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An exploration of dispositional mindfulness across the lifespan and mindfulness interventions for older people

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Thesis submitted in partial fulfillment of the requirements for the
degree of Doctor of Clinical Psychology

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&

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Declaration

This thesis has been written for submission as partial fulfillment of the requirements for the Clinical Psychology Doctorate Programme of Coventry University and The University of Warwick. It has not been submitted for a degree at any other university. This thesis was conducted under the academic supervision of Dr. Tom Patterson, Ms. Jane Muers and Dr. Ian Hume. Authorship of any publications arising from this thesis will be shared with the above named supervisors. The thesis is the candidates own work with the aforementioned collaboration with research supervisors.

Summary of chapters

The three chapters of this thesis are united under a common theme of exploring mindfulness, specifically with reference to older people.

Chapter one: The systematic literature review critically evaluates the evidence for mindfulness-based stress reduction (MBSR) for use with older adults (aged 60 years and older). 12 articles met pre-specified criteria for inclusion. In studies of relatively healthy, high functioning older adults, there were few benefits observed. For samples of older people with clinical levels of mood and physical health difficulty, benefits were observed in some studies across a range of psychosocial domains. The present review indicates that MBSR is both a viable and a feasible approach for use with older people. As methodological concerns were evident, further research could usefully build upon this initial evidence-base.

Chapter two: The empirical paper was a cross-sectional survey of community dwelling, English-speaking younger adults aged 18-34 years ($n = 162$) and older adults aged 65-93 years ($n = 134$), using a group difference design. In accordance with initial hypotheses and theories of lifespan development, the present findings indicated higher levels of dispositional mindfulness, affect and well-being for older adults, compared to younger adults. Future research and clinical implications are discussed. This may inform the development of age-appropriate mindfulness interventions.

Chapter three: In the reflective paper, I share my experiences of conducting research with people in later life and of researching the topic of mindfulness. I then provide a reflective and reflexive account of the stages of research and go on to discuss implications for my professional and personal development.

List of Abbreviations

ACT	Acceptance and commitment based-therapy
CLBP	Chronic Low Back Pain
COPD	Chronic Obstructive Pulmonary Disease
DBT	Dialectical Behaviour Therapy
DV	Dependent Variable
FFMQ	Five Facet Mindfulness Questionnaire
IV	Independent Variable
MANOVA	Multivariate Analysis of Variance
MBBT	Mindfulness-based breathing therapy
MBCT	Mindfulness-based cognitive therapy
MBSR	Mindfulness-based stress reduction
MTD	Motivational Theory of Lifespan Development
NICE	National Institute of Clinical Excellence
QoL	Quality of Life
RCT	Randomised Controlled Trail
SDHS	The Short Depression-Happiness Scale
UN DESA	United Nations Department of Economic and Social Affairs
WEMWBS	The Warwick-Edinburgh Mental Well-being Scale

Chapter I: Literature Review

Mindfulness-based stress reduction (MBSR) with older adults: A systematic review of the literature

Chapter word count: 6,221 (excluding tables, figures and references)

Prepared for submission to 'Clinical Psychology Review'

No upper word length is specified. For publication submission, subheading numbers, figures and tables will be removed (see Appendix F for author guidelines).

1. Abstract

This systematic literature review sets out to critically evaluate the evidence for mindfulness-based stress reduction (MBSR) for use with older adults (aged 60 years and older). More specifically, the paper evaluates the empirical findings regarding the effectiveness of MBSR interventions in terms of psychological outcomes. The feasibility of MBSR interventions for use with older adults is also considered. Four major databases were systematically searched between November 2013 and April 2014 using pre-defined search terms to identify original peer reviewed articles and 12 articles met the criteria for inclusion. In Randomised Controlled Trials (RCTs) of healthy, high functioning older adults, there were few benefits observed across studies over a broad range of psychosocial domains relative to controls. For samples of older people with clinical levels of mood difficulty and chronic health difficulties, benefits were observed in some studies across a range of psychosocial domains. The present review indicates that MBSR is a viable approach for use with older people. As methodological concerns were evident, further research could usefully build upon this initial evidence-base. There is a need for more investment in MBSR research with older adults utilising methodologies appropriate to determine effectiveness for older people with heterogeneous clinical presentations.

Keywords: mindfulness, intervention, older adult and review.

2. Introduction

2.1 Mindfulness

Mindfulness can be defined as “the awareness that emerges through paying attention on purpose, in the present moment, and non-judgmentally to the unfolding of experience moment by moment” (Kabat-Zinn, 2003, p. 145).

Mindfulness can be conceptualised as a trait, which would imply that individuals may differ in a dispositional aspect of mindfulness. However, it is also acknowledged that mindfulness can be cultivated through practice (Davidson, 2010). Mindfulness practice may improve cognitive, emotional and behavioural flexibility, reduce avoidance and enhance acceptance (Chambers, Gullone & Allen, 2009; Nyklíček, 2011; Shapiro, Carlson, Astin, & Freedman, 2006).

2.2 Mindfulness-based stress reduction (MBSR)

MBSR (Kabat-Zinn, Lipworth, & Burney, 1985) was developed by Jon Kabat-Zinn at the University of Massachusetts Medical Center in 1979. Self-regulation of attention in the present moment and non-elaborative awareness (Bishop et al., 2004) are the essence of MBSR. MBSR involves de-appraisal i.e. relinquishing unnecessary evaluations of a situation (Nyklíček, 2011), rather than direct cognitive re-appraisal, as used in cognitive-behavioural interventions (Chambers et al., 2009). Thus, thoughts, feelings and sensations are not subjected to secondary elaborative processing or perseverative thinking (Bishop et al., 2004; Hayes & Feldman, 2004; Nyklíček, 2011). Orientation to experience with curiosity, openness and acceptance is also cultivated (Bishop et al., 2004; Hayes & Feldman, 2004), without judgement or striving towards a desired internal or external state (Bishop et al., 2004). Responding to stressful situations with enhanced reflective capacity, borne out of greater awareness, may reduce

reflexive behavioural responses and avoidance, which are often employed to reduce the frequency and intensity of any unwanted internal experience (Hayes, Luoma, Bond, Masuda, & Lillis, 2006). Meditation may further alleviate physiological aspects of distress, through the balance of sympathetic and parasympathetic responses, engaged through the processes of deep breathing (Kabat-Zinn, 2003).

MBSR is highly structured and typically involves 8 - 10 weekly sessions lasting 2-2.5 hours. This includes combined variants of mindfulness-based meditation, Hatha yoga, mindful stretching and breathing and body scan (Baer, 2003; Kabat-Zinn, 2003). This is accompanied by psycho-educational group discussions relating to coping and stress (Baer, 2003). Participants complete homework assignments as individual daily practice (Baer, 2003; Kabat-Zinn, 2003). Although MBSR is often seen as a skills based intervention, it is perhaps better conceptualised as a way of being, to be practised independently of mental or physical distress or illness (Ott 2004).

For the purposes of the present literature review, it is important to draw the distinction between MBSR and mindfulness-based cognitive therapy (MBCT). MBCT is an adaption of the MBSR programme, which includes an additional focus on aspects of cognitive therapy, which aim to facilitate a decentred or detached model of relating to thoughts and feelings. For example, participants of MBCT learn to notice when they are ruminating and identify specific thought patterns (Baer et al, 2003). MBCT is specifically designed as a prevention

programme for relapsing or recurrent depression, often delivered to a homogenous group (Segal, Williams & Teasdale, 2002).

2.3 Intervention efficacy

Reviews of the literature and meta-analyses have indicated that MBSR is efficacious for non-clinical populations (Chiesa & Serretti, 2009) and clinical young and middle aged adult populations with a diverse range of mental and physical conditions (e.g. Baer, 2003; Grossman, Niemann, Schmidt, & Walach, 2004; Hofman, Sawyer, Witt & Oh, 2010). More specifically, Grossman et al. (2004) conducted a meta-analysis of 10 controlled and 10 uncontrolled trials, which indicated medium effect sizes on psychological and physical indicators of well-being for a broad range of chronic conditions. However, there remains a need for more methodologically stringent, well designed controlled trials (Baer, 2003; Grossman et al., 2004). Small effect sizes for depression, anxiety and psychological distress have been observed in a meta-analysis of studies for people with chronic medical disease (Bohlmeijer, Prenger, Taal & Cuijpers, 2010). For cancer patients of variable mean age (ranging from middle to older adulthood), medium effect sizes have been observed for mental health, but only small effect sizes with respect to physical health (Ledesma & Kumano, 2009). However, until recently, there has been a relative paucity of intervention studies specifically with an older adult sample.

2.4 Rationale

MBSR treatments are shown to be efficacious in the treatment of younger and middle aged adults (Baer, 2003; Grossman et al., 2004; Hofman et al., 2010).

However, it is important to consider whether this efficacy extends into older adulthood. There are reasons to suggest that MBSR may be particularly suited to an older population, as MBSR was initially developed for individuals with chronic physical health conditions, which were unresponsive to medical treatment and intervention (Baer, 2003; Kabat-Zinn et al. 1992). Furthermore, an emphasis on acceptance, as part of a mindfulness philosophy, may be beneficial for those faced with losses in later life. There has been a suggestion that older adults may be able to capitalise on age related changes in emotional control strategies and motivational processes in their practice of MBSR (Gallegos et al., 2013a; Gallegos, Hoerger, Talbot, Moynihan & Duberstein, 2013b). It is also suggested from recent meta-analysis that MBSR may enhance coping with distress and disability in everyday life as well as with more severe disorders or stress (Grossman et al., 2004). The aging process is often associated with changing physical, cognitive and sensory functioning. These can be associated with challenges to mental well-being for some individuals. It is therefore important to identify interventions which will provide beneficial effects across a broad range of psychosocial domains.

2.5 Aims

The main aim of the present literature review was to critically evaluate the evidence for the use of MBSR with older adults. More specifically, the aim was to evaluate the effectiveness of MBSR interventions with respect to psychological outcomes, relating to cognition, affect, pain, disability, Quality of Life (QoL) and well-being. A secondary aim was to assess the feasibility of MBSR interventions, in terms of accessibility and acceptability, for older people. This was with a view

to furthering the knowledge of those researching and working in the fields of Clinical and Health Psychology.

3. Method

3.1 Search strategy

Four major databases i.e. Psycinfo, Pubmed, Scopus and Web of Science, were searched between November 2013 and April 2014. Table 1 shows the search terms and additional variants which were combined with boolean operators to search these databases for articles relating to MBSR for older adults. The major databases have different search parameters. For consistency, these were set to include information contained in the abstract, topic or keyword list rather than anywhere within the article. Duplicates were excluded. Inclusion and exclusion criteria were applied to title and abstracts of articles to remove non-relevant articles. Full-text versions of potentially relevant articles were read and assessed as to whether or not they met full eligibility criteria. The flowchart in figure 1 illustrates this process and provides the number of studies identified at each stage.

Table 1.

Concepts, search terms, additional variants terms and operators		
Concept	Mindfulness Based Stress Reduction (MBSR)	Older Adult
Search Term	Mindfulness	Older
Additional Variations	None Specified ^a	Old* age OR Elder* OR Late* life

^a In order to expand inclusivity of the search and because authors may not specify type of mindfulness intervention in a title, abstract and keyword search, the search term “mindfulness” was used, as opposed to “Mindfulness* Based Stress Reduction” or “MBSR”.

3.2 Inclusions

Studies were included if:

- i.) they were published post-1990, written in English in a peer reviewed journal.
- ii.) they detailed an empirical study, investigating the outcomes of MBSR treatment (minimum duration of 8 weekly sessions in line with protocol), with a pre and post intervention evaluation.
- iii.) quantitative methodology was used where at least one psychosocial outcome measure of relevance to Clinical and Health Psychologists was reported.
- iv.) the mean age of participants in the MBSR treatment group was reported as 60 years and older. This was in accordance with definitions of older age in North American studies and demographic cut-offs used by United Nations Department of Economic and Social Affairs (UN DESA; 2013).

3.3 Exclusions

Studies were excluded if:

- i.) they investigated the use of any other mindfulness practice apart from MBSR. For example: MBCT, Dialectical Behaviour Therapy (DBT), Acceptance and Commitment Therapy (ACT), transcendental meditation and single mind-body practices.
- ii.) they detailed only one component of MBSR or evaluated a single session of mindfulness induction or practice.

- iii.) the mean age of participants in the MBSR treatment group was reported as younger than 60 years.
- iv.) intervention outcomes related only to change on neurological, physiological or biological markers.
- v.) it was not possible to evaluate specific measurable outcomes, such as qualitative outcomes.

3.4 Systematic search results

As shown in figure 1, a total of 280 articles were yielded altogether, excluding duplicates. Titles and abstracts were read, 32 studies were potentially relevant. Full text versions were accessed and 12 studies met full eligibility criteria. Reference and cited by searches did not yield any further relevant articles for inclusion.

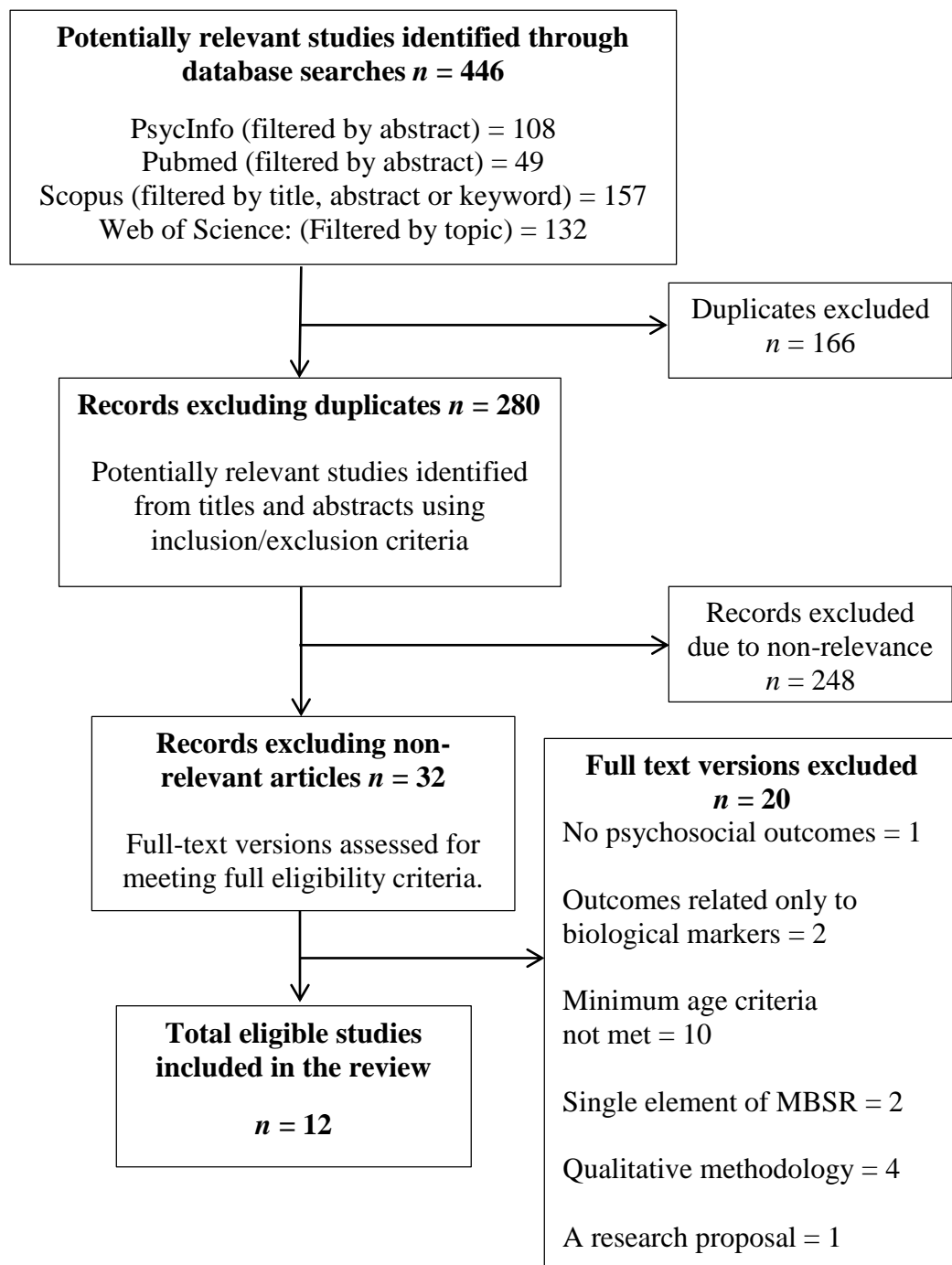


Figure 1. A flow chart of the search strategy and study selection process

3.5 Quality assessment criteria

Appropriate quality checklist questions were selected from three published quality checklists, so that the diversity of study designs included in the present review would be suitable for critical appraisal with this tool. This checklist comprised questions from Downs and Black (1998) quality checklist for reporting, the

National Institute of Clinical Excellence (NICE; 2012) and the Caldwell, Henshaw and Taylor (2005) checklists for quantitative intervention studies, with suitability for public health interventions. The full lists of questions are provided in appendix A. The checklist ascertains quality of reporting and how well the investigators minimised sources of bias in the design, outcomes and analysis, in order to determine internal validity. Each criterion was rated as either met or not met/not reported (on a one-point scale). The total ratings were calculated (maximum score 20) and converted to a percentage, giving a final score for each article. A higher score indicated higher quality. These percentages are reported in table 2.

4. Results ^b

A summary of the samples and methodology for the 12 studies included in the present review are provided in table 2. There was a diversity of domains measured and specific outcome measures utilised, when evaluating the use of MBSR interventions for older adults. This reflects the importance of assessing across affective, cognitive, physical and pain related domains, given that the aging process is often associated with changes in functioning across these domains. The following sections will detail the findings of these investigations for community samples of relatively healthy older adults and those with mental and physical health difficulties.

