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Using a Gratitude Intervention to Enhance Wellbeing in Older Adults.

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Abstract The increasingly ageing population includes a proportion of well older adults that may benefit from low-level psychological support to help maintain their wellbeing. A factor consistently regarded as integral to wellbeing is gratitude. The effect of a ‘Three good things in life’ gratitude intervention on hedonic and eudemonic wellbeing and perceived stress levels in non-clinically depressed older adults was examined. This intervention has not been evaluated with older adults previously. The duration of the intervention was two weeks and baseline, end of intervention and 30 -day follow up measures were compared. The effects of online and paper delivery of the intervention were compared and differences in acceptability of the two routes examined. The daily positive events identified by participants were also analysed. Participants were 88 healthy community living adults aged 60 years or over. The intervention produced significant differences in eudemonic wellbeing as measured by flourishing from baseline to day15 that was maintained as the day 45. Significant increases in flourishing were evident from baseline to day 45. There were decreases in perceived stress from day to day 15 but these were not maintained once the intervention ended. There were no significant differences between online or paper delivery of the intervention. This age group managed and many preferred online delivery, Gratitude diaries seem to be a cost-effective method of producing beneficial improvements in wellbeing for older adults.

Keywords: Older adults , Gratitude, Online delivery, Wellbeing, Three Good Things intervention

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Introduction

Ageing is often viewed from a deficit-oriented and pessimistic perspective that focuses on losses in areas such as health, independence, and memory. However, ageing can take many courses. It can be characterized by risks and losses, but also by the presence of extensive strengths that enable maintenance of positive wellbeing despite losses. The well elderly constitute an important group to target with low-level maintenance support particularly due to the increasing proportion of older adults within the population. The Expectations Regarding Aging Survey (Sarkisian, Hays, & Mangione, 2002) found more than 50% of participants felt becoming depressed was an expected part of aging. Depression is a severe health problem and one of the most prevalent conditions in later life, (van't Veer-Tazelaar, van Marwijk, Jansen et al., 2008) with depressive symptoms in the elderly a far more common problem than major depression (Beekman, Deeg, van Tilburg et al., 1995).

Older people risk an insidious slide into low mood exacerbated by age related risk factors including age-associated neurobiological changes, stressful events such as loss of partner and peers, social isolation, poverty and insomnia (Fiske, Wetherell, & Gatz, 2009). It is therefore important to look at cost-effective ways in which the psychological wellbeing of the elderly can be maintained or enhanced.

1.1 Defining Wellbeing

Within positive psychology, wellbeing is an outcome of positive emotions and positive traits, which enable positive experiences, and positive institutions (Seligman 2002). Wellbeing involves optimal psychological functioning. It is commonly viewed from a hedonistic or eudemonic perspective. Hedonism (Kahneman, Diener, & Schwarz 1999) is based on the experience of physical and mental pleasures and is often described as subjective wellbeing (SWB). The dominant tradition in positive psychology has been to assess subjective

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wellbeing (SWB) which has been shown to equate with happiness (Kahneman et al., 1999). It consists of three components, the presence of life satisfaction, frequent positive emotions, and infrequent negative emotions. In contrast eudemonism (Waterman 1993); recognises that fulfilling pleasurable desires does not always result in wellbeing and so regards psychological wellbeing (PWB) as being more complex than purely SWB. In PWB the focus is on living a meaningful life and developing one's full potential. McMahan and Estes (2011) suggested that eudemonic wellbeing may be relatively more important for positive psychological functioning. However, as hedonia and eudemonia occupy both overlapping yet distinct niches; greatest wellbeing may be associated with their combination (Huta & Ryan 2010). It is due to this debate that the evaluation of the intervention presented here will include SWB and eudemonic measures.

1.2 Dispositional Gratitude and Wellbeing

Based on empirical research, Peterson and Seligman (2004) reported that six virtues containing twenty-four character strengths are consistently related to life satisfaction and well-being (Peterson & Seligman 2004). One such character strength located within the transcendence virtue is gratitude, which from its early roots in theology, has been regarded as integral to wellbeing (Emmons & Crumpler, 2000). Simply expressed gratitude is, "an acknowledgement that we have received something of value from others" (Emmons & Mishra 2011). Gratitude is variously conceptualized as a moral virtue, an attitude, an emotion, a habit, a personality trait, and a coping response (Emmons, McCullough, & Tsang 2003). Dispositional gratitude is assessed on four dimensions, intensity, frequency, span, and density. Individuals high in gratitude experience more intense feelings in response to a gratitude-arousing situation, notice more occasions to express gratitude, have a wider range of circumstances for which they are grateful, and experience gratitude towards people more frequently (McCullough, Emmons, & Tsang 2002). Gratitude is reported to be the most

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beneficial character strength, and is consistently and robustly associated with life satisfaction and wellbeing (Park, Peterson, and Seligman 2004).

Gratitude influences wellbeing either directly as a causal agent of wellbeing, or indirectly by buffering against negative states and emotions (Nelson, 2009) such as those experienced as individuals become elderly (Fiske et al. 2009). Enhancing gratitude may help older people cope with these age-related adversities. This is because gratitude contributes to wellbeing by providing an antidote to stress and helps to develop enduring personal resources such as resilience (Frederickson, 1998, Fredrickson, Tugade, Waugh, & Larkin, 2003). Better adjustment in retirement is associated with robust psychological health (Donaldson, Earl, & Muratore, 2010) and gratitude protects individuals from stress and depression even allowing for personality factors (Wood, Maltby, Gillett, Linley, & Joseph, 2008a).

