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Signature Strengths: A Positive Psychology Intervention with Informal Caregivers

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in partial fulfillment of the requirements for the degree

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### Abstract

The negative consequences of informal caregiving on caregivers' physical and mental health are well-documented (Vitaliano, Zhang, & Scanlan, 2003; Pinquart & Sorensen, 2003a). Many evidence-based treatments exist to address caregiver distress and burden (Gallagher-Thompson & Coon, 2007). Positive aspects of caregiving have received considerably less attention in the literature and, at present, there are relatively few interventions that were designed with a primary focus on improving positive aspects of caregiving. The current study tested an established positive psychology intervention (Seligman, Steen, Park, & Peterson, 2005) with informal caregivers of older adults. This internet-based study employed a three group randomized controlled design. One hundred and fifty-five women caring for an older adult were randomly assigned to one of three conditions: a standard version of the exercise, a modified version of the exercise adapted for the caregiving domain, and a survey only control group. Results showed that participants reported significant increases in happiness,  $F(2, 174) = 3.54, p = .04, \eta_p^2 = .04$ , 90% CI [.002, .089], and satisfaction with life  $F(2, 170) = 9.38, p < .001, \eta_p^2 = .10$ , 90% CI [.03, .17]. The observed improvements in well-being were similar across all conditions. Participants in the intervention conditions showed a significant decrease in depressive symptoms compared to the control group, but this effect was only seen at one-month follow-up,  $F(1, 88) = 4.44, p = .04, \eta_p^2 = .05$ , 90% CI [.00, .14]. Participants who received the modified version of the exercise did not show significantly better performance on positive caregiving measures in relation to participants who received the standard version or survey only. Although, secondary analyses revealed the modified condition had significant increases in positive aspects of caregiving at one-month follow-

up compared to their baseline scores,  $t(29) = -2.34, p = .03, d = -.36, 95\% \text{ CI } [.06, .79]$ .

In summary, caregivers showed improved well-being over the course of the study.

However, results were mixed with regard to clear intervention effects, and there was a lack of evidence demonstrating that improved well-being, mental health, and positive caregiving outcomes were directly attributable to the intervention and not other factors.

*Keywords:* Informal caregivers, positive psychology, strengths

### Signature Strengths: A Positive Psychology Intervention with Informal Caregivers

There are an estimated 34.2 million Americans providing unpaid care to an older family member or friend. According to the National Alliance for Caregiving survey, the typical caregiver is a woman fifty-years-old who, on average, spends about twenty-four hours a week providing care to an older relative (National Alliance for Caregiving [NAC], 2015). Most of these individuals had been serving in the caregiver role for approximately three-and-a-half years, and nearly half reported they had no choice in this. Informal caregivers represent a valuable resource in today's healthcare system, and informal caregiving can significantly reduce healthcare costs associated with long-term care and institutionalization. However, informal caregiving often comes at its own cost. The literature on the caregiving stress-process (Pearlin, Aneshensel, & LeBlanc, 1997) and negative effects of caregiving is well-established (Vitaliano, Zhang, & Scanlan, 2003).

A predominant focus in the literature to this point has been on the negative aspects of caregiving and the creation of interventions to address this (Gallagher-Thompson & Coon, 2007). Yet, caregivers also experience positive aspects of caregiving (Folkman & Moskowitz, 2000) and are associated with beneficial effects for caregivers (Schulz & Monin, 2012). There are numerous evidence-based interventions to reduce caregiver distress, but, at present, relatively few interventions exist to improve positive aspects of caregiving. The development of interventions to increase positive aspects of caregiving is needed and represents an important next step in the ongoing development of the most effective interventions for informal caregivers. The field of positive psychology has much to offer caregiving research.

Positive psychology addresses what is good in people, the factors and institutions that promote positive characteristics, and the consequences of positive experiences for optimal functioning (Seligman & Csikszentmihalyi, 2000). As a field, positive psychology draws together researchers, scholars, and practitioners from various disciplines in the scientific study of well-being. The interest in enhancing optimal human functioning contrasts with a historical emphasis on understanding and treating disorders and distress.

Throughout the psychological literature and parlance, the term “well-being” is often used in reference to the absence of distress. In this view, mental health and mental illness exist as two opposite ends on a continuum. However, within positive psychology, mental health and mental illness are conceptualized as two separate dimensions (Keyes 2002, 2007). Well-being is not merely the absence of distress, but a state in itself to be pursued and enhanced. Well-being encompasses many aspects of functioning, and Martin Seligman, a leader in the field of positive psychology, organized the construct of well-being into five dimensions. In his book, *Flourish*, Seligman (2011) proposed that well-being consists of positive affect, engagement, relationships, meaning, and achievement (PERMA). In addition, individual character strengths underlie each of these areas of functioning. Seligman’s theory of well-being provided a conceptual framework for the present study.

### **Positive Psychology Interventions**

Developments in positive psychology theory and research led to the creation of interventions designed to increase well-being and other positive outcomes. Positive psychology interventions have been defined as, “intentional activities that aim to cultivate

positive feelings, behaviors, or cognitions” (Sin & Lyubomirsky, 2009). Positive psychology interventions encompass various activities that range from brief individual exercises done online to large-scale programs conducted in educational or other institutional settings over an extended period. Interventions have been administered to the general public, school children, workplaces, and the military. Non-clinical populations have been the primary consumers of these interventions, although positive psychotherapy was developed for administration in clinical settings (Seligman, Rashid, Parks, 2006; Rashid, 2015). Many positive psychology interventions include exercises that involve using character strengths in new ways (Gander, Proyer, Wuch, & Wyss, 2013; Mongrain & Anselmo-Matthews, 2012; Seligman, Steen, Park, & Peterson, 2005), or involve the cultivation of specific character strengths, such as gratitude (Emmons & McCullough, 2003) or kindness (Otake et al., 2006).

The benefits of positive psychology interventions have been demonstrated in a number of studies. Two meta-analyses looked at the effects of positive psychology interventions on well-being and depression (Bolier et al., 2013; Sin & Lyubomirsky, 2009). Sin and Lyubomirsky (2009) included seventy-four studies published between 1977 and 2008, and studies were included if the intervention, therapy, or activity being tested was primarily aimed at increasing positive emotion, positive cognitions, or positive behavior. The authors reported Pearson  $r$  effect sizes and results indicated that positive interventions, overall, had a medium effect on improved well-being (mean  $r = .29$ ), and an overall medium effect on reduced depression (mean  $r = .31$ ). Bolier et al.’s (2013) meta-analysis used more stringent criteria to define positive psychology interventions and limited their inclusion to randomized controlled studies developed in the theoretical

orientation of positive psychology. These authors identified thirty-nine studies published between 2009 and 2012 that met their criteria. Bolier and colleagues also found significant effects, although smaller than those reported by Sin and Lyubomirsky (2009).

Bolier et al.'s (2013) meta-analysis showed that positive psychology interventions had small to medium size effects on improvements in subjective well-being ( $d = .34$ ), psychological well-being ( $d = .20$ ), and decreased depression ( $d = .23$ ). The authors also looked at short-term follow-up effects and found that positive interventions continued to have significant effects on subjective well-being ( $d = .22$ ) and psychological well-being ( $d = .16$ ) after three months. Based on the available evidence, it appears that positive psychology interventions lead to increased well-being and decreased depressive symptoms, with small but significant effects lasting up to three months. While heterogeneity of interventions was evident in these meta-analyses, there were also some core elements shared by many of the positive psychology interventions.

Positive psychology interventions frequently involve use of character strengths and the Values in Action (VIA) classification of character strengths underlie many positive psychology interventions (Peterson & Seligman, 2004). Based on an extensive literature review and development process, the authors of the VIA posit that the twenty-four strengths and six virtues included in their classification are universally regarded as virtuous behavior. The VIA classification of character strengths can be found in the *Appendix A*. Character strengths are positive characteristics that an individual displays in a range of ways across various settings. The exercise of character strengths is seen as fulfilling and rewarding.



In addition, individuals each possess their own set of “signature strengths.” Signature strengths are the specific character strengths that an individual exercises most frequently and, when she does, their use is accompanied by a sense of ownership and authenticity. Other features associated with signature strengths include feeling excited and motivated by their use, seeking out new ways to use them, and a feeling of invigoration rather than exhaustion when doing so (Peterson & Seligman, 2004, p. 18). The endorsement of character strengths has been associated with well-being, and individuals who reported higher levels of character strengths also reported greater life satisfaction (Park, Peterson, & Seligman, 2004). For these reasons, many positive psychology interventions explicitly target character strengths as a way to increase well-being.

### **Establishing the Efficacy of Positive Psychology Exercises**

The application of scientific methods to the study of well-being is a hallmark of positive psychology. In intervention research, the randomized controlled trial is the gold-standard for scientific rigor and has been championed by Seligman to test positive psychology interventions. Seligman et al. (2005) were the first to demonstrate the efficacy of positive psychology interventions to improve happiness and decrease depression. In their seminal study, Seligman et al. (2005) compared five exercises designed to increase happiness to a placebo control group. Participants consisted of a convenience sample of visitors to a website for Seligman’s book *Authentic Happiness*. The study was conducted online and participants were instructed to perform their assigned exercise for one week. Follow-up data were collected at one-week, one-month, three-months, and six months post-intervention. Seligman et al.’s (2005) study was the

first to use the Steen Happiness Index, later renamed the Authentic Happiness Inventory, to measure changes in happiness. The exercises tested in Seligman et al.'s (2005) study influenced the development of positive psychology interventions over the next decade.

Because of the influence these exercises had on subsequent positive psychology intervention research, a brief overview of the five exercises from Seligman et al., (2005) follows. Participants were randomly assigned to perform one of five positive psychology exercises or assigned to a control group instructed to journal about their early memories for one week. Participants assigned to do (1) a “gratitude visit” were instructed to write a letter of gratitude to someone who had been especially kind to them, but not properly thanked yet, and to deliver that letter in person in the next week. Participants assigned to (2) “three good things” were instructed to write down three things that went well each day and their causes, and do this every night for one week. Participants assigned to (3) “you at your best” were instructed to write about a time when they were at their best and then review that story each day for a week reflecting on the personal strengths displayed in it. The final two exercises involved the VIA Individual Survey of Character Strengths. Participants assigned to (4) “identification of signature strengths” noted their strengths from the survey and were instructed to use them more often during the coming week. Participants assigned to (5) “using signature strengths in new ways” were instructed to use one of their top five strengths in a new and different way each day over the next week.

Results showed that individuals assigned to a positive psychology exercise for one week reported increased happiness and decreased depressive symptoms. Intervention effect sizes were reported for a statistically significant difference between the

intervention group at that time point compared to baseline: Values ranged from .06 to .50, and the authors reported “moderate to large” size effects (Seligman et al., 2005). In addition, several intervention effects remained significant up to six months. The “gratitude visit” was the exercise that showed the largest effect immediately following the one week intervention period, although after one-month this effect was no longer significant. In contrast, “three good things” and “using signature strengths in new ways” did not show significant effects at post-assessment; however, over time, these intervention effects became significant, and happiness and depression scores for these two groups remained significantly better than the control group at six month follow-up. At six-month follow-up, “using signature strengths in new ways” had a large effect on increased happiness and a moderate effect on reduced depression. On the other hand, “identifying signature strengths” only showed a moderate effect on happiness and a weak effect on depressive symptoms at post-assessment, and this effect did not remain significant during follow-up.

Seligman et al. (2005) discussed the discrepancy between the exercises involving the VIA survey and suggested this pointed to use of signature strengths in new ways as the active ingredient in the exercise rather than merely the identification of one’s strengths. Notably, although participants were instructed to practice the exercise for one week, follow-up showed that participants who continued with their assigned exercise had better long-term benefits on happiness and depression.

### **Replication of Seligman et al. (2005)**

Several studies have sought to replicate and extend Seligman et al.’s (2005) findings. Mongrain and Anselmo-Matthews (2012) compared “three good things” and

“using signature strengths in new ways” to more rigorous control conditions. These exercises were selected because they showed the largest effects in the original study. To strengthen findings from the original study, Mongrain and Anselmo-Matthews (2012) included two control conditions: an expectancy control condition and positive control condition. The positive condition was included to control for any effects due to accessing positive self-relevant information. Results of this study revealed that both active positive psychology exercises produced significant effects on increased happiness at post-assessment, and the effect remained significant at six months follow-up. The “using signature strengths” condition produced the largest effects on increased happiness among all groups, with small to medium effect sizes at post-assessment ( $d = .29$ ) and six month follow-up ( $d = .24$ ). This study partially replicated Seligman’s (2005) findings for the “three good things” and “using signature strengths in new ways” exercises, although with smaller effect sizes, and demonstrated that the intervention effect was not due to expectancy effects.