^b See appendix B for a table summary of main study findings from each article to supplement the main text

Table 2.

Methodology: Participants, design, treatment protocol and outcome measures

Study Sample	Quality Rating %	Sample	Research Design	Treatment Sample	Comparison or control	Outcome domains	Outcome measures
Ernst et al. (2008)	60	22 Nursing home residents Germany	Non-randomised controlled pilot Pre-post test	$n = 15$ (Median age = 80)	Untreated $n = 7$ (Median age = 89)	QoL Depression Cognitive impairment ADLS	SF-12 GDS-12 MMST Barthel Index VAS ^d
Morone et al. (2008)	85	37 Community CLBP U.S.	RCT pilot Pre(T1)-post (T2) and follow-up (T3)	$n = 19$ (M age = 74.1)	Wait list control $n = 18$ (M age = 75.6)	QoL Disability Pain intensity Pain acceptance	SF-36 RMDQ SF-MPQ CPAQ
Morone et al. (2009)	65	40 Community CLBP U.S.	RCT Pre(T1)-post (T2) and follow-up (T3)	$n = 16$ (M age = 78.0)	Health education group program $n = 19$ (M age = 76.0)	QoL Disability Pain intensity Pain coping Activities engagement Mindfulness	SF-36 RMDQ SF-MPQ CPSES CPAQ MAAS FFMQ

Study Sample	Quality Rating %	Sample	Research Design	Treatment	Comparison or control	Outcome domains	Outcome measures
Mularski et al. (2009)	80	86 patients Chronic Obstructive Pulmonary Disease U.S.	RCT Pre(T1)-post (T2)	$n = 44$ (M age = 70.6)	8-week Support Group $n = 42$ (M age = 64.0)	QoL Perceived stress Mindfulness	VR-36 PSS FFMQ
Birnie et al., (2010)	55	21 couples: cancer patients and their partners U.S.	Single group Pre-post test	$n = 42$ (M age = 62.9)	-	Mood states Stress symptoms mindfulness	POMS C-SOSI MAAS
Young & Baime (2010)	45	141 Community U.S. Clinically Significant Depression & Anxiety	Retrospective Single group Pre-post test	$n = 141$ (M age = 65.0)	-	Mood states	POMS-SF
Barrett et al., (2012)	70	149 Community U.S.	RCT Pre(T1) -post (T2)	$n = 51$ (M age = 60.00)	Exercise $n = 47$ (M age = 59.00) Wait list control $n = 51$ (M age = 58.80)	Affective states QoL Relationships Optimism Sleep quality Mindfulness	PANAS STAI SF-12 LOT PR PSQI MAAS

Study Sample	Quality Rating %	Sample	Research Design	Treatment	Comparison or control	Outcome domains	Outcome measures
Creswell et al. (2012)	95	40 Community U.S.	RCT Pre(T1) -post (T2)	$n = 20$ (M age = 64.35)	Wait list control $n = 20$ (M age = 65.16)	Loneliness Mindfulness	UCLA-R KIMS
Moynihan et al. (2013)	80	200 Community U.S.	RCT Pre(T1)-post (T2) and follow-up (T3)	$n = 100$ (M age = 73.30)	Wait list control $n = 100$ (M age = 73.60)	Cognition Depressive symptoms Perceived stress Mindfulness	Trail Making Test CESD-R PSS MAAS
Gallegos et al. (2013a)	60	100 Community (MBSR group only) U.S.	Single group Longitudinal analyses (part of RCT)	$n = 100$ (M age = 72.10)	-	Positive affect Participation in MBSR activities	PA scale of PANAS Diary log (average days per week)
Gallegos et al. (2013b)	75	200 Community U.S.	RCT Pre(T1)-post (T2) and follow-up (T3)	$n = 100$ (M age = 72.08)	Wait list control $n = 100$ (M age = 73.45)	Positive affect Depressive Symptoms	PA scale of PANAS CESD-R and HAM-D composite

Study Sample	Quality Rating %	Sample	Research Design	Treatment	Comparison or control	Outcome domains	Outcome measures
Lenze et al. (2014)	38	34 Community Significant anxiety-related distress ≥ 22 on PSWQ-A U.S.	Single group Pre-post test Pre(T1) midpoint (T2) –post (T3)	$n = 34$ 8-week intervention (M age = 70.90) 12-week intervention (M age = 70.70)	-	Worry Cognition Mindfulness	PSWQ-A RBANS ^c CVLT DKEFS (Verbal fluency) MAAS CAMS-R

M age = mean average age; NR = not reported; T1 = time one T2 = time two T3 = time three for outcome measurement U.S. = conducted in United States
CLBP Chronic Low Back Pain

Quality of life and general health: General Health Survey (SF-36); Short Form General Health Survey (SF-12); Short Form-36 for Veterans (VR-36)

Mood and affective states: Center for Epidemiologic Studies Depression Scale Revised (CESD-R); Geriatric Depression Scale-12 (Residential; GDS-12R); Hamilton Rating Scale for Depression (HAM-D); Life Orientation Test (LOT); Penn state Worry Questionnaire – Abbreviated (PSWQ); Perceived Stress Scale (PSS); Positive Relationships with Others (PR) scale; Profile of Mood States (POMS and Short Form; POMS-SF); Spielberger State Trait Anxiety Inventory (STAI); The Calgary Symptoms of stress Inventory (C-SOSI); The Composite Loneliness Scale (UCLA-R); The Positive and Negative Affect Schedule (PANAS)
Cognition: Delis-Kaplan Executive Functioning Scale (DKEFS) verbal fluency test ('FAS' task); Immediate and delayed list paragraph recall tests of Repeatability Battery for the Assessment of Neuropsychological Status (RBANS)^c; Mini Mental State Test (MMST); The California Verbal Learning Test (CVLT)
Pain and Disability: Chronic Pain Acceptance Questionnaire (CPAQ); Chronic Pain Self Efficacy Scale (CPSES); Pittsburgh Sleep Quality Index (PSQI); Roland and Morris Disability Questionnaire (RMDQ); Short Form-McGill Pain Questionnaire (SF-MPQ); Visual Analogue Scales (VAS)^d for satisfaction with life, severity of pain and major complaints

Mindfulness: Cognitive Affective Mindfulness Scale- Revised (CAMS-R); Five Facet Mindfulness Questionnaire (FFMQ); Kentucky Inventory of Mindfulness Skills (KIMS); Mindful Attention Awareness Scale (MAAS)

4.1 Non-clinical samples

Collectively, across studies of relatively healthy, high functioning older adults, there were few benefits observed across a broad range of psychosocial domains, relative to a control group. This may be because individuals without any significant pre-intervention mood impairment may be less likely to demonstrate any further post-intervention improvements (Barrett et al., 2012; Moynihan et al. 2013).

Psychosocial outcomes were assessed in addition to changes in biological markers in all of these studies. These were randomised-controlled trials (RCTs), which stipulated stringent parameters for inclusion of participants, based on mental, physical and cognitive functioning (Barrett et al., 2012; Creswell et al., 2012; Gallegos et al., 2013a, Gallegos et al., 2013b; Moynihan et al., 2013). The quality ratings for methodology and analysis were acceptable across these studies, indicating adequate internal validity.

Creswell et al. (2012) demonstrated beneficial effects of MBSR, in a well-designed study. Significantly lower levels of loneliness were indicated by the MBSR group post-intervention, compared to wait list controls, with a large overall effect size. Significant improvements in dispositional mindfulness were also observed, which provided some assurance as to the efficacy of the intervention itself. However, it would be helpful to corroborate this finding in a study with a group comparison condition, as opposed to a wait list control, to confirm whether or not changes in loneliness may be attributed to the specific effects of the MBSR intervention itself, as opposed to non-specific effects of being part of a group. Other investigations did not demonstrate psychosocial benefits. Barrett et al. (2012) conducted a study where participants were randomized to MBSR, exercise or wait list control group.

The principal aim of this investigation was to evaluate whether MBSR or exercise may reduce cold and influenza illness burden, which is detailed in the full article. There were no significant post-intervention differences between MBSR and the control condition across affect related, health related and social domains, apart from post-intervention improvements in mental health related QoL. The lack of improvement in dispositional mindfulness, may account for the null findings.

Three publications were part of the same overarching investigation protocol (Gallegos et al., 2013a, Gallegos et al., 2013b; Moynihan et al., 2013). Moynihan et al. (2013) investigated overall efficacy, whereas Gallegos et al. (2013a, 2013b) sought to identify potential determinants of efficacy. These studies benefited from a larger sample size than has been reported in previous investigations, with two-hundred participants pseudo-randomised to a standardised MBSR intervention or wait list control. There were no reported differences between intervention and wait list control groups with respect to perceived stress, depression scores (Moynihan et al. 2013) or positive affect (Gallegos et al., 2013b) and improvements in executive control were not maintained at follow-up (Moynihan et al., 2013). Moynihan et al. (2013) noted that in this relatively healthy sample, there was little scope for improvement with respect to perceived stress or depression. Significant improvements in mindfulness were only present at follow-up.

Gallegos et al. (2013b) sought to identify potential determinants of intervention efficacy. Both self-reported and observable aspects of depression were assessed (Gallegos et al., 2013b), whereas Moynihan et al. (2013) had reported null findings with the former. Gallegos et al. (2013b) reported that greater baseline depression

scores were associated with significantly less improvement in positive affect at treatment completion and at follow-up. However, the interpretation of these findings should be treated with caution, as baseline levels of self-reported depression were not clinically significant (Moynihan et al., 2013). The authors also set an arbitrary cut-point of ≥ 70 years to investigate potential moderating effects of age. Participants aged over 70 years with lesser baseline depression scores had greatest improvements in positive affect at six month follow-up, but not immediately post-intervention.

Gallegos et al. (2013a) sought to determine which components of the MBSR between-session practice were most beneficial in terms of positive affect. Participation in MBSR activities was associated with improved positive affect, as indicated by the average number of days per week participating in MBSR activities reported in activity-logs. When controlling for all other factors, the yoga component, adapted for the needs of older people, made a unique contribution to gains in positive affect. However, it was notable that Gallegos et al. (2013b) did not note any overall improvements in affect, relative to the control group. The authors suggest that MBSR may enhance attentional strategies used to regulate emotion, which may be more readily adopted by older people, if not undermined by symptoms of depression (Gallegos et al., 2013b). In particular, the practice of yoga may enhance this capacity (Gallegos et al., 2013a). This hypothesis will require further corroboration.

4.2 Clinically significant health difficulties

Three effectiveness studies were conducted with community samples, which included participants with clinically significant health difficulties, including clinical levels of mood impairment (Lenze et al., 2014; Young & Baime, 2010), with a proportion of participants who had non-specified chronic disease (Young & Baime, 2010) or other major complaints (Ernst et al., 2008). Statistically significant improvements in mood were observed across studies (Ernst et al., 2008; Lenze et al., 2014; Young and Baime, 2010). Limits to the internal validity, resulted in lower quality ratings. Studies were limited by the use of a single group pre-post design (Lenze et al., 2014; Young & Baime, 2010), retrospective analysis (Young & Baime, 2010) and a small sample size (Ernst et al., 2008; Lenze et al., 2014; Young & Baime, 2010). Therefore, this limits the confidence in conclusions drawn from these studies. Nevertheless, in these small scale feasibility and ‘action research’ investigations, effectiveness of MBSR and clinically significant gains were evident for individuals experiencing a clinical level of mood difficulty, which may potentially be corroborated by future research.

More specifically, in a retrospective analysis of existing data, Young and Baime (2010) found that MBSR intervention was followed by statistically significant improvements (with medium effect sizes), across a broad range of mood states. Furthermore, there was a greater than 50 percent reduction in the number of participants reporting clinically significant anxiety or depression post-intervention. In a study by Lenze et al. (2014), all participants reported clinically significant anxiety and self-reported difficulties with memory and concentration at baseline. Four groups of participants completed a standardised 8-week MBSR intervention or

a modified 12-week intervention across two sites, analysed collectively as a single group. Pre to post MBSR improvements were reported on a measure of anxiety-related distress, with a large effect size. With respect to changes in cognitive functioning, Lenze et al., (2014) noted improvements for paragraph learning and delayed recall, with large and medium effect sizes respectively. However, confidence in these conclusions is limited by changes to methodology and cognitive subtests midway through the investigation. Cognitive data was collectively analysed by converting to z-scores. However, confidence intervals for effect sizes were highly variable and subtests did not have demonstrable equivalence.

Only one study was conducted within a nursing home setting. In this preliminary feasibility study (Ernst et al., 2008), a very small sample of elderly nursing home residents ($n = 15$) took part in an MBSR intervention, with other residents opting to represent a control group. Between-group comparisons of pre-post change scores indicated a significant increase in physical health related QoL and a significant decrease in level of depression and major complaints in the intervention group, relative to the untreated group. There were no significant changes with respect to mental health, overall QoL, activities of daily living, cognitive impairment, pain intensity or satisfaction with life. Given that this was an initial feasibility study with a very small sample size, reporting of effect sizes would have been important to inform subsequent investigation with more meaningful analysis.

4.3 Long-term physical health conditions

MBSR interventions have been conducted with older adults in the community who have specific long-term conditions, including chronic low back pain (CLBP;

Morone, Greco and Weiner, 2008; Morone, Rollman, Moore, Qin and Weiner, 2009), a diagnosis of cancer (Birnie, Garl & Carlson, 2010) and a diagnosis of Chronic Obstructive Pulmonary Disease (COPD; Mularski et al., 2009). There is a suggestion in the literature that MBSR interventions have particular utility for individuals with chronic health conditions (Grossman et al., 2004). One study indicated improvements with respect to pain acceptance and functioning (Morone et al., 2008) and another with respect to mood states (Birnie et al., 2010). However, two studies also reported null findings (Morone et al., 2009; Mularski et al., 2009). The high non-completion rate was also noteworthy in two studies (Mularski et al., 2009; Birnie et al., 2010). This may potentially indicate limitations to acceptability or accessibility of the MBSR treatments for people with more significant health needs. Three of these studies were RCTs, with an acceptable rating of quality (Morone et al., 2008; Morone et al., 2009; Mularski et al., 2009), whereas the Birnie et al. (2010) single group study received a low quality rating.

Morone et al. (2008) randomised participants with CLBP to an adapted MBSR or wait list control group. The authors found significant post-intervention improvements in pain acceptance, engagement in activities (large effect sizes) and physical functioning (medium effect size), relative to the control group. Treatment gains for the MBSR group relative to the control group were maintained at 3 month follow-up. Changes in pain, disability and QoL were not significant. Following on from this study, Morone et al. (2009) randomised CLBP participants to MBSR treatment group or a health education programme as a control group. Null findings were observed for pain, disability and pain self-efficacy in the MBSR group, relative to the health education control group. Role limitation, due to emotional

problems improved significantly post-intervention, but this treatment gain was not maintained at follow-up. There may have been null findings in this study because the health education condition served as an active comparison group rather than an inert control condition as initially intended. However, dispositional mindfulness remained high and stable across the intervention, which may suggest high levels of well-being in this sample, with little scope for improvement. These studies might have benefited from a measure of affect, in addition to pain related and physical outcomes to illustrate whether or not treatment gains would be observable on these parameters.

A further study of participants with significant health needs did not demonstrate benefits from the MBSR intervention. Mularski et al. (2009) randomised participants with moderate to severe COPD to MBSR supplemented with relaxation response training i.e. Mindfulness-based breathing therapy (MBBT) or a comparison support group. MBBT was included to maximise a breath-centred approach to facilitate symptomatic healing for dyspnoea. However, treatment benefits were not observed for these patients with respect to levels of stress or health related quality of life. In the light of a high attrition rate, it could be assumed that accessibility or acceptability of the intervention for individuals with moderate to severe COPD may be limited.

Birnie, et al. (2010) investigated the effects of MBSR treatment for people with a cancer diagnosis and their partners in a pre and post single group design. There were significant pre to post intervention improvements with respect to total mood disturbance (with a medium effect size) and domains of mood disturbance, such as anxiety and fatigue. There were significant decreases in physiological indicators of

stress, but not stress symptoms overall. Although a single-group pre and post design was employed, significant improvements in mindfulness, with a small effect size for patients and medium effect size for their partners, provided some assurance of effectiveness of the intervention itself.

5. Discussion

In RCTs of relatively healthy, high functioning older adults, there were few benefits observed across a broad range of psychosocial domains relative to controls (Barrett et al., 2012; Creswell et al., 2012; Gallegos et al., 2013a, Gallegos et al., 2013b; Moynihan et al., 2013). For samples without any significant mood impairment, there may have been limited scope for further improvement (Barrett et al., 2012; Moynihan et al. 2013). When considering effectiveness studies, which included participants with clinical levels of mood difficulty (Lenze et al., 2014; Young & Baime, 2010) and more complex presentations (Ernst et al., 2008), statistically and clinically significant improvements in mood were observed (Ernst et al., 2008; Lenze et al., 2014; Young & Baime, 2010). For samples with specific long-term conditions, two studies reported at least some benefits, with respect to pain, functioning (Morone et al., 2008) and mood or affective symptoms (Birnie et al., 2010). However, two studies reported null findings (Morone et al., 2009; Mularski et al., 2009). Therefore, there is scope to explore this area further. In the following subsections, the MBSR interventions and important adaptations are outlined, in addition to the accessibility and acceptability of these interventions for older people. Important clinical implications are considered. Methodological issues are described, leading to recommendations for future research, to enhance the quality of studies with older people.