Several possible mechanisms to explain the effect of gratitude have been identified. Expressing gratitude and grateful thinking allow positive life experiences and situations to be savoured increasing satisfaction with life and building positive strengths (Sheldon & Lyubomirsky, 2006). Adaptation whereby good things become taken for granted is less likely so positive affect is increased (Lyubomirsky, Sheldon, & Schkade 2005). Gratitude also helps reframe negative emotional memories decreasing their adverse impact (Watkins, Grimm, & Kolts 2004). This adaptive coping strategy may reduce stress by allowing stressful or negative life experiences, to be reinterpreted with a grateful perspective (Wood, Maltby, Stewart, Linley, & Joseph, 2008b). Positive coping strategies are used more commonly among grateful people (Wood, Joseph, & Linley 2007).

Gratitude may also enhance wellbeing through schematic processing. Grateful people have specific schematic biases towards viewing help as having a higher cost, value, and involving greater altruism, which may account for them feeling more gratitude following events where they are given help (Wood et al., 2008b). Additionally, negative emotions

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including envy, bitterness, anger, and greed are incompatible with gratitude practises thus are inhibited in those high in gratitude (Lyubomirsky et al., 2005). Finally, Fredrickson's (2000) broaden and build model suggests experiencing positive emotions, such as gratitude, undoes the adverse physiological effects of negative emotions. It increases the flexibility of coping strategies and builds social bonds during less stressful times, which bolster coping resources.

1.3 Gratitude and the Elderly

McAdams and Bauer (2004) suggest that a sense of gratitude may be particularly important for older adults in terms of helping people successfully attain the final stage of adult development and resolve the crisis of integrity versus despair to reach ego integrity (Erikson 1959). The theory of socioemotional selectivity suggests that older adults may focus more on the present due to awareness of time being limited. This may lead the elderly to prioritise experiencing emotional meaning in their relationships, and for this, maintaining established relationships with their shared history may be more important than building new ones (Carstensen, Isaacowitz, & Charles, 1999). Existing relationships possess greater opportunities for more frequent reciprocal altruism and the associated expression of gratitude for these acts, so compared with younger adults, older adults may be more likely to view gratitude as a positive, rewarding, experience (Kashdan, Mishra, Breen, & Froh, 2009).

Lau & Cheung (2011) in a study of Chinese older adults aged 55-85 used a narrative writing task on experienced life events, with one group writing about gratitude inducing events, another about hassles, and a third providing neutral descriptions of life. The results suggested that the gratitude induction writing task reduced death anxiety more than the hassle and neutral conditions did. They suggested that gratitude is an important strength to develop for older adults because by re-examining life events with a grateful attitude, people may become less fearful of death due to a sense that their life has been well lived. An intervention study involving older adults aged 60-93 years used training on recalling positive

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autobiographical memories, exploring gratitude and forgiveness with exercises involving the production of gratitude and forgiveness letters (Ramirez, Ortega, Chamorro, & Colmenero, 2014). While changes in gratitude were not specifically measured, there were significant decreases in state anxiety and depression and increases in life satisfaction and subjective happiness compared with a placebo group. The authors report that the association of a gratitude intervention with reductions in depression supports the finding of Seligman, Steen, Park and Peterson (2005) and Gander, Proyer, Ruch, and Wyss (2012), although the participants were younger in these studies. A qualitative interview study exploring successful ageing with 24 community-dwelling older people aged between 77 and 90 years, reported that the strategy of choosing to feel gratitude for what was positive in their lives rather than worrying about what they cannot change was associated with increased feelings of well-being (Hörder, Frändin, & Larsson, 2013).

Researchers are now beginning to examine the biochemical basis of wellbeing and one study by Barraza, Grewal, Ropacki, Perez, Gonzalez, and Zak (2013) examined the effect of a 10-day trial of the neuropeptide oxytocin on the wellbeing of a group of 23 community - dwelling elderly people. Oxytocin is a hormone hypothesized to regulate social processes, particularly the motivation to socially engage and actual behavioral engagement. Emmons and McCullough (2003) reported that gratitude appears to motivate social behavior. Barraza et al. (2013) carried out a randomized trial with participants of mean age 80 years. Dispositional gratitude improved over the trial period for the experimental group but declined in the control group, thus providing some support for the hypothesized role of oxytocin on social behavior and gratitude in particular. Overall, this research attests to the emerging importance of the contribution of gratitude to wellbeing and provides a strong rationale for evaluating a gratitude intervention with an elderly population.

1.4 Using Gratitude Interventions to Enhance Wellbeing

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Emmons & McCullough (2003) originally described using a gratitude intervention to enhance wellbeing in their ‘counting blessings versus burdens’ studies. Three randomised controlled trials demonstrated higher levels of both positive affect and physical benefits. Students keeping weekly gratitude journals were compared with others recording either neutral events or negative life stresses. The weekly-gratitude group spent more time exercising, reported fewer physical symptoms, and felt more optimistic about the future. In the second study, the gratitude-journal was maintained daily rather than weekly. Findings showed this group were more enthusiastic, alert and determined and significantly more likely to progress towards their goals. The third study, compared participants diagnosed with neuromuscular diseases in gratitude or control conditions. Results showed gratitude lists were more effective than waiting list controls at improving functioning and mood. These results need replication with other populations such as the elderly.

