http://dx.doi.org/10.1080/13825585.2014.888391>
- Hayes SC. 2004. Acceptance and Commitment Therapy, Relational Frame Theory, and the third wave of behavior therapy. *Behav Ther* **35**: 639–665. doi:10.1016/S0005-7894(04)80013-3
- Hayes SC, Luoma J, Bond F, Masuda A, Lillis J. 2006. Acceptance and Commitment Therapy: Model, processes, and outcomes. *Behav Res Ther* **44**: 1–25.  
doi:10.1016/j.brat.2005.06.006
- Hayes SC, Strosahl K, Wilson KG. 1999. *Acceptance and commitment therapy: An experiential approach to behavior change*. Guilford Press: New York, NY.
- Helmes E, Ward BG. 2015. Mindfulness-based cognitive therapy for anxiety symptoms in older adults in residential care. *Aging Ment Health*: Advanced online publication. DOI: 10.1080/13607863.2015.1111862
- Karel MJ, Gatz M, Smyer MA. 2012. Aging and mental health in the decade ahead: What psychologists need to know. *Am Psychol* **67**: 184–198. DOI: 10.1037/a0025393
- Karlin BE, Walser RD, Yesavage J, Zhang A, Trockel M, Taylor CB. 2013. Effectiveness of acceptance and commitment therapy for depression: Comparison among older and younger veterans. *Aging Ment Health* **17**(5): 555–563.  
<http://dx.doi.org/10.1080/13607863.2013.789002>

- Kessler RC, Birnbaum HG, Shahly V, Bromet E, Hwang I, McLaughlin KA, ... Stein DJ. 2010. Age differences in the prevalence and co-morbidity of DSM-IV major depressive episodes: results from the WHO World Mental Health Survey Initiative. *Depress Anxiety* **27**: 351–364. DOI: 10.1002/da.20634
- Krishna M, Jauhari A, Lepping P, Turner J, Crossley D, Krishnamoorthy A. 2011. Is group psychotherapy effective in older adults with depression? A systematic review. *Int J Geriatr Psychiatry* **26**: 331–340. DOI: 10.1002/gps.2546
- Linehan MM. 1993. *Cognitive-behavioral treatment of borderline personality disorder*. Guilford Press: New York, NY.
- McCracken LM, Jones R. 2012. Treatment for chronic pain for adults in the seventh and eighth decades of life: A preliminary study of acceptance and commitment therapy (ACT). *Pain Med* **13**: 861–867. DOI: 10.1111/j.1526-4637.2012.01407.x
- Meeten F, Whiting S, Williams CM. 2015. An exploratory study of group mindfulness-based cognitive therapy for older people with depression. *Mindfulness* **6**: 467–474. DOI 10.1007/s12671-014-0279-1
- National Institute for Health and Care Excellence. 2009. *Depression in adults: recognition and management. Clinical guideline No. 90*. National Institute for Health and Care Excellence: London. available from [nice.org.uk/guidance/cg90](http://nice.org.uk/guidance/cg90)
- O'Connor M, Piet J, Hougaard E. 2014. The effects of mindfulness-based cognitive therapy on depressive symptoms in elderly bereaved people with loss-related distress: A controlled pilot study. *Mindfulness* **5**: 400–409. DOI 10.1007/s12671-013-0194-x
- Panos PT, Jackson JW, Hasan O, Panos A. 2014. Meta-analysis and systematic review assessing the efficacy of Dialectical Behavior Therapy (DBT). *Res Soc Work Pract* **24**: 213–223. doi: 10.1177/1049731513503047