5.1 The MBSR intervention and specific adaptations for older people

The majority of interventions were delivered at U.S. university affiliated medical centres. Most often they were conducted by practitioners with extensive mindfulness experience (Barrett et al., 2012; Gallegos et al., 2013a, Gallegos et al., 2013b; Morone et al., 2008; Morone et al. 2009; Moynihan et al. 2013; Mularski et al., 2009; Young & Baime, 2009). Ordinarily, fidelity of treatment to a standardised MBSR protocol would be an important determinant of internal validity. The diversity in MBSR protocol obscures any general conclusions about effectiveness across studies. However, adaptations to the MBSR protocol are often necessary for older people (Morone & Greco, 2014). Collectively these studies indicate that substantial modification is possible. Therefore, further investigation could usefully identify which aspects are particularly effective or useful.

Lenze et al. (2014) modified an 8-week protocol into an extended 12-week protocol, for repetition and consolidation of taught information. Comparisons of these two versions of MBSR intervention did not reveal any differences, with respect to acceptability or improvements in outcomes. However, it is unlikely that this study was sufficiently powered to detect such differences. Intervention sessions varied in duration, from 45 to 120 minute sessions. Mindfulness group activities are included often as a full day ‘retreat’, taken in silence (Baer, 2003; Kabat-Zinn et al. 1992). This component was omitted or shortened in many of the studies (Ernst et al., 2008; Morone et al., 2008; Morone et al., 2009; Mularski et al., 2009), which may have been due to a lack of resources or difficulties in offering this component

to older people, as some may find this too physically demanding (Morone & Greco, 2014).

Many studies adapted and tailored interventions, to suit participant needs, in particular with respect to mobility, sensory and cognitive limitations (Ernst et al., 2008; Lenze et al., 2014; Morone et al., 2008; Morone et al., 2009; Moynihan et al., 2013). In particular, the inclusion of a Hatha yoga component may require a level of physical functioning, which would not be possible for many older adults or may raise safety concerns (Lenze et al. 2014; Morone et al., 2008). Accordingly, some studies excluded (Morone et al., 2008; Morone et al., 2009) or adapted (Gallegos et al., 2013a, Gallegos et al., 2013b; Lenze et al., 2014; Moynihan et al., 2013) this component. The study protocol outlined by Moynihan et al. (2013) included 'mindful movement' (similar to Hatha yoga) in addition to mindful walking. As part of this research protocol, Gallegos et al. (2013a) reported that practicing this adapted yoga component for an additional two days per week significantly increased positive affect. This suggests that it may be important to include an adapted yoga or body-focussed component, rather than omitting it altogether. However, further corroborative evidence would be required to confirm this.

Ernst et al. (2008) also detailed a simplified MBSR protocol, in line with nursing home residents' needs and abilities. Daily practice was declined by the study participants, which was replaced by supervised twice-weekly practice. It is important to consider the impact of omitting daily practice from the study protocol, given that mindfulness can be viewed as a skill, which ideally should be cultivated and

developed in daily practice. However, for older adults with more health difficulties, non-supervised practice may not be advisable.

5.2 Treatment completion, accessibility and acceptability

Concordance and adherence to the treatment protocol was considered through reporting of class attendance, individual practice, reporting of completion rates and comparison with non-completers on important demographic characteristics. This may provide an indication of acceptability and accessibility of these interventions. The non-completion rate was modest i.e. equal to or less than 20 percent across many interventions, in accordance with quality criteria (Barrett, et al., 2012; Creswell et al., 2012; Gallegos et al., 2013a, Gallegos et al., 2013b; Lenze et al., 2014; Morone et al., 2008; Morone et al., 2009; Moynihan et al., 2013). However, there were notable levels of attrition for studies which included participants with significant levels of impairment, such as participants with cancer (Birnie et al., 2010), COPD (Mularski et al., 2009) and nursing home residents (Ernst et al., 2008). Unexpected health difficulties, sickness or health conditions have been cited as reasons for non-completion (Morone et al., 2009; Ernst et al., 2008) as well as family obligations (Morone et al., 2009), a lack of interest (Ernst et al., 2008) or transport difficulties (Mularski et al., 2009).

In two investigations (Ernst et al., 2008; Morone et al., 2009) non-completers were significantly older than completers of the MBSR protocol. Furthermore, in the Ernst et al. (2008) investigation, non-completers had a longer nursing home stay, had higher depression scores, higher level of major complaints and lower life satisfaction than completers. These participants were the oldest included for

review, with a median age of 80 in the intervention group (Ernst et al., 2008). Any age-related declines in receptiveness to MBSR could be due to increased physical limitations that may be more prevalent as chronological age increases. It is also possible that mindfulness-based interventions may be at odds with the understanding or coping strategies adopted by older cohorts (Ernst et al., 2008).

5.3 Methodological considerations

5.3.1 Measurement

The outcome measures were relevant to the samples assessed and the breadth of psychological, social and physical functioning domains that may be compromised in older adulthood. The investigators provided references for validation studies, but often detail about construct validity, internal consistency, inter-rater or test-retest reliability were omitted (Barrett et al., 2012; Lenze et al., 2014; Morone et al., 2008; Mularski et al. 2009; Young & Baime, 2010). Some studies documented whether or not these measures had been validated specifically in an older adult sample (Ernst et al., 2008; Lenze et al., 2014; Morone et al., 2008; Morone et al., 2009; Young & Baime, 2010). Also, the inter-relatedness of physical functioning and affective domains may be important to consider when assessing older adults with greater complexity of needs. Three studies considered cognition as an outcome (Ernst et al., 2008; Lenze et al., 2014; Moynihan et al., 2013). This may represent an important aspect of functioning pertinent to older adulthood, which may warrant further investigation. Studies have found that mindfulness training may have cognitive benefits (Holzel et al. 2011; Jha et al. 2007, 2010). However, validity of these measures included within the studies in the present review was questionable,

due to lack of reference to a specific standardised measure (Lenze et al., 2014; Moynihan et al., 2013), use of a brief cognitive screen (Ernst et al., 2008) or a questionable method for analysing subtests (Lenze et al., 2014).

5.3.2 Dispositional mindfulness as a mechanism of change

The majority of studies included a measure of dispositional mindfulness (Barrett et al., 2012; Birnie et al., 2010; Creswell et al., 2012; Lenze et al., 2014; Morone et al., 2009; Moynihan et al. 2013; Mularski et al. 2009). This provided an indication of whether or not the intervention resulted in an increase in dispositional mindfulness and provided a manipulation check of whether any beneficial effects of the MBSR intervention can be attributed to a change in mindfulness (Creswell et al., 2012). Four studies reported significant increases in mindfulness (Birnie et al., 2010; Creswell et al., 2012; Lenze et al., 2014; Moynihan et al. 2013) across the course of the intervention relative to a control group. Three studies (Barrett et al., 2012; Morone et al. 2009; Mularski et al. 2009) failed to demonstrate changes in dispositional mindfulness, which may account for the null findings reported in these studies. However, authors also attributed a lack of change in mindfulness across the interventions, to ceiling effects (Morone et al., 2009) or a lack of sensitivity of self-report measures of mindfulness to detect change for older adults (Lenze et al., 2014). Further investigation of the psychometric properties of mindfulness measures may be warranted.

5.3.3 Study design

Designs of the reviewed studies were diverse. Three pre and post-test studies did not include a control group (Birnie et al., 2010; Lenze et al., 2014; Young & Baime, 2010), which would make it difficult to determine whether any observed changes

on outcome measures could be attributed to the intervention itself. Ernst et al. (2008) included an untreated control group and four studies included a wait list control group, which improved upon a simple pre and post-test design (Creswell et al., 2012; Gallegos et al., 2013b; Morone et al., 2008; Moynihan et al., 2013). However, when group contact time is not controlled for, non-specific effects may account for the observed outcomes. Comparison groups included an exercise group in addition to a control group (Barrett et al., 2012), a health education group programme as an inert control group (Morone et al., 2009) and a support group (Muleraski et al., 2009). No significant post-intervention improvements in outcomes were observed relative to the comparison groups. There were also no observed benefits in level of mindfulness. This could indicate that MBSR does not show specific advantages relative to other groups for older adults. However, it is also possible that these interventions were insufficiently powered to detect between-group differences.

5.3.4 Analyses

Only one study (Barrett et al., 2012) included a calculation to determine whether the study was sufficiently powered to detect an effect. It was likely that some of the studies were underpowered and small sample sizes may have increased the likelihood of errors, type II errors in particular. The majority of studies reported effect sizes (Birnie et al., 2010; Creswell et al., 2012; Morone et al., 2008; Lenze et al., 2014; Moynihan et al. 2013; Young & Baime, 2010). Randomisation of participants to each treatment arm in the majority of studies (Barrett et al., 2012; Creswell et al., 2012; Gallegos et al., 2013a, Gallegos et al., 2013b; Moynihan et al., 2013; Morone et al., 2008; Morone et al., 2009; Muleraski et al., 2009) may

have reduced the influence of potential confounds in studies with adequate sample size. These studies identified important confounders and adjusted for these in the analyses. Three studies (Creswell et al., 2012; Morone et al., 2008, Muleraski et al., 2009) included an intention to treat (ITT) analysis, which offered a more stringent analysis whereby all participants, including those who did not fully complete the course, were included. The type of analyses conducted was variable in focus, such as pre to post intervention within-group comparisons, between-group post intervention comparisons or interactions between time-point and group.

5.4 Clinical implications

The studies included in the present review indicate that there is scope for adaptation of MBSR interventions for older people. Many studies included healthy older adults without any significant impairment to mood functioning and treatment gains were less evident for these individuals. However, it was illustrated that those with a clinical level of mood and/or physical impairment may benefit from MBSR interventions. There may be some limitations to the acceptability or accessibility of MBSR interventions for a significant minority of older people. Specifically, non-completion was evident for participants with complex impairments or who were more elderly (85 years and older). Nonetheless, studies indicated some helpful adaptations for use with older adults. Preliminary investigation highlighted the potential benefit of yoga movements, adapted for use with older people. This may provide a useful substitute for Hatha yoga which is a core component of the MBSR protocol (Morone & Greco, 2014; Moynihan et al., 2013).

Morone and Greco (2014) discuss adaptations for physical and sensory impairments to inform clinical use, for example chair-based body-scan practice. Further investigation will be helpful to indicate more conclusively which particular components may result in treatment gains, particularly if adaptations are made. For example, it may also be helpful to understand the relative effectiveness of physical stretching components relative to meditative and attentional components, which may be more accessible (Morone & Greco, 2014). This will also be particularly helpful in the light of possible service level constraints of delivering these interventions in full. People accessing services are likely to present with a greater complexity of needs, which will also involve further tailoring and adaptation of the MBSR interventions to reflect this.

5.5 Directions for future research

In the present review, it was difficult to identify specific homogenous samples of older adults, due to the higher prevalence of health conditions and co-morbidities in later life. This likely heterogeneity in presentations can be acknowledged and anticipated in future research. Larger, adequately powered studies will help to determine the magnitude of effects related to MBSR interventions for older people. However, it is important to highlight that although large scale RCTs provide a more stringent methodology and improved internal validity; this is often at the expense of representativeness (Barker, Pistrang & Elliott, 2002). There is also a need for effectiveness studies in field settings (Barker, Pistrang & Elliott, 2002), to reflect the variety of physical, sensory, cognitive and mental health conditions and circumstances which older adults face. It may be that improving upon the methodology of the existing effectiveness studies, without the use of highly stringent

exclusion criteria of efficacy studies, may present a viable solution in future research. These should be sufficiently powered to detect differences between an MBSR intervention, comparison group or control groups. Furthermore, outcome measures should be chosen with care, to ensure that they are valid and reliable for use with older adults, within the context of these additional complexities. Sensitive and repeated measurement of dispositional mindfulness will be important in establishing effectiveness.

5.6 Conclusions

In RCTs of MBSR with healthy, high functioning older adults, there were few benefits observed. When considering samples of older adults with clinical levels of mood difficulty and long-term health difficulties, benefits were observed in some studies across a range of psychosocial domains. As methodological concerns were evident, further research could usefully build upon this initial evidence-base.

6. References

References marked with an asterisk were included in the systematic review.

Baer, R. A. (2003). Mindfulness training as a clinical intervention: A conceptual and empirical review. *Clinical Psychology: Science and Practice*, 10(2), 125-143. doi:<http://dx.doi.org/10.1093/clipsy/bpg015>

Barker, C., Pistrang, N., & Elliott, R. (2003). *Research methods in clinical psychology: An introduction for students and practitioners*. John Wiley & Sons.

*Barrett, B., Hayney, M. S., Muller, D., Rakel, D., Ward, A., Obasi, C. N., ... & Coe, C. L. (2012). Meditation or exercise for preventing acute respiratory infection: a randomized controlled trial. *The Annals of Family Medicine*, 10(4), 337-346. doi: 10.1370/afm.1376

*Birnie, K., Garland, S. N., & Carlson, L. E. (2010). Psychological benefits for cancer patients and their partners participating in mindfulness-based stress reduction (MBSR). *Psycho-Oncology*, 19(9), 1004-1009. doi:<http://dx.doi.org/10.1002/pon.1651>

Bishop, S. R., Lau, M., Shapiro, S., Carlson, L., Anderson, N. D., Carmody, J., . . . Devins, G. (2004). Mindfulness: A proposed operational definition. *Clinical Psychology: Science and Practice*, 11(3), 230-241. doi:<http://dx.doi.org/10.1093/clipsy.bph077>

Bohlmeijer, E., Prenger, R., Taal, E., & Cuijpers, P. (2010). Meta-analysis on the effectiveness of mindfulness-based stress reduction therapy on mental health of adults with a chronic disease: What should the reader not make of it? *Journal*

of Psychosomatic Research, 69(6), 614-615.

doi:<http://dx.doi.org/10.1016/j.jpsychores.2010.09.005>

Caldwell, K., Henshaw, L., & Taylor, G. (2005). Developing a framework for critiquing health research. *Journal of health, social and environmental issues*, 6(1), 45-54.

Chambers, R., Gullone, E., & Allen, N. B. (2009). Mindful emotion regulation: An integrative review. *Clinical Psychology Review*, 29(6), 560-572. doi: 10.1016/j.cpr.2009.06.005

Chiesa, A., & Serretti, A. (2009). Mindfulness-based stress reduction for stress management in healthy people: A review and meta-analysis. *The Journal of Alternative and Complementary Medicine*, 15(5), 593-600.
doi:<http://dx.doi.org/10.1089/acm.2008.0495>

*Creswell, J. D., Irwin, M. R., Burklund, L. J., Lieberman, M. D., Arevalo, J. M. G., Ma, J., . . . Cole, S. W. (2012). Mindfulness-based stress reduction training reduces loneliness and pro-inflammatory gene expression in older adults: A small randomized controlled trial. *Brain, Behavior, and Immunity*, 26(7), 1095-1101. doi:<http://dx.doi.org/10.1016/j.bbi.2012.07.006>

Davidson, R. J. (2010). Empirical explorations of mindfulness: Conceptual and methodological conundrums. *Emotion*, 10(1), 8-11. doi: 10.1037/a0018480

Downs, S. H., & Black, N. (1998). The feasibility of creating a checklist for the assessment of the methodological quality both of randomised and non-

randomised studies of health care interventions. *Journal of epidemiology and community health*, 52(6), 377-384.

*Ernst, S., Welke, J., Heintze, C., Zöllner, A., Kiehne, S., Schwantes, U., & Esch, T. (2008). Effects of mindfulness-based stress reduction on quality of life in nursing home residents: a feasibility study. *Forschende Komplementärmedizin/Research in Complementary Medicine*, 15(2), 74-81.
doi:10.1159/000121479

*Gallegos, A. M., Hoerger, M., Talbot, N. L., Krasner, M. S., Knight, J. M., Moynihan, J. A., & Duberstein, P. R. (2013). Toward identifying the effects of the specific components of mindfulness-based stress reduction on biologic and emotional outcomes among older adults. *The Journal of Alternative and Complementary Medicine*, 19(10), 787-792.
doi:http://dx.doi.org/10.1089/acm.2012.0028

*Gallegos, A. M., Hoerger, M., Talbot, N. L., Moynihan, J. A., & Duberstein, P. R. (2013). Emotional benefits of mindfulness-based stress reduction in older adults: The moderating roles of age and depressive symptom severity. *Aging & Mental Health*, 17(7), 823-829.
doi:http://dx.doi.org/10.1080/13607863.2013.799118

Grossman, P., Niemann, L., Schmidt, S., & Walach, H. (2004). Mindfulness-based stress reduction and health benefits: A meta-analysis. *Journal of Psychosomatic Research*, 57(1), 35-43. doi:http://dx.doi.org/10.1016/S0022-3999(03)00573-7

Hayes, A. M., & Feldman, G. (2004). Clarifying the construct of mindfulness in the context of emotion regulation and the process of change in therapy. *Clinical Psychology: Science and Practice*, 11(3), 255-262.

doi:<http://dx.doi.org/10.1093/clipsy.bph080>

Hayes, S. C., Luoma, J. B., Bond, F. W., Masuda, A., & Lillis, J. (2006).

Acceptance and commitment therapy: Model, processes and outcomes.

Behaviour Research and Therapy, 44(1), 1-25.

doi:<http://dx.doi.org/10.1016/j.brat.2005.06.006>

Hofmann, S. G., Sawyer, A. T., Witt, A. A., & Oh, D. (2010). The effect of mindfulness-based therapy on anxiety and depression: A meta-analytic review.

Journal of Consulting and Clinical Psychology, 78(2), 169-183.

doi:<http://dx.doi.org/10.1037/a0018555>

Hölzel, B. K., Carmody, J., Vangel, M., Congleton, C., Yerramsetti, S. M., Gard,

T., & Lazar, S. W. (2011). Mindfulness practice leads to increases in regional brain gray matter density. *Psychiatry Research: Neuroimaging*, 191(1), 36-43.

<http://dx.doi.org/10.1016/j.psychresns.2010.08.006>

Jha, A. P., Krompinger, J., & Baime, M. J. (2007). Mindfulness training modifies subsystems of attention. *Cognitive, Affective, & Behavioral Neuroscience*, 7(2), 109-119. DOI10.3758/CABN.7.2.109

Jha, A. P., Stanley, E. A., Kiyonaga, A., Wong, L., & Gelfand, L. (2010).