Various types of wellbeing interventions including two related to gratitude were compared in an internet based randomised controlled trial involving nearly six hundred visitors of all ages to a positive psychology website (Seligman, Steen, Park, & Peterson, 2005). Random allocation was to one of five happiness exercises or a placebo control exercise. These included a gratitude visit and a ‘three good things in life’ written exercise involving documenting three things that went well during the day and their causes, every night for one week. Both gratitude intervention groups showed increased happiness and decreased depressive symptoms at one month, continuing for six months in the three good things exercise. However, the participants in this sample were interested in positive psychology, having located the website, which may have influenced the results and the elderly were under-represented in the sample.

Given that these studies highlight the importance of gratitude, it seems timely to evaluate a gratitude intervention with a group of elderly participants, given that the

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intervention has been shown to be effective with younger populations in promoting wellbeing even in adversity. There are increasing numbers of the elderly having to cope with increasing negative events in their lives and related emotions frequently with reduced capabilities so promoting gratitude would seem a useful intervention.

The ‘three good things in life’ intervention was chosen for its emphasis on rousing gratitude by focussing on positive events and causes as distinct from gratitude towards an individual as promoted by a gratitude letter. Expressing gratitude towards an individual may result in feelings of indebtedness, which can be stressful and could actually diminish wellbeing through feelings of inability to repay or reciprocate. This may be more likely to occur in older participants due to their depleted economic or physical resources (Offer 2012). The three good things intervention involves keeping a daily diary in which respondents identify subjectively assessed positive events in their lives. Based on previous research with other age groups, it was hypothesised that the intervention would be beneficial in terms of improving well-being.

1.5 Enhancing Wellbeing Online

Costs of interventions especially with large populations such as the elderly are an issue.

Online interventions can be highly cost-effective with larger numbers being treated compared to traditional therapist led groups. Other advantages include the opportunity to work at the participant’s chosen speed and time. Additionally, in the authors' views, barriers to participation more specific to older people can be overcome by home-based interventions. These include sporadic attendance from lack of accessible public transport or inability to continue driving, difficulties leaving caring responsibilities for partners and reluctance to participate in groups due to hearing loss, stigma among an age group unfamiliar with engaging with psychological services or unwillingness to congregate with similarly frail individuals. However, fully self-directed online interventions without human guidance or

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contact suffer from high attrition rates (Eysenbach, 2005). Attrition from studies of self-directed therapies for depression can reach 99% (Christensen, Griffiths, Mackinnon, & Brittliffe, 2006). Younger age was a consistent predictor of attrition from self-directed therapy (Geraghty, Wood, & Hyland, 2010) while being older increased the chances of completion of post-intervention measures (Buller, Burris-Woodall, Davis et al., 2008).

While Interventions to promote behaviour change are increasingly internet based with 85 such studies identified between 2000-2008 (Webb, Joseph, Yardley, & Michie, 2010), few online interventions have targeted older adults specifically although over half of older adult internet users search for health information online (Huang, Hansen, & Xie, 2012). Bond, Burr, Wolf, & Feldt, (2010) concluded that web-based interventions could be effective in improving older individuals' psychological wellbeing. Meta-analysis of fifty-one positive psychology interventions found benefits increased linearly with age (Sin & Lyubomirsky, 2009). Suggested reasons for this were that older people treated the interventions with greater seriousness, applied more effort, and had more effective emotional and self-regulation. However, paper methods are familiar and accessible to a wider group who lack computer literacy.

Self-guided wellbeing related interventions have been shown to be beneficial whether completed online (Mitchell, Stanimirovic, Klein, & Vella-Brodrick, 2009) or on paper (Ramachandra, Booth, Pieters, Vrotsou, & Huppert, 2009). The present study therefore offered a choice of delivery route in order to address the further research question of whether different outcomes or experiences resulted when older adults completed the intervention online or on paper. Based on previous research it was hypothesised that outcomes would be similar for both routes.

To summarise the study aimed to assess whether a population aged 60 years and over would benefit from a gratitude intervention. Based on previous research, the hypothesis was

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that the intervention would reduce stress levels and improve hedonic and eudemonic wellbeing. The effects of online and paper delivery were compared and differences in acceptability of the two routes examined. The hypothesis, based on previous research, was that there would be no differences.

2 Method

2.1 Participants

Eighty-eight participants were recruited (F=65, M=23) whose ages ranged from 60-91 years (Mean 70.84, SD 7.51). Two participants declined to report their age. They were recruited from local community organisations for older adults, two branches of the University of the Third Age (U3A) in the North of England and subscribers to an Elder's Council newsletter that represents older people in a city in North East England. While pre-retirement occupation was not recorded for these participants, these organisations attract mainly retired professionals (84% is the national figure), with 31.81% ($N = 28$) having university degrees compared with 11.5% of the general population in that age group in the UK. All participants lived independently in the community. Only seven of the participants (7.95%) did not have a computer, while nationally in the UK, 60% of population aged over 65 years do not have computers (UK Office of National Statistics, 2013). No payment was given to participants but a study summary was offered.