Other researchers have sought to build on Seligman et al.’s (2005) findings by testing variations of the original exercises and adding new exercises. Gander, Proyer, Ruch, and Wyss (2013) conducted a large online study with nine positive psychology exercises and a placebo control. Three exercises from the original study were included in their standard format: “gratitude visit,” “three good things,” and “using signature strengths in new ways.” Three additional exercises in this study were included as variations on the original ones, such as extending the duration of “three good things” from one-week to two-weeks, combining the “gratitude visit” with “three good things,” and changing three good things to “three funny things.” Lastly, three new positive

psychology exercises were included to test their use in an online format. Results showed that participants assigned to “using signature strengths in new ways” and participants assigned to a new exercise, “three funny things,” had significantly greater increases in happiness compared to a placebo control. Further, the intervention effect for “using signature strengths in new ways” remained significant at six months. In addition, seven of the nine positive psychology exercises significantly increased happiness scores and decreased depressive symptoms from pre-assessment to post-assessment, and happiness scores remained significant at follow-up. Thus, Gander et al. (2013) in part replicated Seligman et al.’s (2005) findings and again demonstrated the efficacy of “using signature strengths in new ways” on increased happiness. In addition, this study demonstrated the efficacy of several new positive psychology exercises and established a precedent for testing variations of the original exercises.

Studies investigating the efficacy of positive psychology exercises with specific populations, such as women age fifty and older, have produced similar results to previous findings. Positive psychology exercises significantly increased happiness and decreased depressive symptoms from pre-assessment to post-assessment, and at follow-up for middle-aged and older women (Proyer, Gander, Wellenzohn, & Ruch, 2014). In this study, “using signature strengths in new ways” again showed the best performance in relation to other positive psychology exercises.

#### **Additional Studies Testing “Using Signature Strengths in New Ways”**

Over the past ten years, several randomized controlled trials have shown “using signature strengths in new ways” to be one of the strongest exercises for improving well-being. Mitchell, Stanimirovic, Klein, and Vella-Brodrick (2009) sought to further

advance this area of research by increasing the rigor of investigation. In this study, “using signature strengths in new ways” was adapted for an interactive website and extended to three sessions. This condition was compared to a web-based Cognitive Behavior Therapy (CBT) problem-solving intervention, and to a placebo control. Results showed that participants in the “using signature strengths in new ways” condition evidenced significant increases in psychological well-being from pre-assessment to post-assessment, and at follow-up. Participants reported experience of pleasure also significantly increased in this condition compared to the placebo control. Further, adherence was greater in the signature strengths condition compared to the problem-solving condition. Taken together, these findings suggest that participants in the “using signature strengths in new ways” condition enjoyed the exercise and were more likely to complete it. This study sought to compare a positive psychology intervention with a CBT intervention. Although participants in the signature strengths condition had significant increases in psychological well-being, there were no significant changes in affective or cognitive aspects of well-being, nor mental health indices, and no intervention effects were identified at the group level. Although this study produced weaker intervention effects compared to previous studies that included the “using signature strengths in new ways” exercise, it is noteworthy that a positive psychology intervention and CBT intervention had relatively comparable performance.

While the above studies have focused on “using signature strengths in new ways,” there are a number of strengths interventions that have been designed for individuals and groups. Quinlan, Swain, and Vella-Brodrick (2012) conducted a review of various strengths interventions designed to improve well-being or other desirable outcomes, such

as academic or professional performance. The authors identified eight studies for this review and noted that a majority of these studies used the VIA Survey of Character Strengths. The interventions varied widely in terms of delivery and duration, and included school-age children to university students, as well as the general public. Overall, the authors found that strengths interventions consistently showed small to medium significant effects on well-being.

### **Potential Mechanisms of Action in Positive Psychology Interventions**

The creation of positive emotion is one likely way that positive psychology interventions increase well-being. According to the broaden-and-build theory (Fredrickson, 1998; Fredrickson, 2001), positive emotions serve an adaptive function. While negative emotions narrow the thought-action repertoire enabling an individual to respond quickly when faced with a threat, the experience of positive emotion functions to broaden one's thought- action repertoire. This experience opens the mind to draw new connections between things, process information in a more flexible manner, and, ultimately, generate a greater selection of adaptive responses. In addition, this builds enduring personal resources, such as social connections, that an individual can draw on in the future. Also, related to this is the idea of an "upward spiral" of positive emotion: Positive emotion fosters adaptive responses, which, in turn, generates more positive emotion, and, over time, leads to enhanced well-being. Thus, to the extent that positive psychology interventions create experiences of positive emotions, the broaden-and-build theory represents a potential mechanism of action.

Increased engagement with intervention content and strengths practice appears to be another likely way that positive psychology interventions affect well-being. Positive

psychology exercises, such as “using signature strengths in new ways,” engage participants in using their highest strengths, which is expected to be fulfilling and rewarding in itself (Peterson & Seligman, 2004). In addition, endorsement of character strengths correlates significantly with life satisfaction (Park, Peterson, & Seligman, 2004; Peterson et al., 2007), and strengths is a significant predictor of well-being (Govindji & Linley, 2007; Proctor, Maltby, & Linley, 2011). Further, positive psychology interventions may be more enjoyable than other forms of intervention (Mitchell et al., 2009). Thus, strengths use and increased engagement may represent additional mechanisms of action explaining how positive psychology interventions improve well-being.

### **Interventions with Informal Caregivers**

There are presently many well-established interventions for informal caregivers and, in the past decade, several reviews and meta-analyses have looked at these. In 2006, Pinquart and Sorensen conducted a meta-analysis of one hundred twenty-seven intervention studies with dementia caregivers. The authors found that the primary forms of intervention were psychoeducation, Cognitive Behavioral Therapy (CBT), counseling/case management, general support, care recipient training, and multicomponent treatments. The primary outcomes measured across studies were caregiver burden, depression, and a few studies also looked at measures of subjective well-being. Overall, the Pinquart and Sorensen (2006) meta-analysis revealed small but significant intervention effects for caregiver burden, depressive symptoms, and subjective well-being.



Gallagher-Thompson and Coon (2007) conducted a review of nineteen evidence-based treatments for caregivers of older adults. These treatments were generally designed to reduce caregiver distress and remediate negative outcomes. On average, large effect sizes were found for psychoeducational skill building interventions and psychotherapy – counseling interventions, with depressive symptoms and caregiver burden as the primary outcomes for intervention. Caregiver “quality of life” was also addressed in this review and this construct was presented in terms of improvements in negative outcomes and positive outcomes. Positive outcomes included things such as coping skills, self-efficacy, and perceived quality of life. The “positive outcomes” mentioned here were inextricably linked to the caregiving stress process. There do not appear to be any treatments in this review that focused on positive outcomes that promote well-being in its own right.

A more recent review looked at e-health interventions aimed at improving informal caregiver functioning (Boots, deVugt, Knippenberg, Kempen & Verhey, 2014). Twelve studies were included in this review and the authors commented on the overall lack of high methodological quality in the majority of online caregiver intervention studies. The primary outcomes in these studies were measures of depression, sense of competence, decision- making confidence, self-efficacy and burden. The authors concluded that Internet interventions appear to improve caregivers’ well-being. The use of the term “well-being” here was again related to the caregiver stress process, including the reduction of burden or enhancement of adaptive responses to caregiver stressors. Overall, well-being in the caregiving literature has not tended to be conceived of as its own dimension independent of the caregiving stress process.

McKenchie, Barker, and Stott (2014) conducted a review of computer-mediated psychosocial interventions with dementia caregivers. The authors found fourteen studies published between 2000 and 2012, and six of these studies were randomized controlled trials. Similar to studies included in previous reviews, the primary aims for these interventions were related to the caregiver stress process, such as reduction of caregiver distress or increased caregiver competence. The primary outcomes examined were caregiver burden and depression. Two studies, however, also assessed positive outcomes, and one found that an intervention increased positive aspects of caregiving (Beauchamp, Irvine, Seeley, & Johnson, 2005). In a broader review of telehealth interventions, Chi and Demiris (2015) found a total of sixty-five articles, of which approximately half were focused on caregivers to adults and older adults. Among the sixty-five studies identified for the review, only nineteen were randomized controlled trials. A summary of these reviews calls for high-quality research to test the efficacy of online caregiver interventions. In addition, this highlights that the predominant focus in existing caregiver interventions is reduction of distress and negative outcomes. Interventions that target not only the adverse impact of caregiver, but also aim to improve the positive aspects of caregiving and increase well-being are lacking at present.

### **Positive Aspects of Caregiving**

Focus on the negative aspects of informal caregiving has been predominant, and, with good reason, given the potential adverse impact to caregivers (Pearlin et al., 1997, Vitalino et al., 2003). However, the recognition of positive experiences within the caregiving situation also deserves attention. In her work with informal caregivers of AIDS patients, Susan Folkman observed that caregivers experienced both positive and

negative emotion during times of stress. During periods of acute and chronic stress, the predominant emotions are often negative ones, but positive emotions do also occur.

Based on this, Folkman incorporated the adaptive role of positive emotion in her revised model of stress and coping (Folkman & Moskowitz, 2000; Folkman, 2008). In this model, positive emotion impacts positive coping through meaning-focused coping.

Meaning-focused coping, such as benefit finding/ reminding, reprioritizing, and infusing ordinary events with meaning, in turn, generates further positive emotion, which functions to sustain the caregiver in the coping process. Thus, positive emotion serves an adaptive function during times of stress. Taking this into consideration along with the broaden-and-build theory of positive emotion (Fredrickson 1998, 2001) calls attention to a need for interventions that promote positive experiences in the caregiving situation.

In recognition of the importance of positive experiences, Caron and Desrosiers (2010) developed a conceptual model for positive aspects of caregiving. The authors' review of the available literature yielded a wide range of activities that constituted positive aspects of caregiving and they grouped these activities into three central domains: quality of the caregiver and care recipient daily relationship, a caregiver's feeling of accomplishment, and the meaning of the caregiving role in daily life.

According to this model, positive aspects of caregiving are generated through the interaction of the caregiver- care recipient daily relationship and the caregiver's feelings of accomplishment, which lead to the construction of meaning in everyday experiences.

Another study found that providing care to a family member, the care recipient's dementia severity, and lower levels of subjective burden predicted 23 % of the variance in caregiver's sense of satisfaction in the caregiving role (de Labra et al., 2015).

There is ample evidence that many caregivers experience positives in the caregiving role. In a national sample of two hundred eighty-nine informal caregivers, 73% of caregivers interviewed were able to identify at least one specific positive aspect of caregiving, although only 6.9% identified two or more positive aspects (Cohen et al., 2002). Some of the most common responses included finding caregiving fulfilling and meaningful, enjoyment, companionship, and sense of fulfilling a duty or obligation. In another study with thirty-nine family caregivers who were interviewed or part of a focus group, each caregiver in the study shared some positive aspects about caring for their family member with dementia (Peacock et al., 2010). In that study, researchers were able to identify five themes among the positive aspects that were reported: (1) caregiving was an opportunity to give back, (2) an experience of personal growth in the caregiving journey, (3) a sense of competence in the role, (4) an opportunity for a close relationship and commitment to the care recipient, and (5) discovery of inner strengths. These studies highlight the many ways that positive experiences are a part of caregiving for a family member or friend.