Examining the protective effects of mindfulness training on working memory capacity and affective experience. *Emotion*, 10(1), 54. doi: 10.1037/a0018438

Kabat-Zinn, J. (2003). Mindfulness-based interventions in context: Past, present, and future. *Clinical Psychology: Science and Practice*, 10, 144–156.
doi:10.1093/clipsy/bpg016.

Kabat-Zinn, J., Lipworth, L., & Burney, R. (1985). The clinical use of mindfulness meditation for the self-regulation of chronic pain. *Journal of Behavioral Medicine*, 8(2), 163-190.

Ledesma, D., & Kumano, H. (2009). Mindfulness-based stress reduction and cancer: A meta-analysis. *Psycho-Oncology*, 18(6), 571-579.
doi:http://dx.doi.org/10.1002/pon.1400

*Lenze, E. J., Hickman, S., Hershey, T., Wendleton, L., Ly, K., Dixon, D., ... & Wetherell, J. L. (2014). Mindfulness-based stress reduction for older adults with worry symptoms and co-occurring cognitive dysfunction. *International journal of geriatric psychiatry*. doi: 10.1002/gps.4086

Morone, N. E., & Greco, C. M. (2014). Adapting Mindfulness Meditation for the Older Adult. *Mindfulness*, 1-3. doi: 10.1007/s12671-014-0297-z

*Morone, N. E., Greco, C. M., & Weiner, D. K. (2008). Mindfulness meditation for the treatment of chronic low back pain in older adults: A randomized controlled pilot study. *Pain*, 134(3), 310-319.
doi:http://dx.doi.org/10.1016/j.pain.2007.04.038

*Morone, N. E., Rollman, B. L., Moore, C. G., Qin, L., & Weiner, D. K. (2009). A mind-body program for older adults with chronic low back pain: Results of a

pilot study. *Pain Medicine*, 10(8), 1395-1407.

doi:<http://dx.doi.org/10.1111/j.1526-4637.2009.00746.x>

*Moynihan, J. A., Chapman, B. P., Klorman, R., Krasner, M. S., Duberstein, P. R., Brown, K. W., & Talbot, N. L. (2013). Mindfulness-based stress reduction for older adults: Effects on executive function, frontal alpha asymmetry and immune function. *Neuropsychobiology*, 68(1), 34-43.

doi:<http://dx.doi.org/10.1159/000350949>

*Mularski, R. A., Munjas, B. A., Lorenz, K. A., Sun, S., Robertson, S. J., Schmelzer, W., . . . Shekelle, P. G. (2009). Randomized controlled trial of mindfulness-based therapy for dyspnea in chronic obstructive lung disease. *The Journal of Alternative and Complementary Medicine*, 15(10), 1083-1090.

doi:<http://dx.doi.org/10.1089/acm.2009.0037>

National Institute of Clinical Excellence (NICE; 2012). National Institute Appendix F Quality appraisal checklist – quantitative intervention studies. In Methods for the development of NICE public health guidance (third edition). Retrieved from <http://publications.nice.org.uk/methods-for-the-development-of-nice-public-health-guidance-third-edition-pmg4/appendix-f-quality-appraisal-checklist-quantitative-intervention-studies>

Nykliček, I. (2011). Mindfulness, emotion regulation, and well-being. In Nykliček, I., Vingerhoets, A., & Zeelenberg, M. (2011). *Emotion regulation and well-being* (pp. 101-118). New York: Springer. doi:http://dx.doi.org/10.1007/978-1-4419-6953-8_7

Ott, M. J. (2004). Mindfulness meditation: a path of transformation & healing.

Journal of psychosocial nursing and mental health services, 42(7), 22-29.

Samuelson, M., Carmody, J., Kabat-Zinn, J., & Bratt, M. A. (2007). Mindfulness-

based stress reduction in massachusetts correctional facilities. *The Prison*

Journal, 87(2), 254-268. doi:<http://dx.doi.org/10.1177/0032885507303753>

Segal, Z. V., Williams, J. M. G., & Teasdale, J. D. (2002). Review of mindfulness-

based cognitive therapy for depression. *Psychotherapy and Psychosomatics*,

71(6), 363. Retrieved from [http://0-](http://0-search.proquest.com.pugwash.lib.warwick.ac.uk/docview/619806221?accountid=14888)

[search.proquest.com.pugwash.lib.warwick.ac.uk/docview/619806221?accountid=14888](http://0-search.proquest.com.pugwash.lib.warwick.ac.uk/docview/619806221?accountid=14888)

Segal, Z., Williams, M., & Teasdale, J. (2002). Mindfulness-based cognitive

therapy for depression: A new approach to preventing relapse: Book review.

Cognitive Behaviour Therapy, 31(4), 193-194. Retrieved from [http://0-](http://0-search.proquest.com.pugwash.lib.warwick.ac.uk/docview/619844304?accountid=14888)

[search.proquest.com.pugwash.lib.warwick.ac.uk/docview/619844304?accountid=14888](http://0-search.proquest.com.pugwash.lib.warwick.ac.uk/docview/619844304?accountid=14888)

Shapiro, S. L., Carlson, L. E., Astin, J. A., & Freedman, B. (2006). Mechanisms of

mindfulness. *Journal of Clinical Psychology*, 62, 373–386.

doi:10.1002/jclp.20237

United Nations Department of Economic and Social Affairs, Population Division

(UN DESA; 2013). World Population Ageing Report. Retrieved from

<http://www.un.org/en/development/desa/population/publications/index.shtml>

*Young, L. A., & Baime, M. J. (2010). Mindfulness-based stress reduction: Effect on emotional distress in older adults. *Complementary Health Practice Review*, 15(2), 59-64. doi:<http://dx.doi.org/10.1177/1533210110387687>

Chapter II: Empirical Paper

A cross-sectional investigation of differences in dispositional mindfulness in younger and older adults

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1. Abstract

Objectives: To examine whether there are age-dependent differences in levels of dispositional mindfulness. In accordance with theories of lifespan development and recent empirical findings, it was hypothesised that older people would have higher levels of dispositional mindfulness, positive affect and well-being compared to younger people.

Method: This was a cross-sectional survey of community dwelling, English-speaking younger adults aged 18-34 years ($n = 162$) and older adults aged 65-93 years ($n = 134$), using a group difference design to examine age differences across self-reported measures of mindfulness, well-being and affect.

Results: Older people showed significantly higher levels of mindfulness, in comparison to that of younger people, in line with initial predictions. This was with the exception of the observing facet of mindfulness. Medium effect sizes were indicated for acting with awareness and non-judging of inner experience mindfulness facets. Older adults also indicated higher levels of well-being and happiness (on a depression-happiness continuum) than younger people, with medium effect sizes. Post-hoc analyses examined the relationship between mindfulness, affect and well-being.

Conclusions: Findings indicate higher levels of mindfulness, affect and well-being for older adults, compared to younger adults. These findings have implications for our understanding of developmental changes across the lifespan. Future research could usefully replicate this cross-sectional study with participants who have a clinical level of mood or physical difficulty, to see if the observed age differences translate to a clinical sample. **Keywords:** Mindfulness; well-being; affect; aging; lifespan

2. Introduction

2.1 Conceptualisations of mindfulness

According to Bishop (2004), there are two components to mindfulness. The first component comprises self-regulation of attention in the present moment and non-elaborative awareness (Bishop, 2004). The second includes orientating to experience with curiosity, openness and acceptance (Bishop, 2004; Hayes & Feldman, 2004), without judgement or striving towards a desired internal or external state (Bishop, 2004). Although mindfulness has been conceptualised as a single faceted construct by some authors (Brown & Ryan, 2003), mindfulness may be helpfully understood as a complex multifaceted construct (Baer, Smith, Hopkins, Krietemeyer & Toney, 2006).

The specific facets or components of mindfulness differ across definitions or measures of the mindfulness construct. Baer et al. (2006) analysed the factor structure of five independent measures of mindfulness in order to develop the Five Facet Mindfulness Questionnaire (FFMQ; Baer et al., 2006), which yielded five distinct facets, namely acting with awareness, non-judging of inner experience, non-reactivity to inner experience, observing and describing. These facets are compatible with the aforementioned consensus definition. Understanding and measuring the mindfulness construct may facilitate an understanding of how different facets of mindfulness relate to other variables and may enhance predictive and construct validity (Baer et al. 2006). This may also increase our understanding of how mindfulness facets may be differentially related to psychological adjustment (Baer et al., 2008). It could also be argued that more reductionist single factor definitions of an attention state are not consistent with the richness of the

understanding, evident in traditional Buddhist conceptualisations of this construct (Grossman & Dam, 2011; Leary & Tate, 2007).

Mindfulness can be conceptualised as a trait, which would infer that individuals may differ in a dispositional aspect of mindfulness. A combination of genetic predisposition, environmental factors and explicit training are likely to account for these individual differences (Davidson, 2010). There is a growing body of research which indicates that higher levels of dispositional mindfulness are associated with increased well-being, positive affect and lower levels of negative affect, in particular depression and anxiety (e.g. Baer, Smith, & Allen, 2004; Baer et al., 2006; Brown & Ryan, 2003). It should also be acknowledged that the long term targets of most contemplative traditions and mindfulness interventions would include a change in trait affect, such that it is an enduring change to everyday life (Davidson, 2010). This principle forms the basis of mindfulness-based interventions, such as mindfulness-based stress reduction (MBSR), which is shown to be efficacious in a number of meta-analyses (Baer, 2003; Grossman, Niemann, Schmidt, & Walach, 2004; Hofman, Sawyer, Witt & Oh, 2010).

2.2 Developmental regulation and mindfulness

It is important to identify domains of psychological functioning that tend not to decline with age and may represent resources for coping with later-life challenges (Haase, Heckhausen & Wrosch, 2013). There may be improved emotion regulation and prioritising of ‘affect optimisation’ in older adulthood (Carstensen, Fung & Charles, 2003). In particular, the Motivational Theory of Life-span Development (MTD; Heckhausen, Wrosch & Schulz, 2010) posits that pursuit of life goals

provides mastery in younger adulthood, but as this becomes less achievable with age, older people may compensate through changing oneself or through accommodating to the environment. In support of theories of lifespan development, reviews of the empirical literature highlight reductions in negative affect in older age (Charles & Piazza, 2009; Isaacowitz & Blanchard-Fields, 2012; Urry & Gross, 2010).

It may be that re-prioritising of focus on ‘being’ in the present moment, as opposed to a future focused perspective, brings about intrinsic satisfaction, which improves well-being in older adulthood (Laidlaw, 2013). This may be particularly important when people are presented with situations which are not easily changed, such as those associated with functional and relationship losses, more commonly experienced in older adulthood. In this context, dispositional mindfulness may be understood as an emotion-regulating strategy, whereby emotional reactivity is reduced, thereby enhancing the level of emotional control (Gallegos, Hoerger, Talbot, Moynihan & Duberstein, 2013). There may be greater objectivity about internal experiences and enhanced clarity of moment-by-moment experience across the lifespan (Shapiro, Carlson, Astin & Freedman, 2006). It is also possible that there may be an enhanced capacity for separating from internal and external experiences in older adulthood (Shapiro et al., 2006). In line with this theoretical understanding, it would be predicted that dispositional mindfulness would increase across the lifespan (Martin & Kleiber, 2005).

2.3 Investigations of dispositional mindfulness across the lifespan

Empirically, there are a growing number of validation and outcome studies which indicate higher levels of dispositional mindfulness in older adults (Baer et al., 2008; Morone, Rollman, Moore, Qin & Weiner, 2009; Splevins, Smith, & Simpson, 2009). Two studies investigated the effectiveness of mindfulness-based interventions for older adults (mean age ≥ 65 years; Morone et al., 2009; Splevins et al., 2009). Both of these studies identified high mean baseline scores of mindfulness, with higher levels of ‘acting with awareness’ (Morone et al., 2009; Splevins et al., 2009), relative to normative data reported in investigations with North American student or community samples (Baer et al., 2008; Carmody & Baer, 2008). Furthermore, Morone et al. (2009) suggest that baseline mindfulness levels in older adults were more comparable to those of experienced meditators than younger people (Baer et al., 2008). However, these comparisons should be considered with caution, given that conclusions were drawn from demographically different, younger populations. This limitation was partially addressed in a study by Baer et al. (2008), who found a significant correlation between age (range 18 to 83 years) and ‘act with awareness’ and total FFMQ score, when controlling for education and meditation experience, with a small effect size.

The aforementioned studies provide preliminary indications that older people may have higher levels of dispositional mindfulness, which have been corroborated in recent studies, investigating changes in dispositional mindfulness and related constructs, across the lifespan (Raes, Bruyneel, Loeys, Moerkerke & De Raedt, 2013; Shallcross, Ford, Floerke and Mauss, 2013). In a community sample (aged 21 to 73), older age was associated with greater acceptance (Shallcross et al., 2013).

Acceptance or non-judgemental engagement with emotional experiences is a fundamental component of mindfulness. Furthermore, increased acceptance mediated an inverse relationship between age and both anxiety and anger (Shallcross et al., 2013). These findings were corroborated by Raes et al. (2013) in a cross-sectional investigation of community dwelling people (age range 18–85 years). They found that age-related decreases in negative affect were mediated by mindfulness, as measured using both a single and composite measure of mindfulness. However, there is a need to build upon these findings by directly examining the relationship between age and a range of mindfulness facets. There is also scope to examine positive affect in addition to negative affect in different age groups.

2.4 The present investigation

The possible difference in levels of mindfulness in a younger relative to an older sample merits investigation, as this could extend our theoretical understanding of dispositional mindfulness and how this may change across the lifespan. Findings from such research may potentially inform resilience focused interventions for both younger and older adults.

Similarly, it is clinically informative to investigate distinct younger and older age groups in order to determine psychological domains that may be important to well-being and may form the focus of psychological intervention. With increases in life expectancy, it will be important to identify resources for maintaining well-being, which may not be susceptible to age related decline, in the presence of adverse changes and losses that later life may present (Haase et al., 2013). Young adulthood

is also a fundamental period for psychological development and identity formation, which may be relevant to well-being (Neff & McGehee, 2010). It is also a time associated with self-evaluation in relation to the achievement of life-goals (Heckhausen et al., 2010; Neff & McGehee, 2010). Therefore, it is important to identify psychological domains for resilience building (Neff & McGehee, 2010).

Previous investigations have utilised a single facet or composite measure of mindfulness to investigate mindfulness incrementally across the whole lifespan (Raes et al., 2013; Shallcross et al., 2013). However, it is important to investigate the full range of facets, as there have been indications that age-related increases are evident for some, but not all facets of dispositional mindfulness (Baer et al., 2004; Morone et al., 2009; Splevins et al., 2009). It is also important not to investigate age-groups too close in age as important developmental trends may not be observable, particularly as incremental changes across individual facets may not be detectable by statistical methods. Furthermore, assessing mindfulness across the whole life-span has resulted in very few participants represented in the oldest ages of the spectrum. In particular, Shallcross et al. (2013) identified that it would be useful to extend findings from their study to people over the age of 73 years. It would also be important to investigate age differences in negative and positive affect and well-being, to build upon findings that negative affect decreases with age (Raes et al., 2013; Shallcross et al., 2013). Although a decrease in negative affect has been indicated across the lifespan (Charles & Piazza, 2009), the relationship with positive affect shows inconsistent findings (Scheibe & Carstensen, 2010) and the underlying mechanisms remain unclear (Shallcross et al., 2013).

2.5 Aims and research questions

The present investigation aimed to replicate and expand upon findings that have indicated an increase in levels of dispositional mindfulness across the lifespan (Baer et al., 2008; Morone et al., 2009; Raes et al., 2013; Shallcross et al., 2013; Splevins et al., 2009).

It was hypothesised that older adults (aged 65 years and older) would demonstrate higher levels of dispositional mindfulness relative to younger adults (aged between 18-35 years).

A secondary hypothesis was that older adults would demonstrate higher levels of well-being, positive affect and lower levels of negative affect relative to their younger counterparts.

3. Methods

3.1 Design

A cross-sectional survey using a group difference design was employed to examine the association between mindfulness and age differences, as assessed by a self-report measure and demographic information. More specifically, age differences (independent variable) were examined between younger adults (18-35 years) and older adults (≥ 65 years) in terms of levels of dispositional mindfulness (dependent variables) as indicated by the five facets of mindfulness and composite mindfulness score. In addition, age differences (independent variable) were examined between younger adults (18-35 years) and older adults (≥ 65 years) for affect (on a depression-happiness continuum) and well-being (dependent variables).

3.2 Participants

3.2.1 Ethics

Coventry University online ethical review system approved the study on 7-03-2013 with an amendment on 11-03-13. Refer to Appendix C for further details of ethical clearance. Participants were a non-clinical community sample recruited via voluntary, educational and third sector settings. The British Psychological Society (2009) Code of Ethics and Conduct was adhered to.

3.2.2 Power calculation

Quota sampling was used in the present study. The quota was estimated from preliminary collection of pilot data. Relating to the primary hypothesis, effect size d was calculated from the means found for younger adults (18-35 years; $n = 47$) and older adults (65-87 years; $n = 38$) on levels of mindfulness. Independent t-tests were conducted for age differences (IV) across facets of mindfulness (DVs) and a power analysis was calculated to estimate required sample size, indicated by the weakest significant mindfulness facet (DV). G*Power 3.1.7 (Faul, Erdfelder, Lang & Buchner, 2007) was employed to estimate required sample size based on the data collected in the pilot study. It was estimated that 51 participants would be required for each group to have an 80 percent chance of achieving statistical significance at the $p < .05$ level.