Several exclusion criteria were provided in the study advertisement to aid participants' self-selection. These were lack of English as a first language, a current mental health diagnosis due to ethical implications associated with using measures focussing on sensitive topics such as life satisfaction and a diagnosis of memory impairment as the intervention required daily reflections.

2.2 Procedure

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Ethical approval was obtained from the university Research Ethics Committee. Participants selected the online (N= 48) or paper (N= 40) version of the study. Online participants received an e-mail link to the information sheet, study description, and the researchers' e-mail details for any clarification. Participants were advised that choosing the submit button after reading these was recognised as providing informed consent but they could log off before this and no data would be collected. Paper participants received study packs for completion and return by post. These contained similar information sheets but with postal and telephone contact details for the researchers. Anonymity was maintained by using a code on each response form and participants were provided with instructions for generating the code. Participants completed identical baseline questionnaires either online or on paper containing demographic information, details of their computer use, a health measure and five measures of psychological wellbeing. Paper questionnaires were returned in a prepaid envelope.

Every evening for the following fourteen days, participants were requested to record briefly in the 'three good things diary' three events occurring that day that seemed positive to them, and why they viewed them positively. Examples were given for assistance. (Fourteen days were selected, as a shorter time may be inadequate to develop sufficient skills and expertise (Seligman et al., 2005). Baseline questionnaires were repeated on the day following completion of this diary exercise (Day 15) and at 30 days post-intervention (Day 45). Measures were presented in a different order to minimise order effects. Additional qualitative questions addressed difficulties or benefits experienced with the chosen completion route and asked whether respondents would select the same route in future.

Participants were invited to return their completed diaries. The purpose was to check task adherence for the specified duration, to confirm whether positive events were reported and to explore the nature of events experienced as positive by older people.

2.3 Measures

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Participants completed the following measures:

The Gratitude Questionnaire (GQ-6) (McCullough, Emmons, & Tsang, 2002). This six-item scale examines four facets of grateful dispositions, namely, intensity, density, span, and frequency. Responses are recorded on a seven-point Likert scale from 1 (*strongly disagree*) to 7 (*strongly agree*). Higher scores indicate greater dispositional gratitude. The scale has acceptable internal consistency (Cronbach's alpha .82), good convergent reliability with wellbeing and peer ratings and high test, retest reliability, and discriminant validity from related traits. (McCullough et al., 2002). The Cronbach's alpha was .87 in this study.

The Flourishing Scale (FS) (Diener, Wirtz, Tov, et al., 2010). This eight-item scale measures psychological needs related to eudaimonic wellbeing, including the need for competence and relatedness. It measures having supportive and rewarding relationships, contributing to the happiness of others, and being respected by others, assessed on a seven point Likert scale from 1(*strongly disagree*) to 7 (*strongly agree*). The scale has good psychometric properties, (Cronbach's alpha $>.80$, convergent validity shows correlation at high levels with other wellbeing measures, such as the Basic Needs Satisfaction Scale, and Satisfaction with Life Scale (Diener et al., 2010). High scores represent individuals with many psychological resources and strengths. The Cronbach alpha here was .95.

The Satisfaction with Life Scale (SWLS) (Diener, Emmons, Larsen, & Griffin, 1985). This five-item scale assesses global judgment of life satisfaction, as the cognitive aspect of subjective well-being using a seven-point Likert scale from 1 (*strongly disagree*) to 7 (*strongly agree*). Higher scores reflected more satisfaction with life. The SWLS demonstrates high internal consistency (Cronbach's alpha 0.87), and two-month test-retest reliability ($r = .82$), (Diener et al 1985). It demonstrates good discriminant validity from other measures of subjective wellbeing and the more cognitive traits of self-esteem and optimism (Lucas, Diener, & Suh, 1996). The Cronbach alpha was 0.96 in this study.

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The Scale of Positive and Negative Experience (SPANE) (Diener, et al., 2010). The scale comprises twelve items assessing a broad range of negative and positive experiences and feelings. Six items relate to positive and six to negative experiences, providing two subscales, scored separately because of the partial independence of the two types of feelings (Diener et al., 2010). Scoring is based on frequency of experiencing feelings, ranging from 1 (*very rarely or never*) to 5 (*very often or always*). Subtracting the negative score from the positive score gives a balance score. The SPANE shows good psychometric properties; (Cronbach's alpha 0.81 to 0.89) and performs well in reliability and convergent validity with other measures of emotions (Diener et al., 2010). In this study the Cronbach's alphas were positive affect = 0.96 and negative affect = 0.91.

The Perceived Stress Scale (PSS10) (Cohen & Williamson 1988). This is a measure based on the PSS14 (Cohen, Kamarck, & Mermelstein, 1983) with improved internal validity over the original. It provides a global measure of the degree to which situations in life are appraised as stressful rather than reactions to specific stressful events and so is sensitive to chronic stress from on-going life circumstances and stress from expectations concerning future events. It assesses the extent to which respondents find their lives unpredictable, uncontrollable, and overloading, all issues forming the central components of the stress experience (Cohen et al., 1983). Although the PSS shows high correlation with depressive symptomology scales, it has been shown to measure a different, independently predictive construct. Participants respond to ten questions on a 5-point Likert scale from 1 (*never*) to 4 (*very often*). Higher scores reflect greater levels of perceived stress. The study Cronbach alpha was 0.94.