Still, based on the fact that only 6.9% of caregiver identified two or more positive aspects of caregiving (Cohen et al., 2002), there is clear room for improvement. To further highlight this point, in a study where informal caregivers responded to the question, “To what extent do you regard yourself as a happy person?” using a scale from one to five, researchers found a curvilinear relationship between happiness and caregiver tasks (van Campen, Boer, & Iedema, 2013). Caregivers who provided one to five hours of care each week were, on average, happier than non-caregivers; however, caregivers who provided six or more hours of care a week showed lower happiness scores than non-

caregivers and these scores dropped as the amount of care increased. This is particularly relevant given that the average caregiver in the United States provides approximately twenty-four hours of care per week (NAC, 2015). This finding suggests that informal caregivers would also benefit from interventions designed specifically to increase aspects of well-being, such as happiness. Positive experiences of caregiving have been associated with caregiver well-being (Cohen, Colantonio, & Vernich, 2002; Pinquart & Sorensen, 2003), and the need for interventions to promote positive aspects of caregiving has already been called for (Jones, Winslow, Lee, Burns, & Zhang, 2011).

At present, there are numerous effective interventions to address negative outcomes associated with caregiving, however, the successful remediation of distress does not equate to caregiver well-being. Distress and well-being are not opposite ends on a continuum, but, rather, two separate dimensions (Keyes 2002, 2007). Caregivers not only have higher distress (Pinquart & Sorensen, 2003b), but also report less happiness than non-caregivers the more hours of care they provide (van Campen et al., 2013). This suggests that interventions are needed both to alleviate distress and increase happiness, and these represent separate endeavors. While there is increasing recognition of the importance of the positive aspects of caregiving, few interventions exist that focus specifically on this. The field of positive psychology has made significant progress in the area of evidence-based interventions to increase well-being. To this end, the “using signature strengths in new ways” exercise has consistently proven itself and, therefore, is considered a good candidate for use with informal caregivers.

### **The Proposed Study: Specific Aims and Hypotheses**

The current study investigated the use of a positive psychology intervention with informal caregivers of older adults. This study sought to demonstrate the efficacy of the “using signature strengths in new ways” exercise on caregiver well-being. In this study, well-being was conceptualized as optimal functioning and flourishing (Keyes, 2002; Seligman, 2011). Using Seligman’s (2011) theory of flourishing, well-being was operationalized as the presence of positive affect, engagement, positive relationships, and meaning. In relation to this, happiness was defined as positive affect, engagement, and meaning (Seligman, 2002). Other facets of well-being, such as achievement (Seligman, 2011) were not directly examined in this study. Participants’ use of signature strengths was predicted to increase affective, cognitive, and relational facets of well-being as measured by the Authentic Happiness Inventory (Seligman et al., 2005), Positive and Negative Affect Schedule (Watson, Clark, & Tellegen, 1988), Satisfaction with Life Scale (Diener, Emmons, Larsen, & Griffin, 1985), and the Flourishing Scale (Diener et al., 2010). Based on prior results (Seligman et al., 2005), use of signature strengths was also predicted to reduce depressive symptoms.

In addition, the current study also tested a modified version of the signature strengths exercise by using language that was adapted to the caregiving domain. It was predicted that participants’ use of signature strengths within the caregiving situation would increase positive aspects of caregiving, including positive appraisals of caregiving and positive interactions with the care recipient.

This study employed a three group randomized controlled design: the two active intervention conditions (standard exercise and modified exercise) were compared to a

survey only control condition. The control condition completed the VIA Survey and learned their strengths but did not receive the signature strengths exercises during the study period. Prior research has demonstrated that knowledge of strengths alone does not correlate with well-being (Seligman et al.2005, Proctor et al., 2011). To our knowledge, this was the first study of its kind with informal caregivers of older adults.

The specific research questions addressed in this study were: “Do informal caregivers’ of older adults benefit from a positive psychology intervention?” and “Does applying a positive psychology exercise to the caregiving domain increase positive aspects of caregiving?” Based on prior research and theoretical considerations, the specific hypotheses tested in this study were:

1. A positive psychology intervention involving use of one’s signature strengths improves facets of caregivers’ well-being.
  - i. Increases in happiness are significantly greater for participants in the active intervention conditions compared to a survey- only control condition.
  - ii. Happiness significantly increases over time (pre-, post-, one-month follow-up) for participants in the active intervention conditions.
  - iii. Affective, cognitive, and relational aspects of well-being are significantly better for participants in the active intervention conditions compared to a survey- only control condition.
  - iv. Affective, cognitive, and relational aspects of well-being improve over time (pre-, post-, one-month follow-up) for participants in the active intervention conditions.

2. A positive psychology intervention involving use of one's signature strengths improves caregivers' mental health.
  - i. Reduction in depressive symptoms is significantly greater for participants in the active intervention conditions compared to a survey- only control condition.
  - ii. Reduction in depressive symptoms is significant from pre-intervention to post-intervention for participants in the active intervention conditions.
3. Adapting the language of a positive psychology intervention for use in the caregiving domain positively impacts the caregiving experience.
  - i. Positive appraisal of caregiving significantly improves from pre-intervention to post-intervention for participants specifically instructed to use their signature strengths in the caregiving domain.
  - ii. Positive interactions between the caregiver and care recipient significantly increase from pre-assessment to post-assessment for participants specifically instructed to use their signature strengths in the caregiving domain.
  - iii. Participants specifically instructed to use their signature strengths in the caregiving domain report greater positive appraisal of caregiving and more frequent positive interactions with the care recipient compared to participants receiving a standard version of the exercise and compared to participants in a survey-only control group.

## **Method**

### **Participants**



Eligible participants were women age eighteen years or older who provided unpaid care to a relative or friend aged fifty or older in the past year. Caregiving status was defined as providing unpaid help with at least one Activity of Daily Living (ADL), one Instrumental Activity of Daily Living (IADL), or one medical/ nursing task within the past twelve months (NAC, 2015). Participants were excluded if the care recipient was no longer living or if they reported their present contact with the care recipient (either by phone, email, or face to face) was less than once a month. Male caregivers were excluded due to gender differences in the caregiving situation and higher rates of women serving as informal caregivers to older adults (Bott, Sheckter, & Milstein, 2017; Pinquart & Sorensen, 2003; Pinquart & Sorensen, 2011; Zhang, Vitaliano, & Lin, 2006). The caregiver was the sole participant in this project and no data was collected from the care recipient at any point. The caregiver provided all relevant information about the care recipient.

**Recruitment.** Participants were recruited both locally and nationally through direct contact, social media, and online listings in national research registries. Former research participants in the Women's Health & Aging Lab were sent a personal email informing them of a new study in the lab. A similar *Constant Contact* email was sent out to approximately nine-hundred individuals signed up to receive the lab's electronic newsletter. A study announcement was posted on the lab's social media accounts (Facebook & Twitter) and promoted on Facebook through use of a paid advertisement campaign. Information about the study was also posted on various Facebook group pages. The study was listed in the online Family Caregiver Alliance research registry. The study was also listed with Alzheimer's Trial Match and an email alert was sent out to roughly

three thousand Trial Match users containing information about the study. Locally, the study was promoted at community outreach talks sponsored by Signature Medical Group in St. Louis. Community recruitment efforts were also accomplished by staffing the University of Missouri- St. Louis research booth at the St. Louis Walk to End Alzheimer's and St. Louis Pride Fest.

All electronic recruitment contained a direct link to the screener survey. In addition, interested individuals could access the screener survey through the lab's website [www.UMSL-Healthcarestudies.org](http://www.UMSL-Healthcarestudies.org). These recruitment strategies yielded a representative sample of caregivers for older adults in the United States (National Alliance for Caregiving, 2015). Participants who completed both the pre- and post-assessment measures were emailed a \$10 Amazon electronic gift card. As an additional incentive, participants who completed the one-month follow-up assessment were entered into a raffle for a \$100 gift card.

### **Design**

To test the efficacy of a positive psychology intervention with informal caregivers, a three-group randomized control design was used. Eligible participants who provided informed consent and completed the screener survey were sent an email welcoming them to the study. The pre-assessment survey was sent out at the beginning of the next week. Prior to the intervention period, all participants were asked to view an eight minute orientation video titled, "The Science of Character" produced by the VIA Institute on Character Strengths. Upon completion of the pre- assessment survey, participants were randomly assigned to one of three conditions: standard intervention, modified intervention, or survey- only control group. Participants assigned to the

standard intervention completed the VIA Survey of Character Strengths and received the signature strengths exercise in its original form. Participants assigned to the modified intervention completed the VIA Survey of Character Strengths and received the signature strengths exercise with instruction language adapted for the caregiving domain.

Participants assigned to the control condition completed the VIA Survey of Character Strengths but did not receive the signature strengths exercises. The survey- only control group did not receive any intervention during the study period, but were given the option to receive the full intervention upon their completion of the one-month follow-up assessment.

The intervention tested in this study was based on “using your signature strengths in new ways” (Seligman et al., 2005), and related “signature strengths” exercises developed by Seligman and colleagues for positive psychotherapy and positive education (Seligman et al., 2006, Seligman, 2011). Assessment measures were administered at four time-points (screener, pre-assessment, post-assessment, and one-month follow-up).

## **Procedures**

**Screening.** Interested individuals were directed to an online screener survey. After providing informed consent, there were asked three initial eligibility questions: (1) “Are you age 18 years or older?”; (2) Select your gender (female, male, transgender); and (3) “Have you provided care to an adult age fifty years or older in the past 12 months?” Adult women who endorsed that they provided care to an older adult in the past year advanced to complete the remainder of the survey. All other individuals were exited from the survey at that point and received an automatic notification informing them that they were not eligible for the current study. Upon completion of the screener survey, project

staff checked the survey responses to verify the participant's eligibility on caregiving criteria. Women who reported helping an older adult with at least one ADL, IADL, or medical/ nursing task in the past twelve months were contacted by project staff and informed that they meet eligibility criteria for the study. They were also alerted to expect project emails. Participants who were ineligible for the study were sent an email notifying them of their ineligible status and inviting them to visit the Women's Health & Aging Lab webpage for other studies they may be interested in.

**Informed consent.** IRB approval for research with human subjects was obtained from the University of Missouri- St. Louis (IRB Approval Number: 815905-2).

Participants provided informed consent through an online process. Upon entering the screener survey, participants were first presented with the UMSL web-based Informed Consent for Participation in Research. Individuals were informed that the project was a research study, participation in the study was voluntary, that she could exit the project at any time without penalty, and provided with a summary of potential risks and benefits of participation. Individuals confirmed that they read the Informed Consent, understood the purpose of the study as well as any risks and benefits involved, and then electronically gave their permission to participate in the study or declined to be part of the study.

Individuals who provided informed consent and met study criteria advanced in the study.

**Participant contact.** On the screener survey, participants selected their preference for project communication as email only or both email and phone contact. Initially, eligible participants who indicated a preference for phone contact received a phone call from project staff to welcome them in the study. Due to the majority of participants having a preference for email contact only (N= 132, 68%) and changes in

availability of project staff to make phone calls, the welcome phone call was discontinued after approximately two months. At that point, all contact from project staff was by email, although project staff remained accessible to participants by phone to answer any questions.

Participants had access to a project homepage that contained step-by-step directions for completing the VIA Survey and other project materials depending on their assigned condition. During the study, participants received all assessments and intervention exercises by email. Participants also received a mid-week email prompt about project exercises. Participants were also sent reminder emails when an assigned assessment was not completed within one week. After completing the post- assessment, participants were sent a thank you email from project staff and informed that they would receive a separate email from Amazon.com containing their electronic gift card. Participants who requested their study results will receive a summary of their scores by email at the completion of the study.

**Data collection.** Participants completed online assessments at four points during the study (screener, pre-assessment, post-assessment, and one-month follow-up). All demographic, descriptive, and outcome measurement data were collected in Qualtrics. A link to the screener survey was embedded in electronic recruitment sources. A link to the pre-, post-, and follow-up assessments was emailed directly to participants at the corresponding times. Assessment data were downloadable directly from the Qualtrics website. Participants completed the VIA Survey on an external site hosted by the VIA Institute of Character Strengths (<https://www.viacharacter.org>). Detailed instructions and screenshots for how to access and complete the VIA Survey were emailed to the

participants and also available on the project homepage. The VIA Institute compiles VIA Survey results for research participants and this data was accessible upon request using an assigned research code.

A separate Qualtrics survey was created for participants' to report their top five strengths and to record weekly journal entries. This survey link was emailed along with the weekly project instructions, and participants' qualitative data (text entry in "online journal") were regularly checked for completion. To protect data integrity, time to complete assessment measures was collected and individual completion times were compared with the mean completion time. Participants whose completion time was significantly below the mean were excluded from data-analysis.