3.2.3 Recruitment

Samples of younger (aged 18-35) and older (≥ 65 years) adults were recruited between April and November 2013, predominantly in the West Midlands UK. Both younger and older samples were recruited concurrently from community, English-speaking populations, predominantly within settings invested in further education,

to ensure that they were broadly comparable. Organisations were identified and gatekeeper permission was obtained. Potential participants in the younger age group were recruited using a Coventry University online system which awards credits as a compensation for participant's time, in response to a short abstract detailing the study. Other Coventry University affiliates, not eligible for research credit, were given the opportunity to participate by distribution of a link in a flyer containing information about the study. Potential participants in the older age group were alerted to the existence of the study via communication in writing to voluntary and third sector organisation newsletters, an online link for the study and verbal presentation of information at organisational meetings and events.

3.3 Measures

3.3.1 The Five Facet Mindfulness Questionnaire (FFMQ; Baer et al., 2006).

This is a 39 item self-report scale of dispositional mindfulness. Baer et al. (2006) conducted a factor analysis of five independent measures of mindfulness in order to develop the FFMQ. The FFMQ has 5 distinct facets. *Observe* Items (all positively worded) include, 'I pay attention to sensations, such as the wind in my hair or sun on my face.' *Describe* items (both positively and negatively worded) include: 'I'm good at finding words to describe my feelings.' *Acting with Awareness* items (all reverse scored) include: 'When I do things, my mind wanders off and I'm easily distracted.' *Non-Judgement* Items (all reverse scored) include: 'I criticize myself for having irrational or inappropriate emotions.' *Non-Reactivity* Items (all positively worded) include: 'I perceive my feelings and emotions without having to react to them.' Items from each facet are rated on a 5-point Likert scale, ranging from never or very rarely true (score 1) through to always or almost always true

(score 5). Negatively worded items were reverse scored to provide individual facet scores and an overall composite. Cronbach's alpha coefficients range from .75 to .91, demonstrating acceptable internal consistency and the measure has good convergent validity with other mindfulness measures in student and community samples (aged 18-83 years; Baer et al., 2006, 2008).

3.3.2 The Warwick-Edinburgh Mental Well-being Scale (WEMWBS; Tennant et al., 2007)

This is a 14 item self-report scale comprised of items relating to different aspects of positive mental health, including both hedonic and eudemonic aspects. Examples include 'I've been feeling optimistic about the future', 'I've been feeling interested in other people', 'I've been dealing with problems well' and 'I've been feeling good about myself.' For each statement, responses are rated on a 5-point Likert scale ranging from 'none of the time' to 'all of the time', where the individual rates their experience over the last two weeks. Confirmatory factor analysis suggests measurement of a single underlying construct. Cronbach's alpha scores of .89 (student sample) and .91 (population sample aged 16-75 years) suggests good internal consistency. WEMWBS showed high correlations with other mental and well-being and health scales and lower correlations with scales measuring overall health. Test-retest reliability was high (.83; Tennant et al., 2007).

3.3.3 The Short Depression-Happiness Scale (SDHS; Joseph, Linley, Harwood, Lewis & McCollam, 2004)

This is a 6 item self-report scale of positive and negative affective states along a continuum. For example, 'I felt pleased with the way I am', which indicates positive affect and 'I felt dissatisfied with my life' indicating negative affect.

Negatively worded items were reverse scored to provide a single positive affect score. The individual rates how frequently each statement was true for them in the last 7 days on a 4-point Likert scale, ranging from 'never' to 'often.' Psychometric properties were assessed across three data sets of student samples (Joseph et al. 2004). The SDHS is highly associated with the full Depression Happiness Scale (Joseph & Lewis, 1998; ranging from $r = .90$ to $r = .93$). The SDHS has good convergent validity with other measures of depression. Test-retest reliability was also good ($r = .68$; Joseph et al. 2004). Cronbach's alpha coefficients range from .77 to .92 in a student sample (Joseph et al. 2004) and was reported as .83 in a sample of community dwelling older adults (aged 65-75 years; Laukka, 2007), indicating good internal consistency.

3.3.4 Demographic information

Demographic information was recorded on a data sheet alongside formal assessment measures. In addition to documenting age in years (as part of assessing age differences), gender, highest level of educational attainment, current occupation and current meditation experience were also assessed. This additional information was collected to identify potential confounding variables.

3.4 Procedure

A participant information sheet was provided before any informed consent was requested (see appendix D). Participants who provided informed consent completed the FFMQ, WEMWBS, SDHS questionnaires and the demographic sheet on a single occasion. Participants could choose to return written questionnaires by post or submit online versions of the questionnaires. All questionnaires are included in Appendix E.

3.5 Data analysis and preliminary data screening

Data was analysed using IBM SPSS statistics version 20.0. A series of steps were taken to test for the assumptions for parametric tests. Data from questionnaire measures were interval. Parametric tests were used where the assumptions of homogeneity of variance and normal distributions were satisfied.

There were five distinct facets to measure the construct of mindfulness with the FFMQ and the data were inspected to determine whether they satisfied the assumptions for multivariate analysis of variance (MANOVA). There was an adequate sample size as there were more cases in each cell than there were dependent variables. The data were normally distributed and there were no univariate or multivariate outliers. There was a straight line relationship between each pair of DVs indicating linearity of relationship. Meditation level and education were not considered as covariates, as correlations with the facets of mindfulness were weak or absent. There were only moderate relationships between the DVs, thus there was no concern for multicollinearity and singularity. Box's M test indicated that there was homogeneity of variance-covariance matrices and Levene's tests indicated that there was homogeneity of variance for all five DVs. Having satisfied these assumptions, a one-way MANOVA was performed on the data.

4. Results

4.1 Descriptive statistics

4.1.1 Demographic characteristics

The age range of the younger group was 18-34 years ($n = 162$) with a mean age of 20.74 years ($SD = 3.76$) and the age range of the older group was 65-93 years ($n = 134$) with a mean age of 74.42 ($SD = 6.49$). Participant characteristics are outlined in Table 1. The majority of both younger and older adults were female, were working towards or had completed an undergraduate degree, diploma or equivalent and had no practice of mindfulness or meditation.

4.1.2 Questionnaire Completion

240 paper questionnaire packs were distributed, of which 135 were completed between April and November 2013 (44% attrition rate). 4% of younger adults and 92.75% of older adults completed paper questionnaires, with the remaining questionnaires completed online. However, the use of online completion methods prevented calculation of an overall attrition rate. Missing data was recorded on the FFMQ for 35 older participants (25%) and the SDHS and WEMWBS for 5 older participants (1%). No missing data was recorded for younger adults, as online completion methods prompted for responses for missing values.

Table 1.

Demographic characteristics of study participants expressed as percentages

Demographic: %	Younger Adults	Older Adults
Female:	77	67
Education level:		
No formal qualification	-	14
School certificate (SC), O levels, GCSEs or equivalent	-	21
Higher school certificate (HSC), A levels, BTEC or equivalent	89	12
Undergraduate Degree , diploma or equivalent	6	41
Post Graduate Qualification e.g. Masters or Doctorate or equivalent	5	12
Occupation:		
Undergraduate Student	89	-
Postgraduate Student	2	-
Employed – Job requires professional training	8	3
Employed – Job does not require professional training	1	1
Retired - Job required professional training	-	70
Retired – Job did not require professional training	-	17
Voluntary Work		9
Meditation Experience:		
No practice of mindfulness or meditation	75	76
Some practice (at least once a week for a period of less than six months)	22	9
Regular practice (at least once a week for a period of at least six months)	2	7
Very frequent practice (at least two or three times a week for a period of at least 6 months)	1	8

4.2 Inferential statistics

4.2.1 Age differences in mindfulness facets

Age differences were examined between younger adults (18-34 years) compared to older adults (65-93 years) in levels of dispositional mindfulness as indicated by the five facets of mindfulness (observe, describe, act with awareness, non-judgement of inner experience and non-reactivity to inner experience). There was a statistically significant difference between younger and older adults on the combined dependent variables of mindfulness: $F_{(5, 260)} \text{ Wilks' Lambda} = 8.06, p < .0000001, \eta^2_p = .13$.

In line with initial predictions, older people (aged 65-93) in the present study indicated higher levels of mindfulness compared to younger people (aged 18-34), with a medium effect size.

To examine the five DVs independently, the Bonferroni adjusted alpha level was .01. Older adults gave a higher mean level of describing, acting with awareness, non-judging of inner experiences, non-reactivity to inner experience and observing than did younger adults. These differences were all statistically significant ($p < .01$); with the exception of the observing facet. The corresponding effect sizes were medium for acting with awareness and non-judging of inner experience facets of mindfulness. The effect sizes for describe and non-reactivity to inner experience were small (Cohen, 1992). These results are reported in full, in table 2.

Table 2.

Comparison of the effects of younger versus older age group across facets of mindfulness

Dependent Variable	Age Group Mean (SD)		F	p	d
	Younger Adults	Older Adults			
Describing	25.96 (6.00)	28.06 (5.72)	8.09	.005	.36
Acting with awareness	23.97 (5.65)	26.88 (5.02)	18.38	.000025	.54
Non-judging of inner experience	24.12 (6.82)	28.72 (6.92)	28.50	< .0000001	.67
Non-reactivity to inner experience	20.83 (4.17)	22.42 (3.92)	9.66	.002	.39
Observing	25.84 (5.04)	26.97 (5.55)	2.91	.089	.22

Higher scores denote higher dispositional mindfulness

Degrees of freedom $df = 1, 264$

In summary, older people (aged 65-93) in the present study indicated higher levels of mindfulness, in particular describing, acting with awareness, non-judging of inner experience, and non-reactivity to inner experience in comparison to younger people (aged 18-34) in line with initial predictions.

4.2.2 Age differences in composite mindfulness, well-being and affect

Age differences were examined between younger adults (18-34 years) compared to older adults (65-93 years) in composite levels of dispositional mindfulness (as indicated by a total score of the five facets of mindfulness), well-being and affect (on a depression-happiness continuum) using independent t-tests. As predicted, older adults showed a higher mean level of composite mindfulness, well-being and

positive affect (on a depression-happiness continuum) than younger adults. These differences were all statistically significant ($p \leq .0001$) and effect sizes were medium for affect and well-being and large for composite mindfulness. These results are reported in full in table 3.

Table 3.

Comparison of the effects of younger versus older age group across constructs of mindfulness, well-being and affect

Construct	Age Group Mean (SD)		<i>t</i>	<i>p</i>	<i>d</i>
	Younger Adults	Older Adults			
Composite Mindfulness	120.72 (17.37)	133.06 (16.74)	-5.74	< .0000001	.72
Well-being	47.41 (7.98)	51.56 (8.90)	-4.23	.000032	.50
Affect	18.15 (3.70)	20.12 (3.42)	-4.72	< .000004	.55

Degrees of freedom for composite mindfulness $df = 264$

Degrees of freedom for well-being and affect $df = 294$

Higher scores denote higher dispositional mindfulness, well-being and happiness on a depression-happiness continuum

4.2.3 Post-hoc Analysis

Post-hoc analyses were conducted in order to gain a preliminary understanding of the relationship between composite mindfulness, well-being and affect (on a depression-happiness continuum). Pearson's r correlations were conducted for younger and older adults separately. For both younger and older adults, there were significant moderate positive correlations between mindfulness, well-being, and level of happiness on a depression-happiness continuum, which were all statistically significant ($p \leq .0000001$).

The Pearson r coefficients were contrasted to determine whether there were differences in the magnitude of the relationships between mindfulness and affect and also mindfulness and well-being between the two age groups. No significant differences were found. Contrasts of correlation coefficients within each group were also performed to determine whether the relationships between mindfulness and affect and mindfulness and well-being were significantly different from one another. No significant difference was found for either age group. These results are reported in full, in table 4.

Table 4.

Inter-correlations for mindfulness, well-being and affect with contrasts of correlation coefficients

	Mindfulness		Z
	Younger Adults	Older Adults	
Well-being	.53	.62	1.03
Affect (Depression-Happiness)	.57	.51	.63
<i>t</i>	0.76	1.58	

Correlation coefficients all significant at $p \leq .0000001$ level (2-tailed)

All contrasts of correlation coefficients were non-significant $p \geq .05$

t statistics denotes within-group contrasts between well-being and affect

z -score denotes between-group contrasts between younger and older adults

An increase in scores denotes an improvement in dispositional mindfulness, well-being and happiness (on a depression-happiness continuum)

5. Discussion

5.1 Age differences in mindfulness

Older people (aged 65-93) in the present study demonstrated higher levels of mindfulness in comparison to younger people (aged 18-34), in line with initial predictions. In particular, there were medium effect sizes for acting with awareness

and non-judging of inner experience facets, which are encompassed in definitions of mindfulness i.e. “bringing one’s complete attention to the experiences occurring in the present moment, in a non-judgmental or accepting way” (Baer et al., 2006, p.27). The present cross-sectional investigation corroborated and extended upon findings from correlational-analytic studies that suggest older age is positively associated with non-judgment of inner experience or acceptance (Shallcross et al., 2013) and dispositional mindfulness (Raes et al., 2013). They also extend the findings of two intervention studies (Morone et al., 2009; Splevins et al., 2009) and a validation study (Baer et al., 2008) which made a tentative association between older age and higher scores on the act with awareness facet of mindfulness. Furthermore, the present research indicates age associated increases across a range of mindfulness facets, utilising a methodology that was specifically applied to examine discrete age group differences.

It is of theoretical interest that the higher levels of non-judgement of inner experience may be understood as a component of self-acceptance, as opposed to acceptance of others. According to Hayes, Strosahl, Bunting, Twohig and Wilson (2004, p.7) “acceptance involves taking a stance of non-judgemental awareness and actively embracing the experience of thoughts, feelings and bodily sensations as they occur”. Older people may be more willing to accept unpleasant emotions, when faced with age related changes in response to experiences of uncertainty, unpredictability and impermanence (Shallcross et al. 2013). Thus, self-acceptance might be understood as an outcome of emotional growth and development over the lifespan (Laidlaw, 2013). Increased ability to regulate emotions may result from changes in values where older people may selectively optimise the present moment

rather than the future (Laidlaw, 2013). This understanding would be compatible with the theoretical assumptions of MTD (Heckhausen et al., 2010). Butler and Ciarrochi (2007) found that nursing home residents with greater acceptance also had better quality of life, emotional well-being and fewer adverse psychological reactions to decreasing productivity. It would be useful to investigate this further with more diverse samples.

The findings in the present study, which indicated that older adults act with awareness more than their younger counterparts, may link to findings that suggest that older people may increase attention and cognitive resources devoted to the present moment (de Frias et al., 2013). It is also noteworthy that older people did not indicate significantly higher levels of observing on the FFMQ. However, in several studies the observing facet has been atypical amongst the facets of mindfulness, particularly when correlated with other constructs (Baer et al. 2006; 2008; Tran, Glück & Nader, 2013).

5.2 Age differences in well-being and affect

It was found that older adults indicated significantly greater levels of positive affect (on a depression-happiness continuum) and well-being than younger adults, which is important given that there has been a relative paucity of studies confirming age related differences in positive affect and well-being (Scheibe & Carstensen, 2010). These findings are consistent with predictions from theories of lifespan development (Haase et al., 2013) and are consistent with reviews of the literature that indicated reduction in negative affect with older age (e.g. Charles & Piazza, 2009; Isaacowitz & Blanchard-Fields, 2012; Urry & Gross, 2010).

5.3 Implications for research

It is important to gain a further theoretical understanding of age related differences in mindfulness, affect and well-being. There is a growing body of evidence to suggest that mindfulness may exert positive effects through mechanisms related to emotion regulation (e.g. Arch & Craske, 2006; Chambers, Gullone & Allen, 2009; Coffey, Hartman & Fredrickson, 2010; Feldman, Hayes, Kumar, Greeson & Laurenceau, 2007; Gratz & Roemer, 2004). The preliminary post-hoc analysis confirmed the positive relationship between mindfulness, affect and well-being. These variables were moderately correlated for both younger and older adults and the strength of these correlations did not differ according to age group or construct (i.e. affect or well-being). It was not possible to ascertain causality in these relationships. Therefore, there is scope to expand upon the present findings, to test the hypothesis that both negative and positive dimensions of affect and well-being increase across the lifespan, because of changes in mindfulness or indeed emotion regulation. As previously mentioned, two studies have indicated that mindfulness and non-judgment of inner experience mediate a relationship between age and negative affective states (Raes et al., 2013; Shallcross et al., 2013). However, at the time of writing the investigators of the present study have not identified any studies to date which have included a direct measure of emotion regulation in the study of mindfulness across the lifespan.

5.4 Clinical implications and future research directions

The present findings have implications for the provision of healthcare treatments, such as mindfulness interventions for the needs of both younger and older people.

The present study sample included community dwelling adults without any significant psychopathology. Therefore, a future study with a clinical population would be useful to test whether age related increases in dispositional mindfulness are also present for these individuals, in order to determine the treatment implications for younger and older adults who experience mood disorders or difficulties in regulating emotions. Investigation of age differences in responsiveness to mindfulness interventions would also provide a valuable research direction. Mindfulness based treatment approaches may capitalise on and potentially enhance the levels of dispositional mindfulness in older adults (Gallegos et al., 2013b). However, there are contradictory findings (e.g. Nykliček, Dijkman, Lenders, Fonteijn & Koolen, 2014). Therefore, future research may seek to clarify this.

There are also important clinical implications for younger people. The findings of the present study suggests that younger people have lower levels of mindfulness, well-being and positive affect (on a continuum with negative affect). However, the post-hoc analysis would suggest that these constructs were significantly and moderately correlated with one another. Similarly, it has been indicated that self-compassion, a construct that encompasses self-kindness (as opposed to self-judgement) and mindfulness, is strongly associated with well-being in young adults (Neff & McGehee, 2010). These findings may suggest that mindfulness and self-acceptance are important for well-being in younger adults, despite being at lower levels in comparison to older adults. There is promising evidence of the effectiveness of mindfulness interventions for younger people as shown in studies of college students (e.g. Jain et al, 2007; Shapiro et al., 2008) and this may

represent an important intervention for resilience building. Younger adulthood is a time that is important to identity formation and negative self-judgements may impact significantly upon emotional well-being, particularly if it is difficult to achieve environmental mastery (in relation to life goals) as MTD theory would suggest (Heckhausen, Wrosch & Schulz, 2010; Neff & McGehee, 2010). This would also provide a useful avenue for further investigation.