- Pontone GM, Williams JR, Anderson KE, Chase G, Goldstein SA, Grill S, Hirsch ES, Lehmann S, Little JT, Margolis RL, Rabins PV, Weiss HD, Marsh, L. 2009. Prevalence of anxiety disorders and anxiety subtypes in patients with Parkinson's disease. *Mov Disord* **24**: 1333–1338. doi: 10.1002/mds.22611
- Rosenthal R. 1993. *Meta-analytic procedures for social research*. Sage: Newbury Park: CA.
- Scott KM, Von Korff M, Alonso J, Angermeyer M, Bromet EJ, Bruffaerts R, ... Williams D. 2008. Age patterns in the prevalence of DSM-IV depressive/anxiety disorders with and without physical co-morbidity. *Psychol Med* **38**(11): 1659–1669.  
<http://doi.org/10.1017/S0033291708003413>
- Segal Z, Williams JMG, Teasdale JD. 2002. *Mindfulness-based cognitive therapy for depression: A new approach to preventing relapse*. Guildford Press: New York, NY.
- Seitz D, Purandare N, Conn D. 2010. Prevalence of psychiatric disorders among older adults in long-term care homes: a systematic review. *Int Psychogeriatr* **22**(7): 1025–1039.  
DOI: 10.1017/S1041610210000608
- Splevins K, Smith A, Simpson J. 2009. Do improvements in emotional distress correlate with becoming more mindful? A study of older adults. *Aging Ment Health* **13**(3): 328–335.  
DOI: 10.1080/13607860802459807
- Stanley MA, Beck JG, Glassco JD. 1996. Treatment of generalized anxiety in older adults: A preliminary comparison of cognitive-behavioral and supportive approaches. *Behav Ther* **27**(4): 565–581. DOI: 10.1016/S0005-7894(96)80044-X
- Teasdale JD., Segal ZV., Williams JM., Ridgeway VA., Soulsby JM., Lau MA. Prevention of relapse/recurrence in major depression by mindfulness-based cognitive therapy. *J Consult Clin Psychol* **68**: 615–623. doi: 10.1037//0022-006X.68.4.615
- United Nations, Department of Economic and Social Affairs, Population Division. 2015. *World Population Ageing 2015* (ST/ESA/SER.A/390).

Wetherell JL, Afari N, Ayers CR, Stoddard JA, Ruberg J, Sorrell J, ... Patterson TL. 2011.

Acceptance and commitment therapy for generalized anxiety disorder in older adults: A preliminary report. *Behav Ther* **42**(1): 127–134.

<http://doi.org/10.1016/j.beth.2010.07.002>

Wetherell JL, Gatz M, Craske MG. 2003. Treatment of generalized anxiety disorder in older adults. *J Consult Clin Psychol* **71**(1): 31–40. [http://dx.doi.org/10.1037/0022-](http://dx.doi.org/10.1037/0022-006X.71.1.31)

[006X.71.1.31](http://dx.doi.org/10.1037/0022-006X.71.1.31)

Table 1. Selected characteristics of studies examining the efficacy of ACT and MBCT in older people.

Study First-named author	Country	Treatment target	Sample	Age range (Mean)	Treatment (N) <sup>c</sup>	Control (N) <sup>c</sup>	Therapy format	Anxiety measure	Depression measure
Alonso-Fernández, 2015	Spain	Chronic pain	Nursing care home residents	65+ (83.0)	ACT (27)	Support (26)	Group	PASS	GDS-30
Alonso, 2013	Spain	Chronic pain	Nursing care home residents	78-91 (85.4)	ACT (5)	Waitlist (5)	Group	-	GDS-10
Wetherell, 2011	US	GAD	Community	60+ (70.8)	ACT (7)	CBT (7)	Individual	PSWQ	BDI
Karlin, 2013	US	Depression	Veterans	65-90 (NA)	ACT (57)	- <sup>d</sup>	Individual	-	BDI
McCracken, 2012	UK	Chronic pain	Community	60+ (64.3)	ACT (40)	-	Group	PASS	BCMDI
Helmes, 2015	Australia	Anxiety	Aged care service residents	NA (83.0)	MBCT (26)	Activity (26)	Group	GAI	-
O'Connor, 2014	Denmark	Bereavement-related distress	Community	NA <sup>a</sup> (76.9)	MBCT (18)	Waitlist (18)	Group	-	BDI
Meeten, 2015	UK	Depression	Community	65-78 (71.3)	MBCT (9)	-	Group	DASS	DASS
Foulk, 2014	US	Depression, Anxiety	Community	61-89 (72.9)	MBCT (37)	-	Group	HADS-A	GDS-15
Splevins, 2009	UK	Depression, Anxiety, Stress	Community	49-79 <sup>b</sup> (65.0)	MBCT (22)	-	Group	DASS	DASS