### **Experimental Conditions**

**Standard.** Participants completed the VIA Survey of Character Strengths online and automatically received a rank order of their character strengths. In their second week, participants were sent examples of ways to use their signature strengths and instructed to use their signature strengths in a new way each day over the next week either at work, home, or in leisure. In the third week, participants were instructed to do something that celebrated their signature strengths with a significant other. Along with each exercise, participants were sent a link to complete short journal reflections on their experience using their signature strengths that week. See *Figure 1* for overview of study flow.

**Modified.** Participants completed the VIA Survey of Character Strengths online and automatically received a rank order of their character strengths. In their second week participants were sent examples of ways to use their signature strengths in the caregiving situation. The language of the exercise was modified slightly and participants were

specifically instructed to use their signature strengths in *caregiving for their older family member or friend* that week. In the third week, participants were specifically instructed to do something that celebrates their signature strengths with *their older loved one*. Along with each exercise, participants were sent a link to complete short journal reflections on their experience using their signature strengths that week.

**Control.** Participants completed the VIA Survey of Character Strengths online and automatically received a rank order of their character strengths. The control group received a weekly email thanking them for their participation and letting them know when the next survey would be sent. This group was not sent the signature strengths exercises during the study, but participants were given the option to receive the full intervention upon completion of the study.

Figure 1  
Outline of Study Flow.

	<b>Standard</b>	<b>Modified</b>	<b>Control</b>
	Eligible Screener Pre-Assessment Video Orientation	Eligible Screener Pre-Assessment Video Orientation	Eligible Screener Pre-Assessment Video Orientation
	<b>Randomization Occurs</b>	<b>Randomization Occurs</b>	<b>Randomization Occurs</b>
<b>Week 1</b>	VIA Survey	VIA Survey	VIA Survey
<b>Week 2 Intervention</b>	Project Exercise Use Your Strengths in New Ways	Project Exercise Use Your Strengths in your caregiving	Project Email
<b>Week 3 Intervention</b>	Project Exercise Celebrate Strengths	Project Exercise Celebrate Strengths with care recipient	Project Email
<b>Week 4 Assessment</b>	Post-Assessment Survey	Post-Assessment Survey	Post-Assessment Survey
<b>Week 8 Assessment</b>	One-month Follow-up Survey	One-month Follow-up Survey	One-month Follow-up Survey

### Study Flow

#### Week 1: VIA Survey.

*Standard.* Participants received an email informing that they were assigned to the “standard exercises” group and alerting them to the coming week’s activity: “This week you will be taking a survey to discover what your signature strengths are and reporting back to us.” The email contained instructions for completing the VIA Survey and a separate link to an online project journal. Participants were instructed to complete the journal entry after taking the VIA Survey.



**Modified.** Participants received an email informing that they were assigned to the “caregiving exercises” group and alerting them to the coming week’s activity: “This week you will be taking a survey to discover what your signature strengths are and reporting back to us.” The email contained instructions for completing the VIA Survey and a separate link to an online project journal. Participants were instructed to complete the journal entry after taking the VIA Survey.

**Control.** Participants received an email informing that they were assigned to the “learn your strengths” group and alerting them to the coming week’s activity: “This week you will be taking a survey to discover what your signature strengths are and reporting back to us.” The email contained instructions for completing the VIA Survey and a separate link to an online project journal. Participants were instructed to report their top five strengths from the VIA Survey.

**Week 2: Use your strengths!**

**Standard.** Participants received an email at the start of the week containing several examples of ways to use their signature strengths, see *Appendix B*. The email also contained instructions for the first project exercise: “This week you are being asked to use one or more of your signature strengths in a new way each day for the next seven days. Take some time now to come up with specific situations this week where you can practice using these strengths either at work, home, or in leisure.” See *Appendix C* for a sample email. In addition, participants were sent a mid-week email prompt. See *Appendix D* for weekly journal reflections.

**Modified.** Participants received an email at the start of the week containing examples of ways to use their signature strengths in the caregiving situation and instructions for the first project exercise: “This week you are being asked to use one or more of your signature strengths with your caregiving situation. Take some time now to come up with specific situations this week where you can practice using these strengths in *caring for your older family member or friend.*” In addition, participants were sent a mid-week email prompt.

**Control.** Participants received an email thanking them for their study participation and alerting them that the next assessment would be in two weeks. Participants were also reminded that they have the option to receive the project exercises upon study completion.

### **Week 3: Celebrate your strengths!**

**Standard.** Participants received an email at the start of the week congratulating them on using their signature strengths in new ways and instructions for the next project exercise: “Now it is time to also start noticing the character strengths in those around you. This week, you are being asked to set some time aside to do something that celebrates both your strengths and the strengths of a significant other. Or, do something meaningful for another person that involves using one of your signature strengths.” In addition, participants were sent a mid-week email prompt.

**Modified.** Participants received an email at the start of the week congratulating them on using their signature strengths in new ways and instructions for the next project exercise: “Now it is time to start noticing more of the character strengths in your older loved one. This week, you are being asked to set some time aside to do something that

*celebrates both of your strengths, or do something meaningful for your older family member or friend that involves using one of your signature strengths.”* In addition, participants were sent a mid-week email prompt.

***Control.*** Participants received an email thanking them for their study participation and alerting them that the next assessment was in one week. Participants were also reminded that they have the option to receive the project exercises upon study completion.

**Week 4: Post- assessment.**

***Standard.*** Participants received an email congratulating them on completing the signature strengths exercises and sent a link to take the post- assessment survey. Participants were asked to complete the survey regardless of whether they had completed all the project activities or not. Participants received a \$10 Amazon gift card after completing the survey.

***Modified.*** Participants received an email congratulating them on completing the signature strengths exercises and a link to take the post- assessment survey. Participants were asked to complete the survey regardless of whether they had completed all the project activities or not. Participants received a \$10 Amazon gift card after completing the survey.

***Control.*** Participants received an email containing a link to take the post- assessment survey. Participants received a \$10 Amazon gift card after completing the survey.

**Week 8: Follow-up assessment.**

**Standard.** Participants received an email with a link to take the follow-up survey. Participants were entered into a raffle for a \$100 gift card after completing the survey.

**Modified.** Participants received an email with a link to take the follow-up survey. Participants were entered into a raffle for a \$100 gift card after completing the survey.

**Control.** Participants received an email with a link to take the follow-up survey. Participants were entered into a raffle for a \$100 gift card after completing the survey. Participants in this group were also reminded that they had the option to request to receive the full intervention upon study completion.

**Measures**

**Screening measures.** Participants reported their age, race/ ethnicity, religion, education, marital status, employment, and annual household income. In addition, they indicated whether or not they were currently receiving psychotherapy/ counseling services, and if they were currently taking any psychotropic medications.

Participants provided demographic information about the care recipient (age, gender, and race/ ethnicity), the relationship between caregiver and care recipient, where the care recipient lived, the care recipient's health status (e.g. presence of chronic illness, dementia diagnosis), and what medical/ nursing tasks the caregiver provides assistance with. Additional caregiving information was gathered on length of caregiving, hours per week spent providing care, reasons for being a caregiver, and presence of other sources of paid/ unpaid help.

***Index of Activities of Daily Living (ADL)*** (Katz, Down, Cash, & Grotz, 1970).

This six- item measure assesses care recipient's level of functional impairment. It asks

caregivers to report on the older adult's ability to perform basic functions without assistance, such as, bathing, dressing, feeding, and transferring to/ from a bed or chair. The total number of ADLs the older adult needs help with was summed for a total score. In the current study, this scale demonstrated good internal consistency ( $\alpha = .86$ ). In addition, caregiver's also reported the total number of ADL's they provided help with.

***Instrumental Activities of Daily Living Scale (IADL) (Lawton & Brody, 1969).***

This 8- item scale assesses care recipient's functional ability by asking caregivers to report how much the older adult needs help with instrumental activities of daily living, such as, "shopping," "use of telephone," "food preparation," "housekeeping," and "finances." A dichotomous scoring system was used and each item was coded for whether help of any kind was needed in the past month (Vittengel, White, McGovern, & Morton, 2006). The eight items were summed to yield a total score ranging from 0 to 8 with 8 representing the most assistance required. In the current study, the Cronbach's alpha was .68 suggesting the internal consistency of this scale was somewhat questionable in the given sample. In addition, caregivers also reported the total number of IADL's they provided help with.

***Caregiving Index Score (NAC, 2015).*** This score is calculated by assigning point values (1 to 4 points) to hours of care provided and number of ADL and/or IADLs performed. These points are summed to obtain a Level of Care index score ranging from 1 to 5, where level 1 indicates low burden and level 5 indicates high burden.

***Role overload.*** This is a three-item scale that asks the caregiving about her experience of feeling overwhelmed by care-related tasks and responsibilities. Participants indicate how much each statement describes her, ranging from "not at all" (1) to

“completely” (4). An example is, “You are exhausted when you go to bed at night.” The three items were averaged for a mean score. In the current study, this measure demonstrated good internal consistency ( $\alpha = .83$ ).

Caregiver general health and functioning was assessed using four items that asked about the previous 30 days. These items were taken from the Center for Disease Control and Prevention Healthy Days Core Module, part of the CDC’s State –based Behavioral Risk Factor Surveillance System (BRFSS) (Centers for Disease Control and Prevention [CDC], 2013).

Caregiver readiness to participate was assessed using the following questions created for the project:

- “Are you willing to complete additional surveys about your caregiving experience and well-being? You will complete one survey before you begin the intervention, one survey after you finish the intervention (one month after the first survey), and a final survey one month later. Each survey will take about 15- 20 minutes to complete.”
- “Are you willing to take an online survey to learn about your top personal strengths and report this information as part of the project? This will require approximately thirty minutes to complete.”
- “The active part of this intervention lasts a total of four weeks. If assigned to an active intervention condition, are you willing to check your email weekly, participate in guided practice for using your personal strengths, and report your progress online each week during this time?”
- “Rate how interested are you in this project from 0 to 100.”

*Values in Action Inventory of Strengths (VIA)* (Peterson & Seligman, 2004; Peterson & Park, 2009). The VIA Survey is a self-report assessment of individual character strengths. It is based on the VIA classification system of character strengths (Peterson & Seligman, 2004). A shorter version of the original 240 item survey was used in the present study. The VIA Survey short form consists of 120 items comprised of twenty-four scales corresponding to the twenty-four character strengths. The short form was derived using the five items with the highest corrected item-total correlations from the original ten items per scale (Littman-Ovadia, 2015). The VIA Survey was administered online and instructions read, “All of the questions reflect statements that many people would find desirable, but we want you to answer only in terms of whether the statement describes what you are like.” Items are worded in extreme fashion, (e.g. “I always have a broad outlook on what is going on,” and “I never quit a task before it is done.”) Responses are averaged within each of the twenty-four strength scales, and higher numbers reflect more endorsement of that strength. The twenty-four character strengths are rank ordered for the individual, and participants automatically receive online feedback about their top strengths. Participants were sent a link to take the survey on the VIA Institute on Character website and given a research code for the present study. The survey data was compiled by the VIA Institute on Character using the assigned research code and available to the principal investigator upon request. The long form of the survey has demonstrated adequate internal consistency, with Cronbach’s alphas exceeding .70 for all scales. Each of the scales also have shown good test-retest reliability over a four month-period, with correlations  $>.70$  seen for all scales (Peterson & Seligman, 2004). The 120 item shorter version of the survey used in the current study has

also demonstrated adequate internal consistency with a coefficient of .79 averaged across all scales, and strong convergent validity with the 240 item version (“VIA Survey Psychometric Data,” 2014).