5.5 Study limitations

The present cross-sectional investigation, employing a group difference design, has provided an important first step to establishing age-related differences in mindfulness and emotional well-being and potential mechanisms of developmental phenomenon, which can be further elaborated upon in longitudinal research. With a cross-sectional study it is not possible to determine conclusively that the observed differences in mindfulness, affect and well-being are due to developmental changes across the lifespan. However, cross-sectional investigation of potential developmental mechanisms provides a necessary precursor to longitudinal research, which is time and cost intensive and therefore requires considerable theoretical and empirical justification (Shallcross et al., 2013).

Previous studies have investigated mindfulness incrementally across the whole lifespan (Raes et al., 2013; Shallcross et al., 2013). The present group difference design introduced methodological pluralism, in developing an understanding of age-dependent differences in dispositional mindfulness across a range of facets which extended the findings from previous investigations (Raes et al., 2013; Shallcross et al., 2013). The contrasts of age-groupings permitted analysis of

contrasts across the five-facets of mindfulness, whereas differences may have been too subtle to detect incrementally across the lifespan. The group difference design also ensured that sufficient numbers of participants were represented in each age group, in particular those represented in the oldest ages of the spectrum.

The cross-sectional group difference design raises the question as to whether there may have been specific cohort effects. As far as possible, the two age group samples were selected with similar demographic characteristics, to avoid the influence of confounding variables. However, there were inevitable differences, such as the diverse educational and occupational status of older adults in comparison to the predominantly undergraduate student sample of young adults. In the present study, level of current practice of meditation and education level did not correlate with mindfulness and therefore did not pose a significant threat to internal validity. This may have been because there was little variability in the data i.e. participants were predominantly formally educated and had little experience of meditation.

There may be certain cohort differences, determined by societal norms or historical events that were not controlled for in the present study. Furthermore, there are important generational differences in attitudes to mental well-being and possibly to the awareness of thoughts and feelings. It is possible that the younger generation may not show increases in self-acceptance as they age (Twenge, & Campbell, 2010). However, even though we cannot conclude that these changes are developmental, nevertheless there are differences which have relevance to our

understanding of emotion regulation and this may help to inform interventions that aim to enhance psychological well-being at the present time.

It is also possible that there are additional cohort differences within the older age group and there are at least two generations within this age grouping, representing important differences between those represented as 'young-old' or 'old-old'.

Similarly, there may be sub-groups within the young adult group, in the transition between late adolescence and adulthood. It is recognised that older adults may be the least homogenous of all age groups (Laidlaw, Thompson, Gallagher-Thompson & Dick-Siskin, 2003). However, sub-grouping by chronological age may be an oversimplification as there are important biological and psychosocial factors which further contribute to differences within age groupings (Laidlaw et al., 2003).

Furthermore, it is important to have sufficient representation and sample size in each age bracket in order to conduct meaningful analysis.

Almost all the data for the younger participants was completed online as opposed to completing paper questionnaire packs, whereas the converse was true of older adults. This is likely to represent cohort differences in preferred mode of completion. As part of the online surveys, there were prompts to indicate when questions might have been missed. This compares with the missing data present for older participants completing paper copies. Relative to the other two questionnaires, there was more data missing for the FFMQ, which may have indicated difficulties in questionnaire completion. Although the FFMQ has been validated across the lifespan (Baer et al., 2004, 2006, 2008), there is scope for further investigation of

the psychometric properties, acceptability and accessibility of this questionnaire, particularly for use with older people.

5.6 Research summary

The current investigation found that a sample of older adults have higher levels of mindfulness, positive affect and well-being than younger adults. Further investigation should clarify whether the age-related differences found in the present study are replicable, particularly with samples of participants with a clinical level of difficulty. These findings form an important precursor to intervention research, regarding the efficacy of mindfulness interventions, which seek to enhance the levels of dispositional mindfulness present in older adults (Gallegos et al., 2013b) in order to improve well-being.

6. References

- Arch, J. J., & Craske, M. G. (2006). Mechanisms of mindfulness: Emotion regulation following a focused breathing induction. *Behaviour research and therapy*, 44(12), 1849-1858. doi.org/10.1016/j.brat.2005.12.007
- Baer, R. A. (2003). Mindfulness training as a clinical intervention: A conceptual and empirical review. *Clinical Psychology: Science and Practice*, 10(2), 125-143. doi:http://dx.doi.org/10.1093/clipsy/bpg015
- Baer, R. A., Smith, G. T., & Allen, K. B. (2004). Assessment of mindfulness by self-report: The kentucky inventory of mindfulness skills. *Assessment*, 11(3), 191-206. doi:http://dx.doi.org/10.1177/1073191104268029
- Baer, R. A., Smith, G. T., Hopkins, J., Krietemeyer, J., & Toney, L. (2006). Using self-report assessment methods to explore facets of mindfulness. *Assessment*, 13(1), 27-45. doi:http://dx.doi.org/10.1177/1073191105283504
- Baer, R. A., Smith, G. T., Lykins, E., Button, D., Krietemeyer, J., Sauer, S., . . . Williams, J. M. (2008). Construct validity of the five facet mindfulness questionnaire in meditating and nonmeditating samples. *Assessment*, 15(3), 329-342. doi:http://dx.doi.org/10.1177/1073191107313003
- Bishop, S. R., Lau, M., Shapiro, S., Carlson, L., Anderson, N. D., Carmody, J., . . . Devins, G. (2004). Mindfulness: A proposed operational definition. *Clinical Psychology: Science and Practice*, 11(3), 230-241. doi:http://dx.doi.org/10.1093/clipsy.bph077

- British Psychological Society (2009). *Code of Ethics and Conduct*. Leicester:
British Psychological society. Retrieved from [http://www.bps.org.uk/
system/files/documents/code_of_ethics_and_conduct.pdf](http://www.bps.org.uk/system/files/documents/code_of_ethics_and_conduct.pdf)
- Brown, K. W., & Ryan, R. M. (2003). The benefits of being present: Mindfulness and its role in psychological well-being. *Journal of Personality & Social Psychology*, 84(4), 822-848. doi: 10.1037/0022-3514.84.4.822
- Butler, J., & Ciarrochi, J. (2007). Psychological acceptance and quality of life in the elderly. *Quality of Life Research*, 16(4), 607-615. DOI10.1007/s11136-006-9149-1
- Carmody, J., & Baer, R. A. (2008). Relationships between mindfulness practice and levels of mindfulness, medical and psychological symptoms and well-being in a mindfulness-based stress reduction program. *Journal of Behavioral Medicine*, 31(1), 23-33. doi:<http://dx.doi.org/10.1007/s10865-007-9130-7>
- Carstensen, L. L., Fung, H. H., & Charles, S. T. (2003). Socioemotional selectivity theory and the regulation of emotion in the second half of life. *Motivation and Emotion*, 27(2), 103-123. doi:<http://dx.doi.org/10.1023/A:102456980323>
- Chambers, R., Gullone, E., & Allen, N. B. (2009). Mindful emotion regulation: An integrative review. *Clinical Psychology Review*, 29(6), 560-572. doi: 10.1016/j.cpr.2009.06.005
- Charles, S. T., & Piazza, J. R. (2009). Age Differences in Affective Well-Being: Context Matters. *Social and Personality Psychology Compass*, 3(5), 711-724. DOI: 10.1111/j.1751-9004.2009.00202.x

- Coffey, K. A., Hartman, M., & Fredrickson, B. L. (2010). Deconstructing mindfulness and constructing mental health: understanding mindfulness and its mechanisms of action. *Mindfulness*, 1(4), 235-253. DOI10.1007/s12671-010-0033-2
- Cohen, J. (1992). Statistical power analysis. *Current Directions in Psychological Science*, 1(3), 98-101. doi: 10.1111/1467-8721.ep10768783
- Davidson, R. J. (2010). Empirical explorations of mindfulness: Conceptual and methodological conundrums. *Emotion*, 10(1), 8-11. doi: 10.1037/a0018480
- de Frias, C. M. (2013). Memory Compensation in Older Adults: The Role of Health, Emotion Regulation, and Trait Mindfulness. *The Journals of Gerontology Series B: Psychological Sciences and Social Sciences*. doi: 10.1093/geronb/gbt064
- Faul, F., Erdfelder, E., Lang, A.-G. & Buchner, A. (2007). G*Power 3: A flexible statistical power analysis program for the social, behavioral, and biomedical sciences. *Behavior Research Methods*, 39, 175-191. Retrieved from <http://www.psych.uni-duesseldorf.de/abteilungen/aap/gpower3>
- Feldman, G., Hayes, A., Kumar, S., Greeson, J., & Laurenceau, J. P. (2007). Mindfulness and emotion regulation: The development and initial validation of the Cognitive and Affective Mindfulness Scale-Revised (CAMS-R). *Journal of Psychopathology and Behavioral Assessment*, 29(3), 177-190. doi: 10.1007/s10862-006-9035-8

- Gallegos, A. M., Hoerger, M., Talbot, N. L., Moynihan, J. A., & Duberstein, P. R. (2013b). Emotional benefits of mindfulness-based stress reduction in older adults: The moderating roles of age and depressive symptom severity. *Aging & Mental Health, 17*(7), 823-829. doi:<http://dx.doi.org/10.1080/13607863.2013.799118>
- Gratz, K. L., & Roemer, L. (2004). Multidimensional assessment of emotion regulation and dysregulation: Development, factor structure, and initial validation of the difficulties in emotion regulation scale. *Journal of Psychopathology and Behavioral Assessment, 26*(1), 41-54. DOI: 10.1023/B:JOBA.0000007455.08539.94
- Grossman, P., Niemann, L., Schmidt, S., & Walach, H. (2004). Mindfulness-based stress reduction and health benefits: A meta-analysis. *Journal of Psychosomatic Research, 57*(1), 35-43. doi:[http://dx.doi.org/10.1016/S0022-3999\(03\)00573-7](http://dx.doi.org/10.1016/S0022-3999(03)00573-7)
- Grossman, P., & Van Dam, N. T. (2011). Mindfulness, by any other name...: trials and tribulations of sati in western psychology and science. *Contemporary Buddhism, 12*(01), 219-239.10.1080/14639947.2011.564841
- Haase, C. M., Heckhausen, J., & Wrosch, C. (2013). Developmental regulation across the life span: Toward a new synthesis. *Developmental Psychology, 49*(5), 964-972. doi:<http://dx.doi.org/10.1037/a0029231>
- Hayes, A. M., & Feldman, G. (2004). Clarifying the construct of mindfulness in the context of emotion regulation and the process of change in therapy. *Clinical*

Psychology: Science and Practice, 11(3), 255-262.

doi:<http://dx.doi.org/10.1093/clipsy.bph080>

Hayes, S. C., & Strosahl, K. D., Bunting, K., Twohig, M., & Wilson, K.G. (2004).

What is Acceptance and Commitment Therapy? In Hayes, S. C., & Strosahl, K. D. (Eds.). *A practical guide to Acceptance and Commitment Therapy*. (pp. 3-8). New York: Springer-Verlag.

Heckhausen, J., Wrosch, C., & Schulz, R. (2010). A motivational theory of lifespan development. *Psychological Review*, 117,32–60. doi: 10.1037/a0017668

Hofmann, S. G., Sawyer, A. T., Witt, A. A., & Oh, D. (2010). The effect of mindfulness-based therapy on anxiety and depression: A meta-analytic review. *Journal of Consulting and Clinical Psychology*, 78(2), 169-183.
doi:<http://dx.doi.org/10.1037/a0018555>

Isaacowitz, D. M., & Blanchard-Fields, F. (2012). Linking process and outcome in the study of emotion and aging. *Perspectives on Psychological Science*, 7(1), 3-17. doi: 10.1177/1745691611424750

Jain, S., Shapiro, S. L., Swanick, S., Roesch, S. C., Mills, P. J., Bell, I., & Schwartz, G. E. (2007). A randomized controlled trial of mindfulness meditation versus relaxation training: effects on distress, positive states of mind, rumination, and distraction. *Annals of behavioral medicine*, 33(1), 11-21.Doi: 10.1207/s15324796abm3301_2

Joseph, S., Linley, P. A., Harwood, J., Lewis, C. A., & McCollam, P. (2004). Rapid assessment of well-being: The short depression-happiness scale (SDHS).

Psychology and Psychotherapy: Theory, Research and Practice, 77(4), 463-478. doi:<http://dx.doi.org/10.1348/1476083042555406>

Kabat-Zinn, J. (1994). *Wherever you go there you are: Mindfulness meditation for everyday life*. New York: Hyperion.

Keng, S., Smoski, M. J., & Robins, C. J. (2011). Effects of mindfulness on psychological health: A review of empirical studies. *Clinical Psychology Review*, 31(6), 1041-1056. doi:<http://dx.doi.org/10.1016/j.cpr.2011.04.006>

Laidlaw, K. (2013). Self-Acceptance and Aging: Using Self-Acceptance as a Mediator of Change in CBT with Older People. In Bernard (Eds.), *The Strength of Self-Acceptance* (pp. 263-279). Springer New York.

Laidlaw, K., Thompson, L. W., Gallagher-Thompson, D., & Dick-Siskin, L. (2003). *Cognitive behaviour therapy with older people*. John Wiley & Sons.

Laukka, P. (2007). Uses of music and psychological well-being among the elderly. *Journal of Happiness Studies*, 8(2), 215-241. doi:<http://dx.doi.org/10.1007/s10902-006-9024-3>

Leary, M. R., & Tate, E. B. (2007). The multi-faceted nature of mindfulness. *Psychological Inquiry*, 18(4), 251-255. doi:<http://dx.doi.org/10.1080/10478400701598355>

Martin, L. L., & Kleiber, D. A. (2005). Letting go of the negative: Psychological growth from a close brush with death. *Traumatology*, 11(4), 221-232. doi:<http://dx.doi.org/10.1177/153476560501100403>

- Morone, N. E., Rollman, B. L., Moore, C. G., Li, Q., & Weiner, D. K. (2009). A Mind–Body program for older adults with chronic low back pain: Results of a pilot study. *Pain Medicine*, 10(8), 1395-1407. doi: 10.1111/j.1526-4637.2009.00746.x
- Neff, K. D., & McGehee, P. (2010). Self-compassion and psychological resilience among adolescents and young adults. *Self and identity*, 9(3), 225-240. doi:10.1080/15298860902979307
- Nyklíček, I., Dijkstra, S. C., Lenders, P. J., Fontein, W. A., & Koolen, J. J. (2014). A brief mindfulness based intervention for increase in emotional well-being and quality of life in percutaneous coronary intervention (PCI) patients: The mindfulheart randomized controlled trial. *Journal of Behavioral Medicine*, 37(1), 135-144. doi:http://dx.doi.org/10.1007/s10865-012-9475-4
- Prakash, R. S., De Leon, A. A., Klatt, M., Malarkey, W., & Patterson, B. (2013). Mindfulness disposition and default-mode network connectivity in older adults. *Social Cognitive and Affective Neuroscience*, 8(1), 112-117. doi:http://dx.doi.org/10.1093/scan/nss115
- Raes, A. K., Bruyneel, L., Loeys, T., Moerkerke, B., & De Raedt, R. (2013). Mindful Attention and Awareness Mediate the Association Between Age and Negative Affect. *The Journals of Gerontology Series B: Psychological Sciences and Social Sciences*, gbt074. doi: 10.1093/geronb/gbt074

- Scheibe, S., & Carstensen, L. L. (2010). Emotional aging: recent findings and future trends. *The Journals of Gerontology Series B: Psychological Sciences and Social Sciences*, 65(2), 135-144. doi: 10.1093/geronb/gbp132
- Shallcross, A. J., Ford, B. Q., Floerke, V. A., & Mauss, I. B. (2013). Getting better with age: The relationship between age, acceptance, and negative affect. *Journal of Personality and Social Psychology*, 104(4), 734-749.
doi:http://dx.doi.org/10.1037/a0031180
- Shapiro, S. L., Carlson, L. E., Astin, J. A., & Freedman, B. (2006). Mechanisms of mindfulness. *Journal of Clinical Psychology*, 62, 373-386.
doi:10.1002/jclp.20237
- Shapiro, S. L., Oman, D., Thoresen, C. E., Plante, T. G., & Flinders, T. (2008). Cultivating mindfulness: effects on well-being. *Journal of clinical psychology*, 64(7), 840-862. doi: 10.1002/jclp.20491
- Splevins, K., Smith, A., & Simpson, J. (2009). Do improvements in emotional distress correlate with becoming more mindful? A study of older adults. *Aging & Mental Health*, 13(3), 328-335. doi: 10.1080/13607860802459807
- Tennant, R., Hiller, L., Fishwick, R., Platt, S., Joseph, S., Weich, S., ... & Stewart-Brown, S. (2007). The Warwick-Edinburgh mental well-being scale (WEMWBS): development and UK validation. *Health and Quality of life Outcomes*, 5(1), 63.
- Tran, U. S., Glück, T. M., & Nader, I. W. (2013). Investigating the five facet mindfulness questionnaire (FFMQ): Construction of a short form and evidence

of a two-factor higher order structure of mindfulness. *Journal of Clinical Psychology*, 69(9), 951-965. doi:<http://dx.doi.org/10.1002/jclp.21996>

Twenge, J. M., & Campbell, W. K. (2010). Birth cohort differences in the monitoring the future dataset and elsewhere: Further evidence for generation me—Commentary on Trzesniewski & Donnellan (2010). *Perspectives on Psychological Science*, 5, 81–88. doi:10.1177/1745691609357015

Urry, H. L., & Gross, J. J. (2010). Emotion regulation in older age. *Current Directions in Psychological Science*, 19(6), 352-357. doi:10.1177/0963721410388395

Chapter III: Reflective Paper

Learning from the journey: My experiences of conducting research with older people

Chapter word count: 3,140 (excluding references)

Not intended for publication.