The Centres for Disease Control and Prevention (CDC) Health Related Quality of Life, HRQOL-14 "Healthy Days Measure". This assesses physical and mental health over the past thirty days. It contains a 4-item Healthy Days Core Module totalling physically and

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mentally unhealthy days. The 5-item Activity Limitation Module (CDC 2000) asks about presence, duration and need for care related to the major health impairment experienced. The CDC 5-item Healthy Days Symptoms Module (CDC 2000) asks about recent days affected by symptoms of pain, depression, anxiety, sleeplessness, and energy. The questionnaire has criterion validity with respect to the Medical Outcomes Study Short Form 36 (Andresen, Fouts, Romeis, & Brownson, 1999) and Newschaffer (1998) reports good construct validity.

Participants were asked if they intended to continue with the intervention at the end of the intervention. They were also asked about their level of computer use and what which delivery route they would prefer in future for such an intervention with options being online, paper, or no preference and a text boxes were supplied for an explanations.

2.4 Data Analysis

Preliminary analyses included descriptive statistics for demographic and health data and the five wellbeing measures. Prior to computing a repeated measures doubly-multivariate analysis of variance, the dataset was screened for normality, linearity, univariate and multivariate outliers, multicollinearity, homogeneity of variance-covariance matrices and no serious violations were noted. There were no outliers but there was a tendency towards skewness, however Tabachnik and Fidell (2012) suggest that the F-test in MANOVA is robust to non-normality especially if this is due to skewness rather than outliers as in this instance. To deal with unequal samples sizes a Pillai's trace statistic was used. An alpha level of .05 was used for statistical tests. To minimise multicollinearity, the subscales of the SPANE were not included in the analyses, but only the emotional balance calculation. This is also in keeping with the measurement of well-being where emotional balance is the important concept. The dependent variables were flourishing, life satisfaction, mental health (GHQ), emotional balance, perceived stress. The independent variable was completion route (online/ paper) and the measures were repeated at three times points. Mean differences were

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computed on all the variables where there were significant differences across time using Hochberg criteria as the group sizes were unequal. The health quality of life data was only collected, as baseline demographic information so was not included in the statistical analysis.

Thematic analysis was conducted to interpret the diary data and the qualitative questions (Clark & Braun, 2006). This seemed appropriate given the magnitude of the data and that it was clearly structured as responses to specific questions.

3 Results

3.1 Health Data and Descriptives

In all, 87 diaries were returned from the 88 participants demonstrating that respondents had complied with the instructions and successfully identified positive events and causes. Self-reported health was mainly 'good' or 'very good'. Only 15 % of participants described their health as 'fair' or 'poor'. Participants also reported the number of physically or mentally unhealthy days experienced in the previous month, with 46.6% reporting no unhealthy days, 34.1 % had less than ten unhealthy days and 19.3% described ten or more unhealthy days. Table 1 includes descriptive statistics for all the measures. Baseline mean perceived stress scores at 11.87 (5.87) showed comparable results with US data collected in 2009 (Cohen & Janicki-Deverts, 2012) reporting 11.09 (6.77) in a population aged 65 and over. The means, and standard deviations for each variables for the online and paper routes and the total sample at baseline (day 1), end of the intervention (day 15) and at follow-up (day 45) are presented in Table 1. Age related population means were unavailable for the other measures.

- Table 1-

3.2 Analysis of Intervention Data

To analyse the effect of the intervention, data was analysed using a Repeated Measures Doubly-Multivariate Analysis of Variance, with two groups defined by completion mode (paper or online) who completed measures of flourishing, gratitude, life satisfaction

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(SWLS), emotional balance (SPANE), and perceived stress, at 3 time points (Days 1, 15, and 45). Initially age and sex were included in the analyses but as no statistically significant age or sex effects were found, these variables were dropped from the subsequent analyses to increase power. Using Pillai's trace as a conservative test, as group sizes were unequal (Field, 2013), there was no statistically significant difference in online versus paper completion routes, $F(5, 69) = 2.11, p = .07$. There was a statistically significant difference across the three time points, $F(10, 64) = 4.04, p = .001$, partial eta squared = .39 and the time by route of completion interaction was significant $F(10, 64) = 2.31, p = .02$, partial eta squared = .27.

Examining each measure across time, the univariate results using a Bonferroni correction in SPSS, showed that there were statistically significant differences in flourishing across the three time points $F(2, 146) = 7.84, p = .001$, partial eta squared = .10 and perceived stress $F(2, 146) = 4.10, p = .02$, partial eta squared = .05. SPANE balance scores approached significance $F(2, 146) = 2.79, p = .06$, partial eta squared = .04. For flourishing, 10% of the variation in error score was accounted for by completion day, with significant increases in flourishing scores between Day 1 ($M = 44.28.5, SD = 6.78$) and Day 15 ($M = 46.06, SD = 6.08$), $SE = .54, p = .002$, 95% CI [-3.24, -.62]. The differences in mean flourishing scores between day15 ($M = 45.83, SD = 6.37$), and day 45 ($M = 45.49, SD = 6.39$) were not significant. However, the differences in mean flourishing scores between day1 ($M = 44.28.5, SD = 6.78$), and day 45 ($M = 45.49, SD = 6.39$) were significant, $SE = .49, p = .04$, 95% CI [-2.45, -.04].