**Well-being measures.**

*Authentic Happiness Inventory (AHI)*. The AHI is an updated version of the *Steen Happiness Inventory (SHI)* (Seligman et al., 2005). The SHI was created to measure positive emotion, engagement in life, and meaning as they relate to happiness. This measure was modeled after the Beck Depression Inventory (BDI) and intended to be sensitive to weekly changes happiness. Due to a tendency for happiness scores to be negatively skewed, a high ceiling was imposed allowing for sensitivity to change in the upper end of the scale. Response choices consist of five options with one negative phrasing, one neutral phrasing, and three positive with the fifth choice worded in extreme fashion (e.g. “I feel like I am extraordinarily successful.”) Pilot work on the SHI demonstrated a more bell-shaped curve than other existing happiness measures at the time (Seligman et al, 2005). Four items were added to the SHI and the new measure was renamed the AHI. The AHI is composed of 24 items with each item consisting of a set of five phrases. The respondent is instructed to “pick the one phrase in each group that best describes the way you have been feeling for the past week, including today.” Scores were summed and averaged for an overall score ranging from 1 to 5, with higher scores reflecting more happiness. Internal consistency of the AHI has previously been shown with Cronbach’s alpha scores of .92 (Shepherd, Oliver, & Schofield, 2014) and .93 (Zabihi, Katabi, Tavakoli, & Ghadiri, 2014). In the current study, the scale also demonstrated excellent internal consistency ( $\alpha = .94$ ). Adequate test-retest reliability was



seen over a two-day period (Shepherd et al., 2014). Convergent validity was evidenced by significant large correlations between the AHI and other measures of subjective well-being, including the Satisfaction with Life Scale (ranging from .65- .76), the Subjective Happiness Scale (.65), and PANAS- positive affect (.82) (Schiffrin & Nelson, 2010; Shepherd et. al., 2014). Measurement sensitivity to intervention effects versus variance in happiness attributable to trait features was tested with latent state- trait models: Results suggested that the SHI can be broken into the two components of stable trait and occasion specific influences (Kaczmarek, Bujacz, & Eid, 2015).

***Positive and Negative Affect Schedule (PANAS) (Watson et al., 1988).*** The PANAS is a widely used self-report measure of activation of positive affect and negative affect. The creators of this scale conceptualized positive affect (PA) and negative affect (NA) as two distinct dimensions, and factor analysis confirmed two relatively independent factors (PA and NA factors correlated at -.30) (Crawford & Henry, 2004). The PANAS consists of two scales: the PA scale is comprised of ten positively valenced affective words (e.g. interested, excited, alert) and the NA scale is comprised of ten negatively valenced affective words (e.g. distressed, upset, irritable). Respondents are instructed to indicate the extent to which they felt that way during the past week using a five point Likert-style scale. Responses for the PA and NA scales were summed separately yielding a total score for each (range 10-50). The PANAS has previously been shown to have good internal consistency with Cronbach's alpha of .89 for the PA scale, and a Cronbach's alpha of .85 for the NA scale (Crawford & Henry, 2004). Similarly, in the current study, both the PA ( $\alpha = .92$ ) and NA ( $\alpha = .91$ ) scales demonstrated excellent internal consistency. Test-retest reliability for an eight-week retest interval was adequate

for both subscales, with stability coefficients ranging from .39 to .71 (Watson et al., 1988). Convergent validity has been demonstrated with significant correlations between the PANAS and other measures of mood; for example, the PA scale was negatively correlated with the DASS depression (-.48), anxiety (-.31), and stress (-.31) subscales, and the NA scale was positively correlated with these same subscales .60, .60, and .67, respectively (Crawford & Henry, 2004). In the general population, the mean score for PA is 31.31 (*SD* 7.65) and mean score for NA is 16 (*SD* 5.90) (Crawford & Henry, 2004). The PANAS is reported to be sensitive to changing internal or external circumstances when used with short-term time frame instructions (Watson et al., 1988).

***Satisfaction with Life Scale (SWLS) (Diener et al., 1985).*** This is a brief measure of an individual's overall satisfaction with their life as a whole. It is intended to capture the cognitive component of subjective well-being. The SWLS consists of five items using a 7-point Likert-style response format. Examples are, "In most ways my life is close to my ideal" and "The conditions of my life are excellent." Responses were summed and possible scores range from 5 to 35, with higher scores reflecting greater satisfaction. Adequate internal consistency has been previously reported, with coefficient alphas ranging from .79 to .89, and test-retest reliability was .84 for a one month interval (Pavot & Diener, 1993). In the current study, the SLWS scale demonstrated good internal consistency (Cronbach's  $\alpha = .89$ ). Convergent validity has been evidenced with positive correlations between SWLS and other measures of happiness, and moderate to strong negative correlations with BDI. Mean SWLS scores among midlife and older adults ranged from 23.9 to 27.9 (Pavot & Diener, 2008). The SWLS has demonstrated sufficient sensitivity to change in intervention studies, although Pavot and Diener (2008)

remarked that due to the broad bases of the responses, the SWLS may not be extremely sensitive to intervention effects unless they are large.

***Flourishing Scale (Diener et al., 2010).*** This is a brief overall measure of positive functioning reflective of current theories of well-being. The eight-item scale assesses social relationships, purpose and meaning in life, engagement in daily activities, feeling competent and capable in important activities, self-respect, and optimism. Participants respond using a seven-point Likert scale to indicate their level of agreement, from “strongly disagree” (1) to “strongly agree” (7). All items are stated positively. Examples are, “I lead a purposeful and meaningful life” and “My social relationships are supportive and rewarding.” Total scores were summed and possible scores range from 8 to 56. The mean score for a sample of college students was 44.97 (*SD* 6.56). The scale has previously shown good internal reliability with a Cronbach’s alpha of .87; and the Cronbach’s alpha in the current study was .92. Adequate test-retest reliability has been demonstrated over a one-month period (.71). The *Flourishing Scale* correlated .62 with the *Satisfaction with Life Scale*, providing evidence for construct validity. Significant positive correlations with other measures of well-being, including Deci and Ryan’s Basic Need Satisfaction in General (.43 to .73), and Ryff Scales of Psychological Well-being (.54 to .67) provide further evidence of convergent validity.

***Strengths Use Scale (Govindji & Linley, 2007).*** This scale was developed to assess people’s use of individual strengths in a variety of settings. The scale consists of fourteen items and participants rate their agreement with each statement on a scale from 1 (strongly disagree) to 7 (strongly agree). Example item are, “I am regularly able to do what I do best” and “I find it easy to use my strengths in the things I do.” Possible scores

range from 7 to 98. The mean score for a college sample was 64.83 (*SD* 14.09). In the current study, this scale demonstrated excellent internal reliability with a Cronbach's alpha of .96. In addition, the *Strengths Use Scale* was previously shown to be significantly correlated with subjective well-being (.51) and psychological well-being (.56) (Govindji & Linley, 2007) supporting construct validity.

#### **Mental health measures.**

##### ***Center for Epidemiologic Studies Depression Scale (CES-D) (Radloff, 1977).***

This is a self-report measure of depressive symptoms designed for use in the general population. It is intended to measure current functioning and participants are instructed to indicate how often they experienced depressive symptoms during the past week. The scale consists of twenty items and each item is scored 0 to 3 according to the frequency of symptoms experienced during the week. Four positively stated items are reverse scored. Possible scores range from 0 to 60, with higher scores reflecting more depressive symptomatology. A cut-score of 16 has been adopted to identify those at high-risk for depression. The CES-D is a reliable measure as evidenced by good internal consistency, with Cronbach's alphas of .85 and .90 reported, and test-retest correlations ranging between .45 and .70. Convergent and discriminant validity for this measure have also been established with clinician ratings and other self-report measures (Radloff, 1977). In the current study, this scale demonstrated excellent internal consistency (Cronbach's  $\alpha = .92$ ).

#### **Caregiving measures.**

***Positive Aspects of Caregiving (PAC) (Tarlow et al. 2004).*** This measure was created to assess caregivers' perception of their situation as generally satisfying and

rewarding. Positive Aspects of Caregiving (PAC) is made up of two factors: self-affirmation and outlook on life. The measure consists of nine-items that were summed for a total score. Scores range from 9 to 45, with an overall average score of 34 ( $SD = 9$ ) obtained from a large, diverse sample of Alzheimer's disease family caregivers. Adequate internal reliability has been shown with a Cronbach's alpha of .89. Convergent validity was evidenced by significant moderate correlations between PAC and measures assessing similar constructs; for example, CES-D well-being subscale (.24) and Satisfaction with Support (.15), and a negative correlation with a measure of burden (-.23). In the current study, this scale demonstrated good internal consistency (Cronbach's  $\alpha = .88$ ).

***Dyadic Relationship Scale (DRS) (Sebern & Whitlatch, 2007).*** This scale measures positive and negative aspects found in the dyadic relationship of family caregiving. A patient version and a caregiver version of the scale exist, and the caregiver version was used in the present study. The caregiver version of the DRS contains eleven items forming two subscales: positive dyadic interaction and dyadic strain. Items include, "I have felt closer to him/her than I have in a while" and "I felt angry toward him/ her." Caregivers indicate their agreement with each statement using a four-item response (1= Strong Disagreement to 4= Strong Agreement). Cronbach's alpha for the dyadic strain subscale was .89 and .85 for the positive interaction subscale suggesting good internal consistency (Sebern & Whitlatch, 2007). In the current study, the scale demonstrated good internal consistency (Cronbach's  $\alpha = .83$ ).

Two additional items assessing positive aspects of caregiving were included (Aneshensel et al., 1995). Participants were asked to rate their level of agreement with

the following statements, “How much do you... Believe that you’ve learned how to deal with a very difficult situation” and “Feel that, all in all, you are a good caregiver.”

Response choices range from “strongly disagree” (1) to “strongly agree” (4).

**Completion analysis (post-assessment only).** Participants were asked to rate their level of completion for each part of the project as a percentage from 0% (did not complete any of it) to 100% (completed all of it): orientation video, journal entries, and strengths practice. Participants assigned to the control group were instructed to select “not applicable” for the strengths practice category. Participants were also asked to report the percentage of days they used at least one of their signature strengths in any situation over the past two week, and they were asked separately to report the percentage of days they used at least one of their signature strengths specifically in their caregiving situation over the past two weeks.

## Results

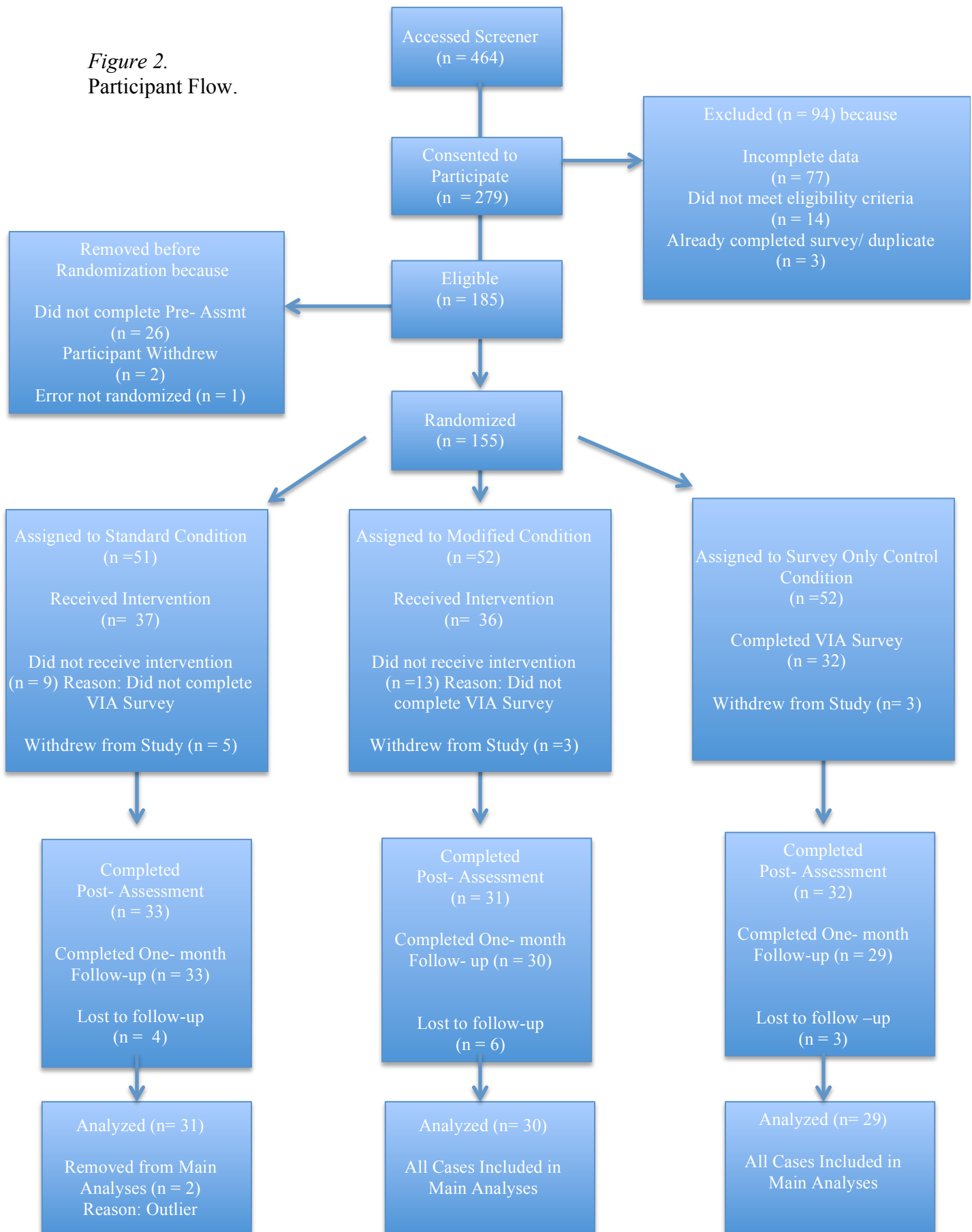
### Data Screening

**Recruitment.** Participant recruitment took place between April, 2016 to October, 2016. The intervention phase was active from May, 2016 to December, 2016, and the follow-up period concluded in January, 2017. Participants were recruited nationally through direct contact, social media, and online listings in national research registries.