1. Introduction

In this paper I will reflect upon my experiences of conducting research with people in later life, with specific reference to researching the topic of mindfulness. I will provide a reflective and reflexive account, with reference to the stages of planning and conducting the empirical paper of this thesis. I will discuss ways in which my experiences may inform research, as well as how I expect to use the learning from these experiences when working as a scientist-practitioner and more generally in terms of my personal and professional development. Anonymous feedback comments provided by people who contacted me by email about the research are included in this chapter with their expressed permission.

2. The planning stage

At the point of commencing my doctorate training, I had learned from others who had completed training and from my own experiences of postgraduate research with nursing home staff, that a pragmatic approach and viability of the research were important considerations, particularly within the time and resource constraints of clinical training. In addition, I was aware of the importance of considering practical issues when researching with older people. I chose to complete the research with a non-clinical community sample of relatively healthy older adults. This cross-sectional research, which explored the relationship between theoretical constructs, seemed appropriate, with a view to sowing the seed for further applied investigations into psychological interventions.

I had chosen voluntary and third sector organisations to recruit from, where attendees would have a relatively high level of functioning. Even within this context, it was important to ensure that the research was accessible to this study sample. I chose questionnaires that were not burdensome to complete as a battery, in terms of ease of completion and length. I also increased accessibility to different age groups by ensuring that both paper and online versions of the questionnaire were available for completion. It was also important that participating individuals were able to complete these questionnaires independently, in order to provide a sufficient number of participants for meaningful analysis.

It would have taken far greater resources and time investment to provide good quality research with individuals who have significant levels of cognitive and physical impairment, which addressed the needs of older people with complex health presentations or those represented as the ‘oldest old.’ The ethical and practical considerations would have presented a much greater challenge, as detailed in reflective accounts of researching with older people in nursing home settings (Hall, Goddard, Speck, & Higginson, 2013; Hall, Longhurst & Higginson, 2009). Although it could potentially have been more useful to complete research with clinical samples in order to further clinical knowledge in the field, I felt constrained by what was practicable within the timeframe. The tension between producing research that represents the varied needs and presentations in older age versus the need to consider viability of the research may represent a concern shared by other researchers. This may be evident in the relative paucity of MBSR intervention studies conducted with older people to date (Rejeski, 2008).

3. The Recruitment process: Engaging with gatekeepers and potential participants

Within qualitative research, the author enlists participants to the role of co-researcher, through a process of mutual collaboration, or a co-operative enquiry (Finlay, 2002). Although the interface between the researcher and research participant is not as evident in the process of quantitative research, it may still be pertinent to discuss issues relating to engagement of gatekeepers and potential participants. A central part of the quantitative research process is to engage potential participants and inform people of the rationale and the value of the research, whilst ensuring that there is some limit to the information provided about the study, so that people do not feel pressured to participate, or to introduce bias to the responses. This was a difficult balance to strike, particularly as much depended upon potential participants 'buying in' to the rationale of the study.

It was difficult to compare the motivating factors for engagement of younger and older cohorts in the research process, as many younger people did not require any face-to-face contact with me when completing online questionnaires. I speculate that the younger student participants may have simply viewed completing these questionnaires as a means to an end as part of their course requirements, particularly as none contacted me to clarify any information about the study. In contrast, the willingness of many older people to participate in the present study seemed conditional on whether or not they were invested in the rationale of the research. This was also dependent upon potential participants having an understanding of the concept of mindfulness, in addition to an awareness of its

potential benefits. Overall, I was struck by the willingness and generosity of many older people to offer me their time, without any direct gain or benefit to themselves.

4. The Recruitment process: Sharing an understanding of mindfulness

When discussing the rationale for the research with potential gatekeepers of organisations and potential participants, generating a shared understanding of the research topic was helpful, particularly with reference to a conceptual understanding of mindfulness. This appeared to be influenced by media portrayal of mindfulness, socio-cultural factors, age cohort and personal resonance of the construct of mindfulness. Mindfulness has received a significant amount of media interest within the last year. I wondered whether this research would have been so well received a few years ago, when an understanding of mindfulness was perhaps more confined to researchers and academics or people with a special interest in Buddhism, yoga and meditation. Although it would be erroneous to assume that older cohorts in general would have less of an understanding of mindfulness, I did wonder if many of the ‘oldest-old’ would have a frame of reference. Some groups that I visited for recruitment did not seem to recognise mindfulness as a concept. This is an important consideration in research with older people, as there may be some important generational and cohort differences in the understanding of a research idea.

The media coverage of mindfulness may have invited varying levels of receptiveness to the research topic. Many older adults referenced radio programmes they had listened to, newspaper articles and books. One potential respondent returned a questionnaire blank and included a post card. They included a cutting of

a newspaper article by way of explaining why they did not wish to participate. This newspaper cutting detailed a commentary from a General Practitioner about limitations of the evidence base for mindfulness interventions relative to other treatments. This opinion did not appear to be borne out of balanced critical evaluation of the literature, but was perhaps indicative of the influence of media presentations of mindfulness. Another gatekeeper spoke with great enthusiasm about mindfulness after reading an article by Ruby Wax. Notably this was after expressing initial scepticism about mindfulness and the concept of ‘well-being’ in a conversation with me.

I feel that mindfulness is not so concerned with psychological pathology and can be viewed as very inclusive, in the way that it can be adopted by all people through yoga and meditation practices (Kabat-Zinn, 1994), whether or not they have any clinical need. In this respect it is very normalising. Some respondents practiced mindfulness as part of yoga or other meditations. However, mindfulness may be at odds with the spiritual and cultural beliefs of some older people. This may have influenced the varied willingness or motivation to invest in this research. I received an email correspondence from an individual who drew parallels between the research topic of mindfulness and their own interests. Therefore, it is likely that mindfulness can be understood from many different perspectives. This can have spiritual or philosophical underpinnings, or may be drawn from media representations. Rather than to paraphrase, I have included this quote from the aforementioned email.

For me, Mindfulness means 'Living in the Now' as Eckhart Tolle describes in his famous book, 'The Power of Now'. That is, accessing the ground of deep peace that exists beyond our thought processes, and discovering the Self of all beyond 'separation consciousness.' It is not easy to put these things into words because the experience behind them transcends normal language, although the spiritual and mental environment is much more open to these ideas today than when I first experienced them.

As well as identifying a personal resonance with the concept of mindfulness, it is also apparent that this person identified a changing socio-cultural context, whereby there may be increasing receptiveness to psychological ideas, in particular ideas around mindfulness.

5. Engaging with potential participants: A reflexive account

I have considered how I may have been viewed by potential research participants and vice versa, in terms of my assumptions about older cohorts (Finlay, 2002). It is important to acknowledge these differences, but also not to accentuate them or minimise their significance. I was aware that engagement would depend upon how potential participants viewed me when attending various senior people's events during recruitment. Many commented about my age and I was aware that I did not blend in particularly well! In the transference, I wondered if I might be viewed as a 'granddaughter' figure, worthy of helping out with my project and at times I wondered if what I had to say would be held with the same regard as their peers. I was keen to present myself as a researcher first and a psychologist second, although this may have been a reflection of my own anxiety about the receptiveness of older

people to psychology, rather than an accurate idea of the socio-cultural context. However, I came to enjoy these interactions and this enabled me to gain insight into the perceptions and perspectives of older people. I realised how rarely people of different age cohorts have the opportunity to meet in UK society, other than within families. It would seem that interactions could initially be seen as critical of the research, but over time I realised that these were actually expressions of healthy scepticism and curiosity about the research and my motives. Therefore, the ability to be thoughtful in my responses was important.

The participant information sheet provided, detailed that I would be investigating “mindfulness across the life-span, looking at mindfulness in young adulthood and in more senior years”. There were many older people who commented disparagingly about the level of mindfulness adopted by younger people. In conversation, they frequently commented anecdotally on young people’s use of phones and other music devices which would prevent them from “paying attention in the present moment”. It would appear that older people tended to define mindfulness as encompassing a greater appreciation of external experiences and engagement in the environment around them. This may have been valued over and above experiences which involve a more private, internal or introspective means of paying attention. As a 30 year old researcher who would fall into the younger demographic, I endeavoured to take a balanced or neutral stance on this when interacting with potential participants, rather than to take a defensive position. However, it was possible that this attitude towards younger people may subtly influence or bias questionnaire responses, as a way of confirming perceived differences with their younger counterparts.

6. Methodological considerations: Quantitative survey methods

Some gatekeepers and potential participants expressed scepticism about the methodology I was using. Some did not see the value in the use of survey questionnaire methods. This may possibly be because of negative experiences of market research or opinion surveys, which are used very differently to the research I was conducting. There was one third sector organisation who conducted mindfulness groups as part of a health and well-being initiative for older people, who expressed reservations about the research. They thought that the questionnaires did not reflect their conceptualisation of mindfulness and they struggled to see how survey questionnaires would translate to provision of mindfulness interventions for older people in practice. I endeavoured to convey the process of research to them and how initial cross-sectional investigations form a necessary precursor to more clinically relevant intervention research. I also acknowledged that questionnaires which assess mindfulness as a construct may not reflect the broad range of definitions used in practice.

Some people expressed that the questionnaires appeared repetitive. There are sound psychometric reasons for asking the same type of questions in different ways, in order to enhance the validity and internal consistency. However, this would not be so readily understood by participants without any specialist knowledge of research. Comments were also made about responses to internal experiences, such as thoughts and feelings on the Five Facet Mindfulness Questionnaire (FFMQ; Baer et al., 2006). This measure has been validated across the lifespan, although there may be some specific limitations. Some people felt that they seldom had distressing thoughts, which this illustrated in this quote.

There were several questions about my reaction to feeling upset or having distressing thoughts. I rarely have these emotions, so the answers may be misleading.

It may be that some people are particularly well adjusted and psychologically healthy and therefore would experience very few distressing thoughts. However, it could also be that some people are less aware of their internal experiences, or they may be less able to identify or label the emotional valence of their thoughts. It is also possible that the questionnaire content may not fully incorporate issues relevant to later life. This is illustrated in the following email response.

I found many of the answers needed an explanation as to why I answered the way I did. For example, The question about how I reacted to smells and aromas, 10f. I answered Never or rarely true. I have lost my sense of smell, so how could I answer otherwise but my answer may give you a misleading impression of my mindfulness

As a researcher, I felt that quantitative research offered greater clarity about the constructs under investigation and was important to furthering our theoretical understanding of dispositional mindfulness. However, at the same time the needs and views of older people may sometimes be overlooked by using quantitative methods. In addressing this issue, methodological pluralism may be helpful. It is possible that qualitative methodology should be given greater precedence, or indeed mixed methods, as this offers a richness of information beyond that possible with questionnaire methods. This may be more acceptable to people who are invested in communicating their specific needs and opinions.

7. Conclusions: Professional applications

7.1 Research & Service Development

My capacity and available resources to conduct formal research within a clinical setting post qualification may be limited, given the competing clinical demands. However, I can certainly apply guiding principles of a pragmatic and viable approach that is also of clinical relevance through action research, service evaluation and service development, which I am likely to invest in post-qualification. When I am established and embedded within a service, with the aid of assistant and trainee clinical psychologists, it may be more practicable to carry out this work.

If working as a clinical psychologist with older people, it will be important for me to evaluate the effectiveness of service provision. When considering outcome measurement, it is important to ensure measures are validated with older people and that they allow for the complexity and comorbidity in presentations. Careful thought will be required to ensure that measures allow for the sensory and cognitive limitations of some older people. Qualitative methodology and mixed methods will also increase the richness of understanding of people's needs and progress. This would also include the views and opinions of older people to offer a different perspective on relevant issues. Older people have a wealth of experience to draw upon, which can be very valuable to service development, if service user input is used in a way that is not simply tokenistic. The ways in which we think about reducing barriers to engagement in research may also be applicable to reducing barriers to engagement with services. This may be through creating strong contacts

with groups for older people. Opening up a dialogue with older people would be important for sharing psychological ideas and information.

7.2 Clinical work

I can also apply the issues discussed in the empirical paper and literature review to my clinical work. In particular, the importance of compassionate self-acceptance and mindfulness to well-being and psychological adjustment may be relevant (Laidlaw, 2003). Equally it can be important to gain an understanding of thoughts, beliefs and anxieties which may block compassionate self-acceptance. It will also be useful to my clinical work to consider how therapeutic approaches, including mindfulness-based interventions may be creatively adapted for use with older people. The challenge remains to engage people with greater and complex need and provide interventions that will be beneficial. I would also hope to include mindfulness practice when working with staff teams, as well as with client groups. Often when working with people who may have chronic conditions, staff may experience frustration and hopelessness at times, particularly where the aim may be to 'fix' or make better. This may impact upon the team who lose flexibility, empathy and compassion over time. Therefore there may be a need to reconnect with values, increase cognitive flexibility within the team and gain perspective on unhelpful cognitions (Dahl & Lundgren, 2006).

8. Conclusions: Personal reflections

Throughout the research process I have remained thoughtful about my own practice of mindfulness. Compassionate self-acceptance is a very powerful idea, which has sometimes been very difficult to adopt throughout the unpredictable and demanding aspects of this research and clinical training in general. Although I do not consider

myself to be naturally mindful, I feel that this is something I can cultivate more often, which will be beneficial to my clinical work and my personal well-being. There are times when the process of conducting research, in particular the literature review, has felt like a game of snakes and ladders and has tested my perseverance. I have particularly struggled when I have not known what obstacles lay ahead. On some occasions, I have been able to adopt a more mindful approach to the research and I have benefitted on these occasions from a sense of perspective and a greater tolerance to the uncertainty of research. The following popular mindfulness quote captures this most simply for me, "You can't stop the waves, but you can learn to surf" (Kabat-Zinn 1994, p.32). In equal measure, I have enjoyed my interactions with older people. I especially like working with and learning from people from all walks and stages of life and this research has enabled me to do this usefully. I hope to continue to enjoy these interactions throughout my career.

9. References

- Barker, C., Pistrang, N., & Elliott, R. (2003). Research methods in clinical psychology: An introduction for students and practitioners. John Wiley & Sons.
- Dahl, J., & Lundgren, T. (2006). Living beyond your pain: Using acceptance and commitment therapy to ease chronic pain. New Harbinger Publications.
- Davies, K., Collerton, J. C., Jagger, C., Bond, J., Barker, S. A., Edwards, J., ... & Robinson, L. (2010). Engaging the oldest old in research: lessons from the Newcastle 85+ study. *BMC geriatrics*, 10(1), 64.
- Finlay, L. (2002). Negotiating the swamp: the opportunity and challenge of reflexivity in research practice. *Qualitative research*, 2(2), 209-230.
- Hall, S., Goddard, C., Speck, P., & Higginson, I. J. (2013). 'It makes me feel that I'm still relevant': A qualitative study of the views of nursing home residents on dignity therapy and taking part in a phase II randomised controlled trial of a palliative care psychotherapy. *Palliative medicine*, 27(4), 358-366.
- Hall, S., Longhurst, S., & Higginson, I. J. (2009). Challenges to conducting research with older people living in nursing homes. *BMC geriatrics*, 9(1), 38.
- Kabat-Zinn, J. (1994). *Wherever you go, there you are: Mindfulness meditation in everyday life*. Hyperion.
- Laidlaw, K. (2013). Self-Acceptance and Aging: Using Self-Acceptance as a Mediator of Change in CBT with Older People. In Bernard (Eds.), *The Strength of Self-Acceptance* (pp. 263-279). Springer New York.

Rejeski, W. J. (2008). Mindfulness: Reconnecting the body and mind in geriatric medicine and gerontology. *The Gerontologist*, 48(2), 135-141.

Tolle, E. (2004). *The power of now*. New World Library.

APPENDIX A: Quality rating scale

Each criterion was rated as either met (1point) or not met/not reported (0 score). The total ratings were calculated (maximum score 20) and converted to a percentage, giving a final score for each article. This Checklist comprised questions from Downs and Black's (1998) quality checklist for reporting, the National Institute of Clinical Excellence (NICE; 2012) and the Caldwell, Henshaw and Taylor (2005) checklists for intervention studies – see references

Reporting
1 Is the rationale clearly described?
2 Is the hypothesis/aim/objective clearly described?
3 Is the study design clearly identified and the rationale for the design evident?
4 Is the sample adequately described i.e. Are the characteristics of interest clearly described? Study sample characteristics adequately described (inclusion/exclusion criteria)
5 Are the main outcomes to be measured clearly described in the introduction or methods section
6 Are the main findings of the study clearly described? Are the results presented in a way that is appropriate and clear?
7 Have the characteristics of patients lost to follow-up been described?
8 Is there a comprehensive discussion including justifiable conclusions?
Design & Methodology
9 Were the psychometric properties of outcome measures reported
10 Were interventions (and comparisons) well described and appropriate?
11 Is there a suitable control group or comparison group?
12 If there was a comparison group, were procedures carried out to randomly allocate participants to each group?
13 Were those lost-to-follow-up (i.e. dropped or lost pre-, during or post-intervention) acceptably low (i.e. <20%)
Analysis
14 Does the study provide estimates of the random variability in the data for the main outcomes? (means and standard deviations for parametric data or median and range for non-parametric data)
15 Were the analytical methods appropriate?
16 Was the precision of intervention effects given or calculable? (reporting of p value)
17 Were analyses meaningful? (Reporting of full test statistic)
18 Was intention to treat (ITT) analysis conducted?
19 Was the study sufficiently powered to detect an intervention effect (if one exists)? - was a power calculation presented?
20 Were the estimates of effect size given or calculable?