With perceived stress 5% of the variation in error score was accounted for by completion day, with significant decreases in perceived stress scores between Day 1 ($M = 11.88, SD = 5.87$) and Day 15 ($M = 10.40, SD = 5.52$), $SE = .42, p = .003$, 95% CIs [.43, 2.49]. The

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differences in scores between day 15 and day 45 ($M = 11.36$, $SD = 6.47$) and day 1 and day 45 were not statistically significant.

Exploring the time by route interactions for each measure indicated that the only significant differences were on the SPANE balance scores $F(2, 146) = 4.09$, $p = .02$, partial eta squared = .05. The differences in scores between the online and paper completion routes for SPANE balance were not significant on day 1 or day 45 but at day 15, the scores of the paper group ($M = 12.40$, $SD = 5.90$) were significantly higher than those of the online group ($M = 8.92$, $SD = 6.43$), $t(85) = 2.36$, $p = .02$ 95% CIs [.53, 6.2].

3.3 Confirmation of Positive Events

A possible disadvantage with the self-directed nature of this intervention was that identified events might not actually be positive resulting in an events record without any positive reflections, which would be unlikely to enhance wellbeing. Analysis of the diaries confirmed compliance with the intervention and positive events were described. Content analysis identified six dimensions of successful positive psychological functioning comprising; self-acceptance, positive relations with others, autonomy, environmental mastery, purpose in life, and personal growth. Examples of positive experiences and their causes related to these themes are illustrated in table 2.

-Table 2-

Many of the positive experiences fitted the components of the eudaimonic multidimensional model of psychological wellbeing being activities that contribute to a meaningful life, maintain independence, and helping others (Ryff & Keyes, 1995).

3.3 Intention to Continue

Eighty per cent did not plan to keep a gratitude diary in the future, 8% had continued and 12% said they planned to start after they had finished the study. Planned or confirmed continuation was similar for online ($N = 8$) and paper ($N = 7$) participants. An ANOVA

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comparing the day 45 mean scores on all the variables between this group and those not continuing with the intervention found no significant differences between the two groups.

3.4 Views on Delivery Route

No barriers to participation with the online method were identified, with 60% of online respondents saying they would choose this method again (21% no preference, 19% paper).

Among paper respondents 15% said they would try online (73% paper, 12% no preference).

Reasons for choosing the online route were based around ease and legibility:

'It's quick, convenient, and not likely to get lost in a heap of papers in the house' (Marion 62)

'Online is much quicker, and any written material is legible' (John 71)

In addition to word processing, questionnaire completion required further computer interaction but the completion accuracy did not differ between the online and paper groups. Many of the paper participants did use computers with 55% reporting using one for at least one hour a day. This compared with 83% using a computer for at least an hour a day for online participants. Only 18% of the sample reported that they never used a computer although some had a computer in their homes as only seven participants did not have a computer. Comments regarding preferences for using paper were that using the computer felt like a work task and required them to sit at a desk in a study. There seemed little awareness of the flexibility of portable devices such as tablets and phones for completion of this type of task.

'I can fill in the diary away from the computer instead of upstairs in the workroom' (Pat aged 69)

Some participants expressed anxiety about making errors online:

'Paper methods give everybody an equal opportunity, my computer is my unpredictable ally not my friend' (Doris 67)

4 Discussion

The two-week gratitude intervention was effective in increasing aspects of well-being in this relatively healthy elderly population with statistically significant increases in flourishing and decreases in perceived stress. There was no significant differences between paper and online delivery overall, although there was a significant interaction between time and route of completion. This was accounted for by the paper group having significantly higher scores on emotional balance than the online group at the end of the intervention although overall the levels of emotional balance did not change significantly across the time of the intervention and follow-up. Content analysis of the positive events diaries that the participants' completed confirmed that the intervention was being implemented appropriately. Collecting this data does not appear to be standard practice yet in this study it provided interesting data as well as a reliability check on the contents of the intervention.

Flourishing scores increased significantly between day 1 and day 15, the end of the intervention, for the total sample regardless of whether the intervention was completed online or on paper. Flourishing scores at the 45-day follow-up remained very similar to the day 15 scores evidencing that the increases were still being maintained 30 days after the end of the intervention. Overall, the intervention significantly increased flourishing in this elderly sample with scores at day 45 being significantly higher than at the start of the intervention.