**Participant flow.** As shown in *Figure 2*, a total of four hundred and forty- six persons accessed the screener survey and, of those, two hundred and seventy-nine participants consented to be part of the study. One hundred eight-five participants were identified as eligible and sent the pre-assessment survey. Two participants withdrew before randomization and one eligible participant was not randomized by error. A total of

one hundred and fifty-five participants completed the pre-assessment survey and randomized into the study. A total of ninety-six randomized participants completed the post-assessment and ninety-two randomized participants completed the one-month follow-up assessment.

*Figure 2.*  
Participant Flow.





**Completion rates.** Ninety- two participants (59%) fully completed all parts of the study. Forty-two participants (45%) were lost to attrition post-randomization due to failure to complete the VIA Survey. In total, fifty-five randomized participants (60%) were lost to attrition prior to completion of the study. There were a total of eleven randomized participants (12%) who officially withdrew from the study. A Chi- square test of independence was conducted to compare attrition between the three conditions and results showed that there were no significant differences in attrition rates between the standard, modified, and control conditions,  $\chi^2(2) = .94, p = .62$ .

**Comparison of completer status.** A series of independent samples t-tests, one-way ANOVAs, and Chi-square tests were conducted to compare completers vs. non-completers on demographics, caregiving characteristics, and baseline measures. Results revealed that participants who dropped out of the study early reported personally providing a higher percent of care for other older loved one ( $M = 64.92, SD = 31.94$ ) compared to study completers ( $M = 53.26, SD = 30.32$ ),  $t(154) = 2.31, p = .02$ . Results also indicated that participants who left the study prematurely reported a higher burden of care index ( $M = 6.41, SD = 1.57$ ) compared to those participants who completed the study ( $M = 5.57, SD = 1.56$ ),  $F(1, 153) = 10.93, p = .001$ . There were no differences in caregiver age, education level, employment status, marital status, or psychotherapy/ taking psychiatric medication between study completers vs. non- completers. In addition, there were no significant differences found on any baseline measures of well-being, depression, and positive aspects of caregivers between completers and non-completers.

**Eligibility for study.** Prior to randomization, seventy-seven participants were removed due to incomplete data on the screener survey. Another fourteen participants

were removed before randomization due to ineligibility, including not meeting caregiving criteria (e.g. care recipient age, length of caregiving, level of care provided), identifying as a male caregiver, not willing to complete additional surveys/ exercises, and five entries were deemed “questionable” (e.g. phishing email address). Data sets were visually scanned for duplicate entries based on name and/ or IP address: three cases were identified as duplicates on the screener, three duplicate entries and one triplicate entry was identified on the pre- assessment survey, six duplicate entries were identified on post- assessment survey, and one duplicate entry was identified on the follow-up survey: For each these cases, the original entry was retained and all duplicate entries was removed from statistical analyses. Survey completion time was examined to identify potential invalid responses due to rushing through the survey quickly without giving adequate attention to answering the questions in a meaningful way. The mean survey completion time for the screener survey was 14 minutes, the mean completion time for the pre- assessment survey was 16 minutes, the mean completion time for the post- assessment survey was 17 min; for each of these time points there were no cases that fell more than two standard deviations below the mean and no cases were removed from the screener, pre- assessment, or post- assessment due to completion time. The mean completion time on the one- month follow-up survey was 14 min; there was one case that completed the survey in 4.76 minutes ( $- 2.2 SD$ ); however, this completion time was deemed a reasonable amount of time to complete the survey and a decision was made to retain the case.

### **Preliminary Analyses**

**Power analysis.** A power-analysis using G\*power 3.0.10 (Faul, Erdfelder, Lang, & Bucher, 2007) was performed to determine the sample size necessary to obtain .80 power for detecting a medium effect size ( $f = .25$ ) at an alpha level of .05. Based on this analysis, a sample of 36 participants was required for adequate power to perform a 3 conditions x 3 times (pre-, post-, and follow-up assessment) ANOVA. A sample size of 98 was required to adequately power a 3x3 MANOVA. The intended sample size for the present study to be adequately powered was 98 participants, with 33 participants in each group. Due to an unexpected higher rate of attrition prior completion of the VIA Survey, the actual total sample size for the main analyses was 90 participants. Therefore, given this smaller number, the present multivariate analyses were slightly underpowered.

**Missing data.** Missing data was not an issue at the item level for any measure in the study. Missing data in the study were due to participants exiting the survey before reaching the end. In these cases, there was no way to connect the survey responses with the participant's unique study identifier; therefore, all cases in which the participant exited the survey before reaching the end were removed from data analyses. Seventy-seven entries were removed at the screener, fourteen entries were removed at pre-assessment, eleven entries were removed at post- assessment, and four entries were removed at one-month follow-up assessment due to the participant exiting the survey before reaching the end. Missing data in the study were also due to attrition during the intervention phase, and at post- assessment and one- month follow-up. Thirty-nine participants were lost to attrition due to not starting the intervention (i.e. not completing the VIA Survey); nine participants were lost to attrition at post- assessment, and an

additional four participants were lost to attrition at one- month follow-up. Participants who were missing complete data due to attrition at post- assessment or one- month follow-up were excluded from main statistical analyses. This study used non-intent-to-treat analyses. According to Ten Have, Normand, Marcus, Brown, Lavori, & Duan (2008), this is considered an appropriate approach for testing a new treatment and when the primary interest is the efficacy of the intervention as followed. For the present research goals, intent-to-treat analyses could weaken the intervention effects by including non-adherers.

**Outliers.** Z-scores were generated for each variable and values greater than three standard deviations above or below the mean were identified as an outlier. For CES-D, one outlier value was identified at pre- assessment and one outlier value was identified at post- assessment and none at follow-up. For Positive Aspects of Caregiving, one outlier value was identified at pre- assessment and two outlier values were identified at post- assessment, and none were identified at follow-up. For the Dyadic Relationship Scale, one outlier value was identified at pre- assessment and no outliers were identified at post- assessment or follow-up. For the Flourishing Scale, one outlier value was identified at pre- assessment, two outlier values were identified at post- assessment, and three outliers were identified at one- month follow-up. It was determined that the outlier scores found on the four pre- assessment measures noted above were all attributable to one case, and that case was subsequently removed from analyses. It was next determined that the outlier values found on the three post- assessment measures noted above were attributable to the same participant responsible for the pre- assessment outlier scores and one additional participant, and these two cases were subsequently removed from analyses.

When examining the one- month follow-up data, only one measure contained any outlier scores and it was determined that two of the three outlier values on the Flourishing Scale were attributable to the previously removed outlier cases; one additional case was identified as being an outlier only on this one measure and it was decided that this case, which fell 3.33 standard deviations below the mean score, would be retained in the statistical analyses. There were no outlier values found for the Authentic Happiness Inventor (pre-, post-, or follow-up), Positive and Negative Affect Schedule- Positive Affect (pre-, post-, or follow-up), or Satisfaction with Life Scale (pre-, post, or follow-up). In total, two outlier cases were removed from main analyses. The final sample used for the preliminary analysis included 103 participants and the sample for main analysis included 90 participants.

For multivariate analyses, two multivariate outliers were identified as having Mahalanobis distance value greater than 27.88, [ $X^2(9)$ , alpha level .001] and these two cases were removed from the multivariate analyses.

**Distribution characteristics.** Skewness and kurtosis statistics set within an acceptable range of -1.0 and + 1.0, Shapiro- Wilk statistics set at a stringent alpha level of  $p < .001$ , and visual inspection of histograms were used to examine univariate normality (Meyers, Gamst, & Guarino, 2006, p. 68). Inspection of these statistics suggested non- normal distributions for CES-D and Flourishing Scale total scores. CES-D total scores showed a slight positive skew and Flourishing Scale total scores were kurtotic with a moderate negative skew. A square root transformation successfully improved normality for CES-D and the transformed variable was used in main analyses. Data transformation did not improve normality for the Flourishing Scale and, therefore,

no transformations were made to this measure before main analyses. In conclusion, the assumption of normality was partially met for variables included in the main analyses.

The Authentic Happiness Inventory, Positive Aspects of Caregiving, Dyadic Relationship Scale- Positive interaction, PANAS, and Satisfaction with Life Scale were all approximately normally distributed.

**Statistical assumptions.** Before proceeding with main analysis, preliminary analyses were conducted to test the statistical assumptions for proposed analyses. To test the statistical assumptions for conducting a three-group repeated measures ANOVA, Box's M was used to test for equality of covariance, Levene's was used to test for homogeneity of error variance, and Mauchly's W was used to test for sphericity. These tests revealed that statistical assumptions for this test were partially met. Equality of covariance was violated and the Greenhouse-Geiser statistic was used to correct for the violation of sphericity. To test the statistical assumptions for conducting a doubly repeated measures multiple analysis of variance (MANOVA) for three groups by three times with three dependent variables multivariate normality was assessed by looking at univariate normality of each dependent variable and Box's M was used to test for homogeneity of variance- covariance matrices. Six of the nine dependent variables were approximately normally distributed. The assumption of normality was partially met. Preliminary analyses indicated that the assumptions for Repeated Measures MANOVA were partially met and MANOVA is robust to violations of multivariate normality. In addition, SPSS GLM program adjusts means for unequal numbers and protects against statistical collinearity and singularity.

**Sample characteristics.** Participants in this study were, on average, white (84%), college-educated (61%), married (70%), middle-aged ( $M = 54.70$  years old,  $SD = 12.70$ ) women, working full or part-time outside the home (62%). The majority of participants were providing care to a parent (64%) in their late seventies ( $M = 78.52$  years old,  $SD = 10.64$ ), who needed assistance with approximately three activities of daily living and approximately seven instrumental activities of daily living. On average, participants were providing approximately twenty-five hours of unpaid care each week ( $M = 25.83$ ,  $SD = 30.97$ ), and had been in the caregiving role for about five years ( $M = 4.86$ ,  $SD = 3.88$ ). A majority of participants reported that they had no choice in assuming the caregiving role for their older loved one (66%) and reported experiencing a moderate amount of role overload at the start of the study ( $M = 2.93$ ,  $SD = 0.81$ ). The full presentation of participant demographics is presented in Table 1. More detailed information on caregiving characteristics and care recipient characteristics are presented in Table 2 and Table 3, respectively.