APPENDIX B: Table of reviewed studies

Study	Summary of Main Findings	Mindfulness
	* $P \leq 0.05$ ** $P \leq 0.01$ *** $P \leq 0.001$ NS = Not Significant	Between and within-group improvements
Ernst et al. (2008)	- Improvement on physical-HRQoL **, depression** and major complaints** relative to control condition - Total health related QOL, cognitive impairment, ADLS, satisfaction with life or pain intensity NS	Not measured
Morone et al (2008)	- Improved pain acceptance**, engagement in activities** (large effect sizes) and physical functioning* (medium effect size) relative to control, maintained at 3 month follow-up - Pain, disability due to back pain and quality of life NS	Not measured
Morone et al (2009)	- Pain, disability and pain self-efficacy NS relative to education group comparison at 4-month follow-up - Role limitation due to emotional problems *post-intervention NS at 4 month follow-up	NS
Mularski et al (2009)	- Perceived stress, health related QOL NS between or within groups - Total practice time per day NS	NS
Young & Baime (2010)	- Pre-post improvement: Tension/anxiety, depression/dejection, anger/hostility, fatigue/inertia, confusion/bewilderment and vigour/activity and total mood score all*** (medium effect size) - $\geq 50\%$ reduction in participants reporting clinically significant anxiety or depression	Not measured
Birnie et al. (2010)	- Pre-post improvement: Total mood score* (medium effect sizes), Tension/anxiety** and fatigue/inertia* - Physiological indicators of distress (arousal)* - All other measures NS including depression/dejection and symptoms of stress	* (small and medium effect sizes)

Study	Summary of Main Findings	Mindfulness
Barrett et al. (2012)	<ul style="list-style-type: none"> - Mental Health in both MBSR treatment and exercise groups* and MBSR group only at 3 month follow-up* relative to control group - Positive and negative affect, anxiety, optimism, perceived social support, perceived stress, sleep and quality NS relative to control group 	NS
Moynihan et al. (2013)	<ul style="list-style-type: none"> - Improvement in executive control at treatment completion* (small effect size) relative to controls but follow-up NS - No differences in perceived stress, depression scores NS relative to control group 	* (small effect size) follow-up NS
Gallegos et al. (2013a)	<ul style="list-style-type: none"> - Participation in MBSR activities was associated with Positive Affect*** - When demographics and all other MBSR activities were controlled for, yoga participation explained the unique variance in total improvement in positive affect 	
Gallegos et al. (2013b)	<ul style="list-style-type: none"> - Positive affect NS - Greater baseline depression scores were associated with less improvement in positive affect at treatment completion** and follow-up* - No main effect of age. Participants ≥ 70 years with lower baseline depression scores had greatest improvements in positive affect at follow-up 	
Creswell et al. (2012)	<ul style="list-style-type: none"> - Within and between-group improvements for loneliness** - Between groups (large overall effect size) 	Mindfulness composite** describe**
Lenze et al. (2014)	<ul style="list-style-type: none"> - Improvement in anxiety-related distress *** (large effect size) - Paragraph Immediate Recall (large effect size), paragraph delayed recall (medium effect size) - Other subtests (small effect sizes) 	First two groups NS Second two groups **

APPENDIX C: Ethical Approval Notification and amendment notification detailed in comments

CU Ethics <omis@coventry.ac.uk>

Jennifer Dilworth <dilwortj@coventry.ac.uk>;



The following ethics request has been approved by Joanna Hemming. All the relevant documentation will be available for you to download within the next 24 hours. Please log back into Ethics and select the request from your listing. Select the Downloads tab to retrieve the documentation.

Please proceed with good ethics.

Ref:	P8731
Project Title:	A cross-sectional investigation of differences in dispositional mindfulness in younger and older adults
Applicant:	Jennifer Dilworth
Supervisor:	Tom Patterson
Module Code:	D44PY
Module Leader:	

Go to ethics.coventry.ac.uk to view this request in more detail.

Comment	Posted
Evaluation of the ethics of the proposal: I have no concerns regarding the ethics of this proposal. All ethical issues have been considered	Adam Jowett 25/01/2013 03:44 PM
Evaluation of the participant information sheet and consent form: It's not clear enough in the participant info sheet what the procedure for withdrawing retrospectively is. You make clear that they won't be identifiable from the data, so in this context it's important to explain how they can withdraw. I'd suggest it is made clear that they need to make note of a participant identifier in order for you to identify their data should they wish to withdraw	Adam Jowett 25/01/2013 03:44 PM
Conditions or reasons that support your recommendation: Make the process of withdrawal clearer for the participant in the participant information sheet	Adam Jowett 25/01/2013 03:44 PM
Conditions or reasons that support your recommendation: All conditions met and authorised by Supervisor.	Elaine Cartmill 07/03/2013 05:12 PM
Conditions or reasons that support your recommendation: As academic supervisor for the above project (Ref: P8731), I am emailing you to confirm that I approve the proposed amendment of including an additional formal measure, the Short Depression-Happiness Scale (SDHS; Joseph, Linley, Harwood, Lewis & McCollam, 2004) to collect data on participant mood state. There are, in my view, no risks attached to the inclusion of this additional brief measurement scale. Tom Patterson	Joanna Hemming 11/03/2013 02:20 PM

APPENDIX D: Participant Information sheet and Consent form

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Programme Director
Doctorate Course in Clinical Psychology
Dr Eve Knight
BSc Clin.Psy.D. CPsychol

THE UNIVERSITY OF
WARWICK



A study of *Mindfulness*: investigating how we pay attention in the present moment

The purpose of this study is to look at 'mindfulness'. Mindfulness is about "paying attention in a particular way: on purpose, in the present moment and non-judgementally" (Kabat-Zinn, 1994, p.4). It is a concept that originated in Buddhist traditions. Research has found that levels of 'mindfulness' vary from person to person (Keng, Smoski, Robins, 2011).

This study will investigate *mindfulness across the life-span, in young adulthood and in more senior years*. This will help us to develop our understanding of mindfulness. This will also be important in informing healthcare treatments which aim to increase wellbeing.

Do I have to take part?

Your participation is completely voluntary. If you are **aged between 18 and 35** or **aged 65 and over** we would like to invite you to take part. In collecting data for this study we *will not use information that will identify you personally i.e. you can contribute anonymously*.

If you participate, you will be given a *participant identifier code*. We encourage you to make a note of this code, should you decide to withdraw your information from the study in the future. You are free to withdraw your information at any time without giving any reason for doing so, up until 27th December 2013, when the final analysis will begin. This will not affect your relationship with the Universities or any organisations with which you are affiliated.

What will happen if I decide to take part?

Before you decide, please take time to read the following information carefully before filling in the **consent form**. You will be provided with a single set of questionnaires to complete either by hand using the pack, or online using the link provided, which can be entered into the web browser. <https://www.survey.bris.ac.uk/coventry/mindfulness>

Page 1

Dean of Faculty of Health and Life Sciences

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Head of Department of Psychology

Professor James Tresilian BSc PhD University of Warwick Coventry CV4 7AL Tel 024 7657 3009

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This will include three questionnaires: a 'mindfulness' questionnaire, a second relating to well-being and a third relating to mood. You will also be asked some questions about yourself, in particular, your age. These may take around 10 to 20 minutes to complete. You can return these directly to the researchers, online or in the stamped addressed envelope provided.

Will my information be kept confidential?

The information you provide will remain confidential in accordance with Data Protection Act (Office of Public Sector Information, 1998). The questionnaires you return to us will be stored appropriately on an encrypted data storage device or in a locked cabinet, which will only be accessed by the researchers named below and doctorate course regulatory authorities if required. ***It will not be possible to identify you from the data.*** In line with University requirements, the data will be kept for 5 years at Coventry University in a locked storage room. Once analysed and interpreted, your data will form a research report and will be used in a doctorate thesis and may be published. Your identity will not be recorded as part of your data, and will not be revealed in any publication that may result from this study.

Are there any difficulties associated with taking part?

The questionnaires that we have used in this study are ones used routinely to evaluate therapies, mood and emotional well-being. We do not anticipate that you would experience any difficulty as a result of taking part. However, you are advised to stop completing the questionnaires at any point if you find them distressing. You can contact your General Practitioner (GP) if you feel you need any support.

Please do not hesitate to contact us if you have any queries about the study, if you would like more information, or if you would like a summary of the study findings which will be available at the completion of the study, anticipated to be in August/September 2014.

Jennifer Dilworth – Trainee Clinical Psychologist Email: dilwortj@uni.coventry.ac.uk
Dr Tom Patterson Academic Director Email: aa5654@coventry.ac.uk
Also contact by telephone: 02476 888328 or by post Clinical Psychology Doctorate, JSG24, Coventry University, Priory Street, Coventry, CV1 5FB.

The following information was added for online completion of questionnaires:

“Cookies, personal data stored by your Web browser, are not used in this survey”.

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THE UNIVERSITY OF
WARWICK

Coventry University

CONSENT FORM

Participant Identifier Code
 Please make a note of this code

717

A study of <i>Mindfulness</i>: investigating how we pay attention in the present moment	Please tick
I confirm that I have read and understood the information sheet. I have had the opportunity to consider the information and any questions I may have are answered satisfactorily.	<input checked="" type="checkbox"/>
I understand that my participation is completely voluntary and that I am free to withdraw my information at any time without giving any reason up until 27th December 2013 using the Participant Identifier Code above. I understand that I can stop completing these questionnaires at any point.	<input type="checkbox"/>
I understand that I cannot be identified from the information provided for data collection and my contributions are anonymous.	<input type="checkbox"/>
I understand that data collected during the study, may be looked at by the named researchers from Coventry University and from regulatory authorities where it is relevant to my taking part in this research. I give permission for these individuals to have access to my data from this study.	<input type="checkbox"/>
I understand that the data collected will be retained for 5 years in a locked storage room at Coventry University before being destroyed, in line with University requirements	<input type="checkbox"/>
I understand that I can contact the researchers listed on the participant information sheet at any point if there is anything that is not clear, if I would like more information about the study or a summary of the findings.	<input type="checkbox"/>
I agree to take part in the above study.	<input type="checkbox"/>

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APPENDIX E: Questionnaires and demographic information

- The Five Facet Mindfulness Questionnaire (FFMQ; Baer et al., 2006).
- The Warwick-Edinburgh Mental Well-being Scale (WEMWBS; Tennant et al., 2007)
- The Short Depression-Happiness Scale (SDHS; Joseph, Linley, Harwood, Lewis & McCollam, 2004)
- Demographic information sheet

The Five Facet Mindfulness Questionnaire (FFMQ; Baer et al., 2006).

Please rate each of the following statements using the scale provided. Please tick the box that best describes your own opinion of what is generally true for you.

	Never or very rarely true	Rarely True	Sometimes true	Often True	Very often or always true
1. When I'm walking, I deliberately notice the sensations of my body moving.					
2. I'm good at finding words to describe my feelings.					
3. I criticize myself for having irrational or inappropriate emotions.					
4. I perceive my feelings and emotions without having to react to them.					
5. When I do things, my mind wanders off and I'm easily distracted.					
6. When I take a shower or bath, I stay alert to the sensations of water on my body.					
7. I can easily put my beliefs, opinions, and expectations into words.					
8. I don't pay attention to what I'm doing because I'm daydreaming, worrying, or otherwise distracted.					
9. I watch my feelings without getting lost in them.					
10. I tell myself I shouldn't be feeling the way I'm feeling.					
11. I notice how foods and drinks affect my thoughts, bodily sensations, and emotions.					
12. It's hard for me to find the words to describe what I'm thinking.					

	Never or very rarely true	Rarely True	Sometimes true	Often True	Very often or always true
13. I am easily distracted.					
14. I believe some of my thoughts are abnormal or bad and I shouldn't think that way.					
15. I pay attention to sensations, such as the wind in my hair or sun on my face.					
16. I have trouble thinking of the right words to express how I feel about things					
17. I make judgments about whether my thoughts are good or bad.					
18. I find it difficult to stay focused on what's happening in the present.					
19. When I have distressing thoughts or images, I "step back" and am aware of the thought or image without getting taken over by it.					
20. I pay attention to sounds, such as clocks ticking, birds chirping, or cars passing.					
21. In difficult situations, I can pause without immediately reacting.					
22. When I have a sensation in my body, it's difficult for me to describe it because I can't find the right words.					
23. It seems I am "running on automatic" without much awareness of what I'm doing.					
24. When I have distressing thoughts or images, I feel calm soon after.					
25. I tell myself that I shouldn't be thinking the way I'm thinking.					
26. I notice the smells and aromas of things.					
27. Even when I'm feeling terribly upset, I can find a way to put it into words.					

	Never or very rarely true	Rarely True	Sometimes true	Often True	Very often or always true
28. I rush through activities without being really attentive to them.					
29. When I have distressing thoughts or images I am able just to notice them without reacting.					
30. I think some of my emotions are bad or inappropriate and I shouldn't feel them.					
31. I notice visual elements in art or nature, such as colours, shapes, textures, or patterns of light and shadow.					
32. My natural tendency is to put my experiences into words.					
33. When I have distressing thoughts or images, I just notice them and let them go.					
34. I do jobs or tasks automatically without being aware of what I'm doing.					
35. When I have distressing thoughts or images, I judge myself as good or bad, depending what the thought/image is about.					
36. I pay attention to how my emotions affect my thoughts and behaviour					
37. I can usually describe how I feel at the moment in considerable detail.					
38. I find myself doing things without paying attention.					
39. I disapprove of myself when I have irrational ideas.					

Baer, R. A., Smith, G. T., Hopkins, J., Krietemeyer, J., & Toney, L. (2006). Using self-report assessment methods to explore facets of mindfulness. *Assessment*, 13, 27-45.

Scoring Information

Observe items:

1, 6, 11, 15, 20, 26, 31, 36

Describe items:

2, 7, 12R, 16R, 22R, 27, 32, 37

Nonjudge items:

3R, 10R, 14R, 17R, 25R, 30R, 35R, 39R

Nonreact items:

4, 9, 19, 21, 24, 29, 33

Act with Awareness items:

5R, 8R, 13R, 18R, 23R, 28R, 34R, 38R

**THE WARWICK-EDINBURGH MENTAL WELL-BEING SCALE
(WEMWBS)**

Below are some statements about feelings and thoughts.

Please tick the box that best describes your experience of each over the last 2 weeks

	STATEMENTS	None of the time	Rarely	Some of the time	Often	All of the time
1	I've been feeling optimistic about the future					
2	I've been feeling useful					
3	I've been feeling relaxed					
4	I've been feeling interested in other people					
5	I've had energy to spare					
6	I've been dealing with problems well					
7	I've been thinking clearly					
8	I've been feeling good about myself					
9	I've been feeling close to other people					
10	I've been feeling confident					
11	I've been able to make up my own mind about things					
12	I've been feeling loved					
13	I've been interested in new things					
14	I've been feeling cheerful					

Warwick-Edinburgh Mental Well-Being Scale (WEMWBS) © NHS Health
Scotland, University of Warwick and University of Edinburgh, 2006, all rights
reserved.

THE SHORT DEPRESSION-HAPPINESS SCALE

SDHS

A number of statements that people have used to describe how they feel are given below. Read each one and circle the number that best describes how frequently each statement was true for you in the last 7 days (or other agreed time period). Some statements describe positive feelings & some describe negative feelings. You may have experienced both positive & negative feelings at different times in the last week.

©Stephen Joseph 2000

		<i>never</i>	<i>rarely</i>	<i>sometimes</i>	<i>often</i>
1	I felt dissatisfied with my life				
2	I felt happy				
3	I felt cheerless				
4	I felt pleased with the way I am				
5	I felt life was enjoyable				
6	I felt life was meaningless				

Items 1, 3 and 6 are reverse scored

Permission was granted from authors for use of questionnaires in the present study

Basic Information

Please answer the following questions about you and your background

1) How old are you? (age in years)

Please tick the appropriate boxes

2.) What is your gender? Please tick one option Female ☐ Male ☐

3.) What is the highest level of education you have completed? Please tick *one* option

No formal qualification <input type="checkbox"/>	School certificate (SC), O levels, GCSEs or equivalent <input type="checkbox"/>	Higher school certificate (HSC), A levels, BTEC or equivalent <input type="checkbox"/>	Undergraduate Degree, diploma or equivalent <input type="checkbox"/>	Post Graduate Qualification e.g. Masters or Doctorate or equivalent <input type="checkbox"/>
---	--	---	---	---

Other ☐ please specify _____

4.) Which term most closely describes your current Occupation? Please tick *one* option

Undergraduate student <input type="checkbox"/>	Employed: Job requires professional qualification/training <input type="checkbox"/>	Voluntary work <input type="checkbox"/>
Postgraduate student <input type="checkbox"/>	Job does not require professional qualification/training <input type="checkbox"/>	Retired from job that required professional training <input type="checkbox"/>
		Retired from job that did not require professional training <input type="checkbox"/>
		Unemployed <input type="checkbox"/>
		Carer or parent <input type="checkbox"/>

Other ☐ please specify _____

5.) Please indicate what describes your current practice in mindfulness or meditation? (approximately within the last 6 months) Please tick *one* option

No practice of mindfulness or meditation <input type="checkbox"/>	Some practice (at least once a week for a period of less than six months) <input type="checkbox"/>	Regular practice (at least once a week for a period of at least six months) <input type="checkbox"/>	Very frequent practice (at least two or three times a week for a period of at least 6 months) <input type="checkbox"/>
--	---	---	---

APPENDIX F: Author guidelines for publication in Clinical Psychology Review and Aging and Mental Health



CLINICAL PSYCHOLOGY REVIEW

ISSN: 0272-7358

Ethics in publishing

For information on Ethics in publishing and Ethical guidelines for journal publication see <http://www.elsevier.com/publishingethics> and <http://www.elsevier.com/journal-authors/ethics>.

Conflict of interest

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