The concept of flourishing relates to the fulfilment of psychological needs related to eudemonic wellbeing, such as the presence of supportive and rewarding relationships, contributing to the happiness of others, being respected by others and feeling competence and a sense of autonomy (Waterman, 1993). The six dimensions representing the events that the research participants identified as positive in their practice of gratitude fulfilled many of the flourishing criteria. Competence and feelings of autonomy were apparent in the 91-year-old man who was sewing on buttons despite his physical frailties or the woman putting out

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her own refuse. Supportive and rewarding relationships were apparent in assisting with childcare and sharing their expertise and experiences with others and being helped by others as well. Other themes related to having a purpose in life and thus contributing to the wellbeing of others, be it by keeping neighbourhood shops open or participating in political protests. While many of the examples were ordinary events, the explanations indicate how important their achievements were for these individuals, they were life-affirming experiences, showing that they still mattered and were of value. This would seem to link to the requirements for the attainment of ego integrity that Erikson (1959) discusses and the self-acceptance dimension reinforces this interpretation. The intervention can be conceptualised as requiring individuals to become more mindful of events in their daily lives and recognise the positive aspects in the everyday, being grateful for what they can experience, contribute, and achieve. These findings provide tentative support for the contention that experiencing gratitude may be particularly important for older adults seeking to reach ego integrity and could be examined in more depth in the future (McAdams & Bauer, 2004).

Other researchers have similarly demonstrated the importance of gratitude exercises in increasing wellbeing in elderly populations but they used different interventions and wellbeing measures. This appears to be the first study measuring flourishing in an elderly population. The results are similar to those obtained with much younger participants by Wood et al. (2010). Lau and Cheung (2011) reported that a gratitude inducing writing task reduced death anxiety in elderly Chinese participants. The suggestion was that bringing a positive focus to narrating life events provides a sense to individuals of their life being meaningful and well lived. This is similar to the process reported in the qualitative analysis of life events in this study.

Ramirez et al. (2014) found reductions in anxiety and depression after elderly participants wrote letters expressing their gratitude to other. Hörder et al. (2013) in a

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qualitative interview study with community-dwelling older people reported that focusing on feeling gratitude for what was positive in their lives rather than worrying about what could be changed was associated with increased feelings of well-being. This again is similar to the activities reported by participants in the gratitude intervention reported here and produces similar benefits.

Perceived stress scores significantly reduced over the course of the intervention but this reduction was not maintained at follow up with scores returning close to those at the baseline. The link between the gratitude intervention, stress reduction and increases in flourishing supports the contention that gratitude may influence wellbeing by buffering against negative states and emotions (Frederickson, 1998, Fredrickson et al., 2003; Nelson, 2009; Wood et al., 2008a). The increase in reported perceived stress at follow-up in this study, suggests that it is important to continue actively practising the gratitude intervention if any stress buffering effect is to occur. Frederickson (1998) suggested that the practice of gratitude should lead to greater resilience against adversity and this would be worth examining a future study. It would be useful to determine how long these interventions need to be for greater resilience in the face to stress to emerge.

Fredrickson et al. (2003) propose that positive affect will also increase because of the experience of a positive emotion such as gratitude. However, there were no significant increases in emotional balance over the course of the gratitude intervention in our study. The paper delivery group had significantly higher scores on emotional balance at the end of the intervention than the online group although the increase from baseline scores was not significant for either group. This is not easy to explain. Some participants in the online group reported they while they used computers, they were not totally at ease with them and sometimes became frustrated when online. It may be that such computer problems, or

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apprehension about using a computer affected the emotional balance results for some online participants and future research could examine this in more detail.

Delivering the intervention online or via the more traditional paper route did not significantly affect the results with both routes appearing equally efficacious. This successful delivery of the intervention with minimal contact between researcher and participants reinforced findings obtained from studies with younger populations that a therapeutic alliance is not essential to produce beneficial effects (Seligman et al., 2005). This allows for cost effective delivery of such interventions. The results suggest that online participation is not disadvantageous for this age group compared to the traditional paper route. Online participants confirmed a willingness to engage with the computer as a tool for a therapeutic exercise. While many older adults have excellent computer literacy skills, awareness of potential difficulties they might face online is essential to facilitate uptake and compliance. This may include accommodating declining vision, hearing, and psychomotor coordination by using larger font sizes, considering the frequency range of any sounds and using layouts that need less precise mouse movements (Hawthorn 2000).

Although the intervention was focussed on inducing gratitude, actual gratitude scores barely changed across the time of the intervention. This may be unimportant if as shown respondents experienced enhanced wellbeing through increased awareness of the things and people that made them feel grateful. Gratitude is a dispositional measure, so only small increases on the gratitude scale were anticipated. However, the scores showed a minimal decrease that could have been due to ceiling effects from very high baseline scores. Alternatively, in some participants, the effect of reflecting on gratitude may have produced slightly negative effects from feelings of indebtedness that can be associated with feelings of guilt (Watkins, Scheer, Ovnicek, & Kolts, 2006).

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While the subjective well-being measures of life satisfaction and emotional balance increased over the intervention they increases were not statistically significant. It appears that the intervention was more effective at increasing eudemonic wellbeing. As discussed earlier the six dimensions identified in analysis of daily positive events and why they were positive seems to support this.

Increases in wellbeing are highest when an activity is a good fit with a participant's personality and they enjoy completing it (Sheldon & Lyubomirsky 2006). The vast majority of respondents in the present study complied with the instructions but occasionally comments were made that less than three examples could be identified for that day. Additionally some respondents may have been bored by daily entries while for some fourteen days was insufficient to develop the habit of grateful thinking. When considering the efficacy of gratitude interventions Lyubomirsky et al., (2005) report that counting blessings once a week may be more beneficial for wellbeing enhancement compared engaging in the same behaviour three times a week and suggest that the exercise may become less meaningful with frequent repetition. Future interventions might allow participants the freedom to tailor the intervention to personal style in terms of frequency of completion and number of grateful episodes recorded.