*Note.* ACT = Acceptance and Commitment Therapy; Activity = Activity-based control treatment focused on personal experiences and reminiscing (e.g., role of weddings, nautical life, air travel); BCMDI = British Columbia Major Depression Inventory; BDI = Beck Depression Inventory-II; Community = Community-dwelling individuals; GAI = Geriatric Anxiety Inventory; GDS = Geriatric Depression Scale (10-, 15-, and 30-item versions); DASS = Depression, Anxiety and Stress Scales; HADS-A = Hospital Anxiety and Depression Scale Anxiety subscale; MBCT = Mindfulness-Based Cognitive Therapy; PASS = Pain Anxiety Symptoms Scale; PSWQ = Penn State Worry Questionnaire; Support = Minimal support condition (a 2 h educational group session about factors that can influence pain conditions and pain perception and information about Selective Optimization with Compensation strategies).

- The age range of participants in the original study published in 2010 was 65-80. Participants were recruited through a 4-year follow-up to this original questionnaire study.
- Four out of 22 participants were aged under 65. They were carers for someone over 65.
- N at post-test.
- This study compared the efficacy of ACT among younger (18-64) versus older (65+) veterans. The pre- and post-data for the older veteran group was used for the purpose of the current meta-analysis.

Table 2. Therapist and treatment characteristics for ACT/MBCT studies with older people.

Study First-named author	Treatment protocols	No. of sessions	Training experiences of therapist(s) reported		Age-specific modifications made to the standard manual
			ACT/ MBCT	Geriatric/ Geropsy	
Alonso- Fernández, 2015	ACT-SOC (Alonso et al., 2013)	2h x 9	Y	Y	Training in SOC strategies was added to help individuals to continue engaging in committed actions despite the presence of age related losses (e.g., physical independence).
Alonso, 2013	Protocol developed based on Hayes et al. (1999), Hayes & Duckworth (2006), and Baltes et al. (1999)	2h x 10	Y	Y	Training in SOC strategies was added to help individuals to continue engaging in committed actions despite the presence of age related losses (e.g., physical independence).
Wetherell, 2011	Protocol developed based on Hayes et al. (1999)	1h x 12	Y <sup>c</sup>	-	-
Karlin, 2013	ACT for depression in veterans (Walser et al. in press)	12-16 <sup>a</sup>	Y	-	-
McCracken, 2012	ACT for chronic pain (McCracken, 2005)	6.5h x 5 days pw over 3-4 weeks	-	-	-
Helmes, 2015	MBCT manual (Segal et al., 2002)	1.5h x 8	Y	-	The length of each session was reduced from 2.5 h to 1.5 h.
O'Connor, 2014	MBCT manual (Segal et al., 2004)	2h x 8 + 2 BS	Y	-	The length of each session was reduced from 2.5 h to 2 h. The psycho-educational parts focused on general negative affect instead of depressive symptoms.
Meeten, 2015	MBCT manual (Segal et al., 2002)	2h x 8 + 1-3 BS	Y	-	-
Foulk, 2014	MBCT manual (Segal et al., 2002)	2.5h x 8 <sup>b</sup> + 1 BS	Y	Y	Some procedural modifications were made to overcome barriers for participants experiencing functional limitations (e.g., providing the option of sitting on a chair to do an exercise rather than lying on the floor).
Splevins, 2009	-	2h x 8	Y	-	-

*Note.* ACT-SOC = Interventions based on Acceptance and Commitment Therapy (ACT) and on the Selective Optimization with Compensation (SOC) model (Baltes et al., 1999) proposed by Alonso et al. (2013); BS = Booster sessions; Geropsy = geropsychology; pw = per week.

a) This study did not provide the information regarding the length of each session.

b) For one of the five MBCT groups only, one-day retreat was added. The duration of the retreat was shortened to 5 hours from the recommended 6 hours to accommodate this aging population.

c) All six therapists involved had at least 2 years' experience in providing CBT. Only one had 2 years' experience with ACT.