Table 1  
*Participant Demographic Characteristics (N = 103)*

Characteristic	<i>n</i>	%
<b>Marital Status</b>		
Married/ living together	72	69.9
Divorced/ separated	13	12.6
Widowed	3	2.9
Never married	15	14.6
<b>Formal Education</b>		

High school/ GED	4	3.9
Some college	23	22.3
Two- year college degree	13	12.6
Four- year college degree	34	33
Advanced degree	29	28.1
Employment		
Full-time	48	46.6
Part-time	16	15.5
Retired	25	24.3
Unemployed	14	13.6
Annual household income (N = 102)		
Less than \$14,999	4	3.9
\$15, 000 – \$ 29,999	8	7.8
\$30,000 - \$49, 999	23	22.4
\$50,000 - \$69,999	18	17.5
\$70,000 - \$99,999	26	25.3
Over \$100, 000	23	22.3
Race/ ethnicity		
White/ European	86	83.5
Black/ African American	9	8.7
Hispanic	5	4.9
Biracial/ multiracial	3	2.9



## Currently in counseling/ psychotherapy

Yes	24	23.3
No	79	76.7

## Currently taking psychiatric medication

Yes	43	41.7
No	60	58.3

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Table 2  
*Caregiving Characteristics* (N = 103)

Characteristic	<i>M</i>	<i>SD</i>	Range
Caregiver age (years)	54.70	12.70	25 - 83
Care recipient age (years)	78.52	10.64	50 - 101
Length of caregiving (years) (N = 102)	4.86	3.88	0 - 25
Hours of care per week (N = 101)	25.83	30.97	1 - 168
Percent of care personally provide	53.37	30.69	3 - 100
Role overload	2.93	0.81	1 - 4
Care recipient ADL	2.88	2.32	0 - 6
Care recipient IADL	6.92	1.56	2 - 8

Table 3  
*Care Recipient Characteristics (N = 103)*

Characteristic	<i>n</i>	%
Relationship to caregiver		
Spouse/ partner	24	23.3
Parent	66	64.1
Grandparent	4	3.9
Aunt/ uncle	2	1.9
Sibling	3	2.9
Close friend/neighbor/ member of religious congregation	4	3.9
Living situation		
In his/ her own home	56	54.4
With caregiver	32	31.1
With someone else	2	1.9
Assisted living/ nursing home	13	12.6
Needs help with		
Long-term physical health condition	69	67
Short-term physical health condition	20	19.4
Memory problem	82	79.6
Mental health/ behavioral issue	37	35.9

**Baseline comparability of groups.** To check the effectiveness of random assignment and equality of groups, a series of one- way between- subjects ANOVA's were conducted on pre- assessment total scores for each outcome measure with study condition as the independent variable. Mean scores for each group are presented in Table 4. Results indicated that there were no group differences in AHI,  $F(2, 102) = 1.15, p = .32$ ; CES-D,  $F(2, 102) = 1.54, p = .22$ ; PANAS\_PA,  $F(2, 102) = .96, p = .39$ ; SWLS,  $F(2, 102) = .27, p = .76$ , FLS,  $F(2, 102) = .11, p = .90$ , PAC,  $F(2, 102) = .68, p = .51$ , and DRS\_POS,  $F(2, 102) = .92, p = .40$  at baseline. In summary, there were no significant group differences in pre-assessment scores which suggests that random assignment was successful at producing three comparable groups at baseline.

Table 4  
*Baseline Scores for Each Group (N = 103)*

Variable	Standard		Modified		Control	
	<i>M</i>	<i>SD</i>	<i>M</i>	<i>SD</i>	<i>M</i>	<i>SD</i>
Authentic Happiness Inventory	2.88	.63	2.92	.56	3.10	.68
PANAS - Positive Affect <sup>1</sup>	28.80	7.83	30.56	9.18	31.72	9.02
Satisfaction with Life Scale	20.10	8.50	18.75	6.87	19.50	7.42
Flourishing Scale	42.69	9.82	43.11	7.75	43.69	8.81
CES-D <sup>2</sup>	17.11	10.73	13.44	8.87	16.72	9.20
Positive Aspects of Caregiving	32.26	7.66	31.19	7.54	33.25	6.42
DRS- Positive Interaction <sup>3</sup>	15.29	2.48	15.97	3.33	16.25	3.17

<sup>1</sup> Positive and Negative Affect Schedule

<sup>2</sup> Center for Epidemiologic Studies Depression Scale

<sup>3</sup> Dyadic Relationship Scale

To determine any variables that may need to be included as covariates in main statistical analyses, correlations were first run between potentially confounding variables and outcome measures; for any variable that was significantly correlated with a dependent variable, a one-way between-subjects ANOVA was conducted to compare study groups on that variable at baseline. For categorical variables, Chi-square analyses were used to examine group differences in potentially confounding variable at baseline.

Caregiver stress was identified as a potential confounding variable and to investigate this construct, the NAC Index of Caregiving Burden and Role Overload were examined as potential covariates. The NAC Index was significantly correlated with *CES-D*,  $r(103) = .35, p < .01$ ; *SWLS*,  $r(103) = -.21, p = .03$ ; and *FLS*,  $r(103) = -.22, p = .03$ . Role Overload (RO) was significantly correlated with *AHI*,  $r(103) = -.35, p < .01$ , *CES-D*,  $r(103) = .45, p < .01$ , *PA*,  $r(103) = -.33, p < .01$ , *SWLS*,  $r(103) = -.43, p < .01$ , *FLS*,  $r(103) = -.37, p < .01$ , and *PAC*,  $r(103) = -.27, p < .01$ . To assess whether these variables needed to be included as covariate in main analyses, a one-way between-subjects ANOVA was conducted with group as the independent variable. The results of the ANOVA indicated there were no group differences for NAC Burden of Index scores at baseline,  $F(2, 102) = .57, p = .57$ , and, therefore, the variable does not need to be included as covariate in main statistical analyses. A one-way between-subjects ANOVA was also conducted for RO with study condition as the independent variable. The results of the ANOVA indicated there were no group differences for RO scores at baseline,  $F(2, 102) = 1.81, p = .17$  and, thus, no need to include this variable as covariate.

Demographic and participant characteristics were also assessed as possible confounding variables. A Chi-square test for independence was performed to examine

group differences in racial minority vs. non-minority status. There was a statistically significant difference found for minority vs. non-minority participants in each group,  $\chi^2(2, N= 103) = .27, p = .03$ . Given the unequal number of minority and non-minority participants in each group, independent samples t- tests were conducted to compare minority and non-minority participants on pre- assessment measures. There was a statistically significant differences found in baseline DRS\_POS scores for minority and non-minority participants,  $t(101) = -3.22, p = .002$ , with minority participants reporting more positive dyadic interaction at baseline ( $M = 17.88, SD = 2.47$ ) than non-minority participants ( $M = 15.42, SD = 2.96$ ). Minority and non- minority participants were comparable on all other well-being, depression, and positive aspects of caregiving outcome measures. Given the relatively few minority participants in the overall sample, a decision was made to not include race as a covariate in analyses. Age was not correlated with any dependent variables at baseline and not included as a covariate. Chi-square tests of independence showed there were no significant group differences in baseline for the number of participants currently participating in treatment,  $\chi^2(2, N= 103) = .08, p = .70$ . In summary, random assignment was able to equate all groups and, thereby, reduce the impact potentially confounding variables on outcome measures. Thus, there was no need to use any variables as covariates in the main statistical analyses.

### **Main Analyses**

**Hypotheses 1. A positive psychology intervention involving use of one's "signature strengths" improves facets of caregiver well-being.** It was hypothesized that caregivers in the active intervention conditions would show significantly greater increases in happiness compared to the survey-only control group. To test this hypothesis,

a mixed design repeated measures ANOVA (3 groups x 3 times) was performed with Authentic Happiness Inventory (AHI) as the dependent variable. A  $p$  value of  $\leq .05$  was used to indicate statistical significance. A significant interaction between group and time was predicted. As seen in Table 5, results showed no significant interaction between group and time for happiness scores,  $F(4, 174) = .33, p = .83, \eta_p^2 = .008, 90\% \text{ CI} [.00, .01]$ . In addition, the between-subjects main effect for group was found not to be significant,  $F(2, 87) = .47, p = .63, \eta_p^2 = .01, 90\% \text{ CI} [.00, .05]$  suggesting that being assigned to receive the intervention did not impact changes in happiness any more than what was seen for participants in the survey-only control group.

Table 5  
*Repeated Measures ANOVA Results for Group and AHI<sup>1</sup>*

Source	<i>df</i>	<i>SS</i>	<i>MS</i>	<i>F</i>	<i>p</i>	$\eta_p^2$
Between subjects						
Group	2	.31	.16	.47	.63	.01
Error (Group)	87	28.86	.33			
Within subjects						
Time	2	.49	.28	3.54	.04	.04
Group x Time	4	.09	.03	.33	.83	.008
Error (Time)	174	11.97	.08			

<sup>1</sup> Authentic Happiness Inventory

It was also hypothesized that happiness would significantly increase over the three time points for caregivers who received the intervention with a significant main effect for time predicted. Results of a 3 x 3 mixed design repeated measures ANOVA did reveal a significant within-subjects main effect for time on AHI scores,  $F(2, 174) = 3.54,$

$p = .04$ ,  $\eta_p^2 = .04$ , 90% CI [.002, .089]. The nature of this effect was determined using a Bonferroni adjusted multiple comparison test with a  $p$  value of  $p < .025$ . Planned contrasts were performed comparing each time period (post-assessment and follow-up) to pre-assessment scores. Pairwise comparisons showed a significant increase in AHI scores from pre- assessment ( $M = 2.96$ ,  $SD = 0.61$ ) to one- month follow-up ( $M = 3.06$ ,  $SD = 0.61$ ),  $F(1, 87) = 5.12$ ,  $p = .026$ ,  $\eta_p^2 = .06$ , 90% CI [.004, .148]; however, when using the Bonferroni corrected alpha level, this did not reach the level of statistical significance. In conclusion, this hypothesis was partially supported with happiness significantly improving across time for all participants and this being seen most significantly from pre-assessment to one-month follow-up; however, improvements in happiness were generally the same for all groups and results suggest that receiving the intervention did not have a greater impact on improved happiness than the control condition. Means and standard deviations are presented in Table 6.

Table 6  
*Means and Standard Deviations for AHI<sup>1</sup> by Group and Time*

Group	Pre- Assessment	Post- Assessment	Follow-up
Standard			
<i>M</i>	2.88	2.96	2.98
<i>SD</i>	.58	.60	.58
Modified			
<i>M</i>	2.96	3.04	3.12
<i>SD</i>	.56	.57	.57
Control			
<i>M</i>	3.05	3.08	3.10
<i>SD</i>	.69	.67	.69



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<sup>1</sup> Authentic Happiness Inventory

It was additionally hypothesized that affective, cognitive, and relational aspects of well-being would be significantly better for caregivers who received the intervention compared to a control group. To test this hypothesis, a doubly repeated measures MANOVA was performed for three groups by three times with three DV's: Flourishing Scale, Positive Affect, and Satisfaction with Life Scale. This statistic is used when both the within subjects factor (time) and multiple DV's are analyzed multivariately. To control for Type I error, univariate analyses were only carried out if a multivariate effect was significant. A multivariate interaction was predicted. Results indicated that there was no significant multivariate interaction found for group and time, Wilks'  $\Lambda = .94$ ,  $F(4, 168) = 1.27$ ,  $p = .28$ ,  $\eta_p^2 = .03$ , 90% CI [.00, .06], nor a significant interaction between group and measure across time, Wilks'  $\Lambda = .96$ ,  $F(8, 164) = .33$ ,  $p = .95$ ,  $\eta_p^2 = .02$ , 90% CI [.000, .003]. Thus, this hypothesis was not supported; receiving the signature strengths intervention did not appear to have a significant impact on these facets of well-being.

It was also predicted that affective, cognitive, and relational aspects of well-being would improve over the three time points for caregivers in the two active intervention conditions. A doubly repeated measures MANOVA was performed with three groups by three times and three dependent variables (Flourishing, Positive Affect, and Satisfaction with Life Scale) with a significant main effect for time predicted. As seen in Table 7, results revealed that a significant multivariate main effect for time was found, Wilks'  $\Lambda = .04$ ,  $F(2, 84) = 948.55$ ,  $p < .01$ ,  $\eta_p^2 = .96$ , 90% CI [.94, .97].

Table 7  
*Multivariate Analysis for Well-being Measures*

Source	<i>A</i>	<i>F</i>	<i>df</i>	<i>df</i> (Error)	<i>p</i>	$\eta_p^2$
Time	.04	948.55	2	84	<.001	.96
Time x Group	.94	1.27	4	168	.28	.03
Time x Measure	.95	.99	4	82	.42	.05
Time x Group x Measure	.96	.33	8	164	.95	.02

As seen in Table 8, a series of mixed design repeated measures ANOVA's were conducted for each dependent variable as follow-up to the significant multivariate main effect. A Bonferroni corrected alpha value of .016 (.05/3 comparisons) was used to control for Type I error in follow-up analyses. Means and standard deviations for well-being measures by group and time are presented in Table 9.