4.1 Limitations

The recruitment methods resulted in participants of above average education and socio-economic status and this may limit generalizability. However, given the high computer ownership in this group, compared with the general population in the same age range, this population is a likely target for online health interventions. While a 30-day follow-up seemed reasonable for retaining participants, a longer follow up would be desirable as previous interventions using a one-week diary showed benefits continued to improve at 3 and

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even 6 months (Seligman et al., 2005). To reliable results Bonferroni corrections were used but these can be regarded as over conservative (Streiner, 2009).

4.2 Implications and Conclusions

Older adults who are generally physically well and therefore not in regular contact with health professionals may attribute any insidious drop in feelings of wellbeing to ageing or may fail to identify a decline. This intervention could be promoted as an opportunity for people to enhance their own mental health resources for healthy ageing.

Concentrating solely on statistical significance is inappropriate because it is unclear what numerical or percentage change equates to a discernible experiential difference in wellbeing or whether a similar rise from a lower baseline is more beneficial than when a score already approaches the maximum. The clinical relevance of small increases should be considered and this is demonstrated by the decision of some respondents to continue with the diary as they found it beneficial. However, continuation could indicate a desire to please the researchers, as there were no significant differences between these participants and those not continuing with the intervention.

The strength of the present study is that it provides support for an inclusive and effective approach towards improving and maintaining optimum levels of wellbeing as aging progresses. Beneficial outcomes have been demonstrated using both online and paper routes for self-directed delivery. The findings of this study suggest that the three good things gratitude diary can enhance eudemonic wellbeing and reduce perceived stress in a population of older adults.

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Table 1 Means, Standard Deviations and Ranges for Gratitude, Flourishing, Life Satisfaction, SPANE and Perceived Stress, Across Time by Paper ($N= 40$) or Online ($N= 48$) Completion Route and for the Total Sample ($N = 88$).

Scale (Range)	Day 1 M (SD)	Day 15 M (SD)	Day 45 M (SD)
Total gratitude (6-42)	34.56 (4.71)	34.23 (5.05)	34.29 (5.98)
Paper	35.35 (4.70)	34.40 (4.94)	35.37 (6.19)
Online ($N= 48$)	33.90 (4.67)	34.08 (5.18)	33.58 (5.27)
Total flourishing (8-56)	44.28 (6.78)	46.06 (6.08)	45.49 (6.39)
Paper	43.93 (7.66)	45.83 (6.37)	46.00 (6.44)
Online	44.58 (6.02)	46.25 (5.89)	45.16 (6.40)
Total life satisfaction (5-35)	24.78 (6.46)	24.83 (7.12)	25.29 (6.54)
Paper	24.93 (6.03)	24.90 (6.94)	24.70 (6.83)
Online	24.67 (6.86)	24.77 (7.34)	25.69 (6.39)
Total SPANE balance (-24-24)	9.59 (6.79)	10.50 (6.41)	11.20 (7.62)
Paper	10.85 (6.16)	12.40 (5.90)	11.33 (8.25)
Online	8.54 (7.17)	8.92 (6.43)	11.11 (7.27)
Total perceived stress (0-40)	11.88 (5.87)	10.40 (5.52)	11.36 (6.47)
Paper	10.85 (4.94)	9.60 (5.12)	11.10 (6.47)
Online	12.73 (6.47)	11.06 (5.81)	11.53 (6.67)

Table 2. Content analysis of diary entries

Theme	Positive experience & (cause)
Autonomy	I put my wheelie bin out and brought it back in after the refuse men had been. (One of my sons has been doing this. I felt more independent being able to do it myself.) (Frances 75)
	A button had come off my cardigan and I sewed it back on. (My eyesight isn't good and my hands are shaky but I still did it!) (Arthur 91)
	I accepted an invitation to talk to a group about arranging finances. (It felt good to use my experience to help others). (Laura 73)
Positive relations with others.	Cooking a meal for my grandson to help out my daughter. (The most positive part was when he said, "Thanks Grandma, that was great"). (Mary 76)
Purpose in life.	Visited the local butcher and shopping area. (I am trying to keep local shops open to stop this small area from dying). (Jan 74)
	Went on the anti-cuts march in London. (This Government is destroying the very foundations of our society, we can do something if we demonstrate we do not support them.) (John 77)
Personal growth	Completing a pastel painting of fruit. (I was always told I had no artistic talent and I was pleased with what I produced). (Jen 65)
	Talked to year 10 pupils about HIV/AIDS. (My daughter died unnecessarily and in fear of AIDS. I need to make some sense of the senseless and it allows me to talk positively about my daughter). (May 66)
Environmental mastery	Found out a lot about which TV to consider buying and what not to be. (Went to TV department as part of my shopping research and was helped by someone who answered all my questions). (Elaine 62)
	Went to the supermarket early. (Glad to have gone before the rush and remembered everything). (Sue 63)

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Self-acceptance

Weighed myself. (Very pleased to see that despite far too many nuts and fat too much chocolate and biscuits, I have managed to remain at 8 and a half stones). (Barbara 65)

Knees aching while shopping. (Saw someone walking with a stick and thought, "well at least I can still walk"). (Dot 73)