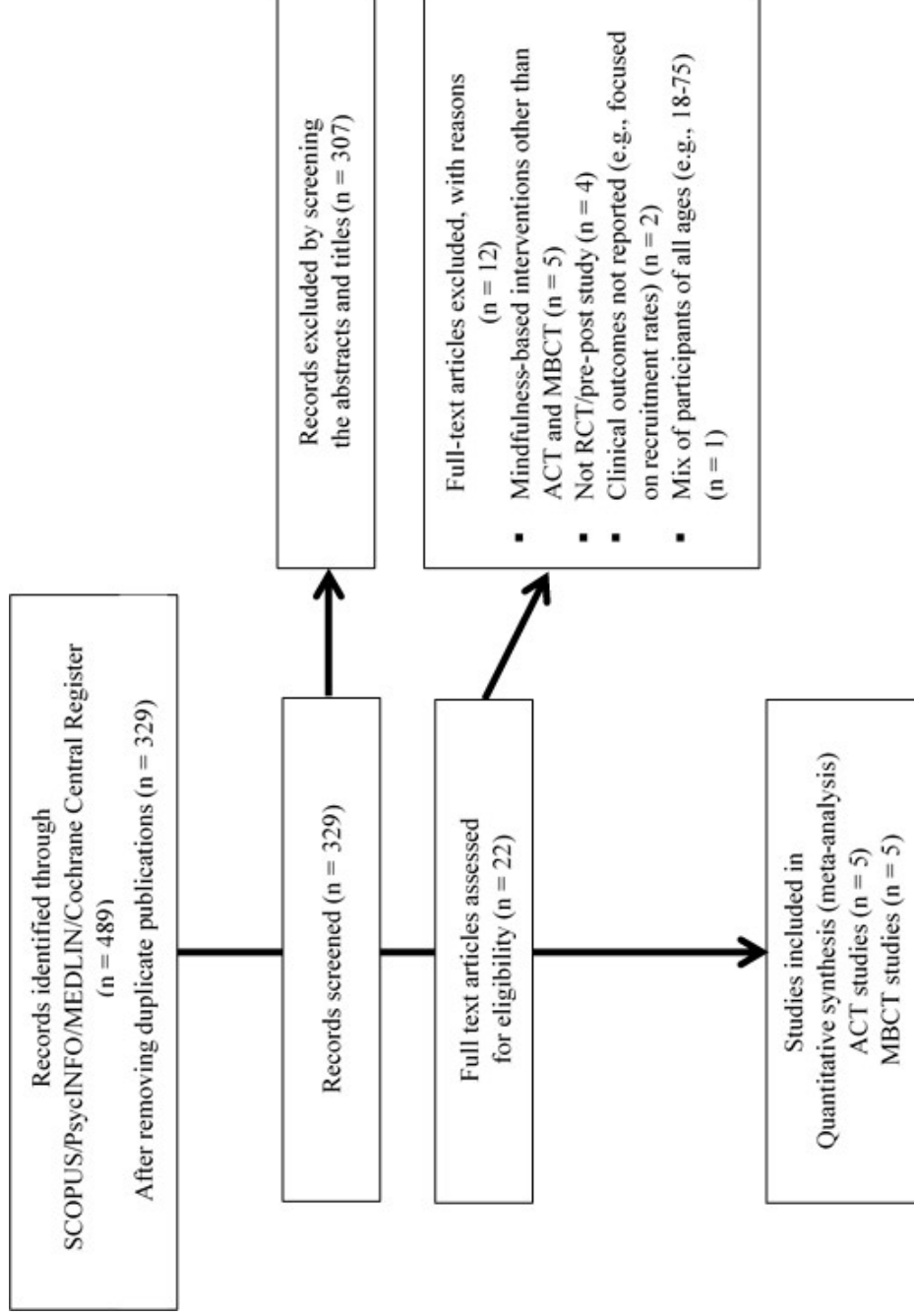


Figure 1 . Flow chart showing the process of selection of studies of ACT and MBCT for older people.



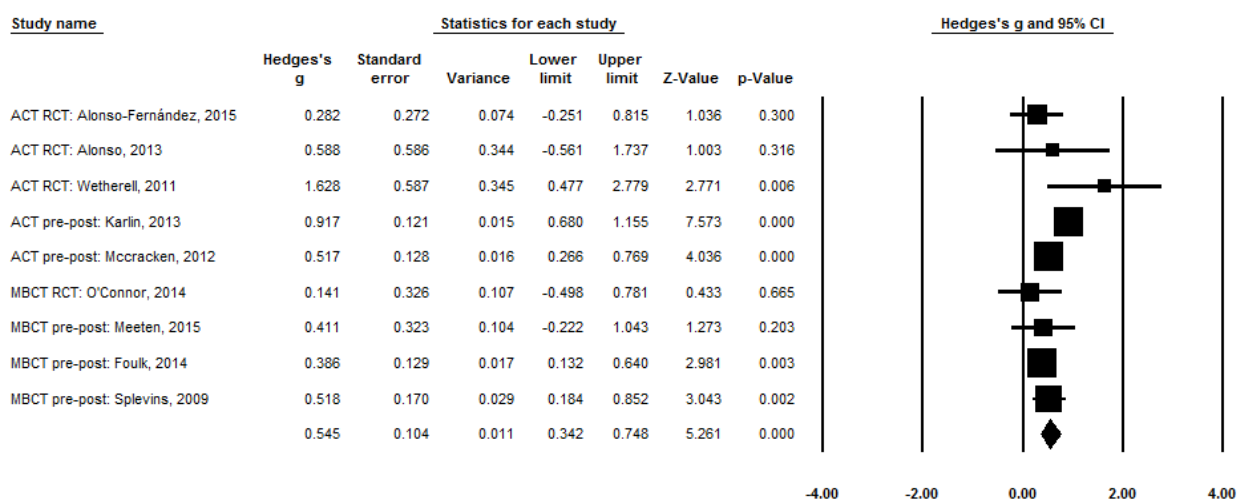


Figure 2. Effect sizes (Hedge's g) derived from studies examining the efficacy of ACT/MBCT in older people – Depression –

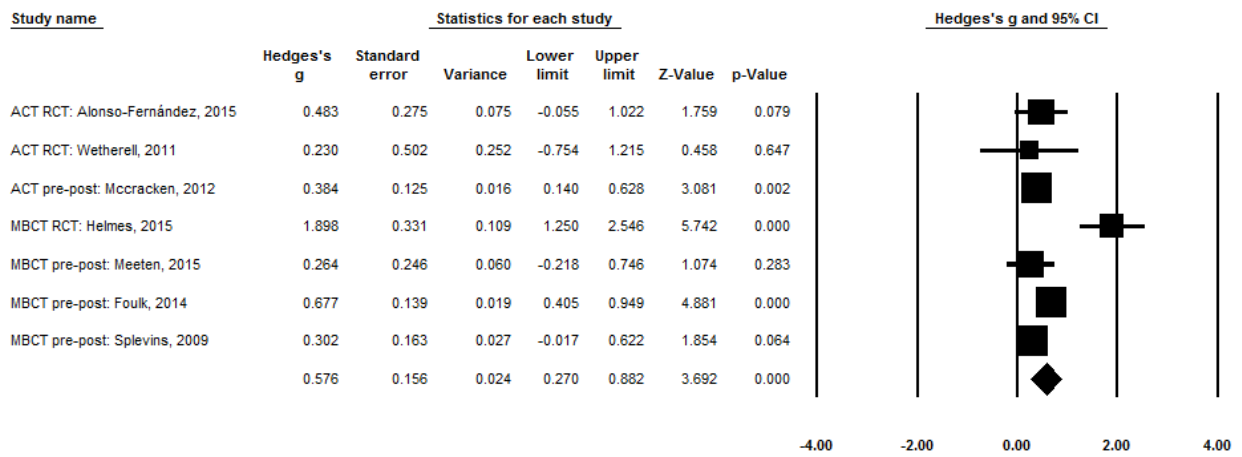


Figure 3. Effect sizes (Hedge's g) derived from studies examining the efficacy of ACT/MBCT in older people – Anxiety -