Table 8  
*Follow-up Univariate Analysis for Well-being Measures*

Source	Flourishing Scale			Positive Affect			SWLS <sup>1</sup>		
	<i>F</i>	<i>p</i>	$\eta_p^2$	<i>F</i>	<i>p</i>	$\eta_p^2$	<i>F</i>	<i>p</i>	$\eta_p^2$
Time <sup>a</sup>	2.92	.06	.03	2.88	.06	.03	9.38	<.001	.10
Group <sup>b</sup>	.54	.59	.01	1.43	.25	.03	.18	.83	.00
Group x Time <sup>c</sup>	49.68	.54	.02	.82	.52	.02	1.16	.33	.03

<sup>1</sup>Satisfaction with Life Scale

<sup>a</sup> *df* = 2, 170, <sup>b</sup> *df* = 2, 85, <sup>c</sup> *df* = 4, 170

A mixed design repeated measures ANOVA (3 conditions x 3 times) was performed with Flourishing Scale as the dependent variable. Results indicated that there

was no significant interaction between group x time,  $F(4, 170) = .75, p = .54, \eta_p^2 = .02$ , 90% CI [.00, .04], nor significant within-subjects main effect for time,  $F(2, 170) = 2.92, p = .06, \eta_p^2 = .03$ , 90% CI [.00, .08] nor significant between-subjects main effect for group,  $F(2, 85) = .54, p = .59, \eta_p^2 = .01$ , 90% CI [.00, .06]. In conclusion, there were no significant changes in flourishing observed during the study.

A mixed design repeated measures ANOVA (3 conditions x 3 times) was performed with Positive Affect as the dependent variable. Results indicated that there was no significant interaction between group x time,  $F(4, 170) = .82, p = .52, \eta_p^2 = .02$ , 90% CI [.00, .04], nor within-subjects main effect for time,  $F(2, 170) = 2.88, p = .06, \eta_p^2 = .03$ , 90% CI [.00, .08], nor between-subjects main effect for group,  $F(2, 85) = 1.43, p = .25, \eta_p^2 = .03$ , 90% CI [.00, .10]. In conclusion, there were no significant changes in positive affect observed during the study.

A mixed design repeated measures ANOVA (3 conditions x 3 times) was performed with the Satisfaction With Life Scale as the dependent variable. Results revealed a significant within-subjects main effect for time  $F(2, 170) = 9.38, p < .001, \eta_p^2 = .10$ , 90% CI [.03, .17]. The nature of this effect was determined using a Bonferroni adjusted multiple comparison test. Pairwise comparisons showed a statistically significant change on SWLS scores from pre-assessment ( $M = 19.15, SD = 7.71$ ) to one-month follow-up ( $M = 21.43, SD = 7.76$ ),  $F(1, 85) = 14.82, p < .001, \eta_p^2 = .15$ , 90% CI [.05, .26]. There was no significant interaction between time x group,  $F(4, 170) = 1.16, p = .33, \eta_p^2 = .03$ , 90% CI [.00, .06], nor significant between-subjects main effect for group,  $F(2, 85) = .18, p = .83, \eta_p^2 = .00$ , 90% CI [.00, .03]. In conclusion, this hypothesis was partially supported; participants' overall appraisal of how satisfied they are with their life was

significantly higher at one-month follow-up compared to pre- assessment, and this moderate effect was seen across all groups.

Table 9  
*Mean and Standard Deviation for Well-being Measures by Group and Time*

Group	Flourishing Scale			Positive Affect			SWLS <sup>1</sup>		
	T1	T2	T3	T1	T2	T3	T1	T2	T3
Standard									
<i>M</i>	42.81	43.03	43.55	28.84	29.45	29.81	19.97	20.00	21.52
<i>SD</i>	9.67	8.48	8.61	7.29	7.53	8.37	8.702	8.44	8.15
Modified									
<i>M</i>	43.40	44.23	45.23	31.30	32.33	33.23	18.97	21.00	22.03
<i>SD</i>	8.22	7.57	9.22	9.42	9.12	8.78	7.18	6.44	7.62
Control									
<i>M</i>	42.93	44.38	43.24	30.97	33.23	30.76	18.72	19.79	20.31
<i>SD</i>	8.91	7.47	7.84	8.89	8.78	9.72	7.11	7.90	7.55

<sup>1</sup>Satisfaction with Life Scale

**Hypothesis 2. A positive psychology intervention involving use of one’s “Signature Strengths” improves caregiver mental health.** It was hypothesized that caregivers in the active intervention groups would show a significantly greater reduction in depressive symptoms compared to the survey only control group. To test this hypothesis, a mixed design repeated measures ANOVA (3 groups x 3 times) was performed with CES-D as the dependent variable with a significant group x time interaction predicted. The square root transformed CES-D variable was used for analyses. A p value of  $\leq .05$  was used to indicate statistical significance. As seen in Table 10, results revealed no significant interaction between group and time,  $F(4, 174) = 1.40, p =$

.24,  $\eta_p^2 = .03$ , 90% CI [.00, .06], nor significant main effect for group,  $F(2, 87) = 2.49$ ,  $p = .09$ ,  $\eta_p^2 = .05$ , 90% CI [.00, .13], nor significant main effect for time,  $F(2, 174) = 1.03$ ,  $p = .35$ ,  $\eta_p^2 = .01$ , 90% CI [.00, .04]. Thus, this hypothesis was not supported and participation in the intervention had no significant impact on reducing depressive symptoms.

Table 10  
*Repeated Measures ANOVA Results for Group and CES-D<sup>1</sup>*

Source	<i>df</i>	<i>SS</i>	<i>MS</i>	<i>F</i>	<i>p</i>	$\eta_p^2$
Between subjects						
Group	2	26.84	13.42	2.49	.09	.05
Error (Group)	87	469.07	5.39			
Within subjects						
Time	2	1.44	.80	1.03	.35	.01
Group x Time	4	3.93	1.09	1.40	.24	.03
Error (Time)	174	122.20	.78			

<sup>1</sup> Center for Epidemiologic Studies Depression Scale

It was also hypothesized that there would be a significant reduction in depressive symptoms specifically from pre- assessment to post- assessment for participants in the active intervention groups. To test this hypothesis, a paired samples t- test was conducted to compare pre- assessment CES-D scores and post- assessment CES-D scores for the combined intervention groups. A p value of  $\leq .05$  was used to indicate statistical significance. Means and standard deviations for depression scores by group and time are presented in Table 11. Results indicated that there was no significant change in depressive symptoms from pre- assessment ( $M = 15.25$ ,  $SD = 9.93$ ) to post- assessment

( $M = 15.71$ ,  $SD = 11.62$ ) among participants who received the intervention,  $t(61) = 0.18$ ,  $p = .86$ ,  $d = .02$ , 95% CI  $[-.23, .27]$ . Thus, hypothesis two was not supported; the intervention had no significant effect on the reduction of depressive symptoms during the active intervention period.

Table 11  
*Means and Standard Deviations for CES-D<sup>1</sup> by Group and Time*

Group	Pre- Assessment	Post- Assessment	Follow-up
Standard			
<i>M</i>	17.11	17.39	14.71
<i>SD</i>	10.72	11.51	10.80
Modified			
<i>M</i>	13.44	14.03	12.07
<i>SD</i>	8.87	11.66	11.89
Control			
<i>M</i>	16.72	17.75	19.45
<i>SD</i>	9.20	11.55	10.90

<sup>1</sup> Center for Epidemiologic Studies Depression Scale

**Hypothesis 3. Tailoring a signature strengths exercise to the caregiving domain impacts caregivers positively.** It was hypothesized that participants specifically instructed to use their strengths in the caregiving domain would show significant increases in positive appraisal of the caregiving situation from pre-intervention to post-intervention. To test this hypothesis, a paired samples t- test was conducted looking at changes in ratings of Positive Aspects of Caregiving (PAC) from pre- assessment to post-assessment among participants in the caregiving intervention condition. A  $p$  value of  $\leq .05$  was used to indicate statistical significance. Results showed that, for participants in

this condition, increases in PAC ratings from pre- assessment ( $M = 31.93$ ,  $SD = 7.83$ ) to post- assessment ( $M = 34.14$ ,  $SD = 7.83$ ) approached statistical significance,  $t(30) = -1.88$ ,  $p = .07$ ,  $d = -.26$ , 95% CI [.00, .69]. Means and standard deviations for caregiving outcomes are presented in Table 12.

Table 12  
*Mean and Standard Deviation for Caregiving Dependent Variables by Group and Time*

Group	Positive Aspects of Caregiving			Dyadic Relationship Scale- Positive Interaction		
	T1	T2	T3	T1	T2	T3
Standard						
<i>M</i>	32.39	32.68	33.16	15.26	15.94	16.23
<i>SD</i>	7.83	6.83	6.78	2.56	2.68	2.83
Modified						
<i>M</i>	31.93	34.13	34.77	16.40	15.93	17.03
<i>SD</i>	7.83	7.83	7.85	3.31	3.80	3.92
Control						
<i>M</i>	32.55	32.93	32.86	16.00	16.86	15.72
<i>SD</i>	6.12	6.72	8.08	3.09	2.81	4.07

It was also hypothesized that participants instructed to use their strengths in the caregiving domain would report increased positive interactions with the care recipient from pre- intervention to post- intervention. To test this hypothesis, a paired samples  $t$ -test was conducted looking at changes in participants' ratings on the positive interaction subscale of the Dyadic Relationship Scale from pre- assessment to post- assessment. A  $p$  value of  $\leq .05$  was used to indicate statistical significance. Results showed that, for participants in the caregiving condition, increases in DRS\_POS ratings from pre-

assessment ( $M = 16.40$ ,  $SD = 3.31$ ) to post- assessment ( $M = 15.93$ ,  $SD = 3.80$ ) did not significantly change,  $t(30) = .91$ ,  $p = .37$ ,  $d = .14$ , 95% CI [-.19, .52]. Thus, hypothesis two was not supported and tailoring the intervention instructions to the caregiving domain did not have a significant impact participants' appraisal of the caregiving situation or positive interactions with their older loved one.

Lastly, it was hypothesized that participants in the caregiving condition would report greater positive appraisal of the caregiving situation and more frequent positive dyadic interactions compared to participants in the standard intervention group and compared to participants in a survey only control group. To test this hypothesis, a three group x three times doubly repeated measures MANOVA was performed with two DV's: Positive Aspects of Caregiving and Dyadic Relationship Positive Subscale. A significant multivariate interaction was predicted. If a significant multivariate effect was found, univariate ANOVAs would be performed for each dependent variable separately. As shown in Table 13, results revealed that there was no significant multivariate interaction between group and time Wilks'  $\Lambda = .97$ ,  $F(4, 172) = .66$ ,  $p = .62$ ,  $\eta_p^2 = .02$ , 90% CI [.00, .03], nor significant interaction between group and measure across time, Wilks'  $\Lambda = .96$ ,  $F(4, 172) = .92$ ,  $p = .46$ ,  $\eta_p^2 = .02$ , 90% CI [.00, .05]. Thus, the hypothesis that participants who received instructions tailored to the caregiving domain would show greater improvements on caregiving measures compared to a standard or control condition was not supported.



Table 13  
*Multivariate Analysis for Caregiving Measures*

Source	<i>A</i>	<i>F</i>	<i>df</i>	<i>df</i> (Error)	<i>p</i>	$\eta_p^2$
Time	.08	479.14	2	86	<.001	.92
Time x Group	.97	.66	4	172	.62	.02
Time x Measure	.15	241.11	4	86	<.001	.85
Time x Group x Measure	.96	.92	4	172	.46	.02

### Secondary Analyses

A (2 group x 2 time) mixed method repeated measures ANOVA was conducted to explore possible delayed intervention effects revealed at one- month follow-up. For this analysis, the standard and modified invention conditions were combined into one overall intervention group. Results showed that there was a significant difference in depression scores between the combined intervention vs. control group at one- month follow-up,  $F(1, 88) = 4.44, p = .04, \eta_p^2 = .05, 90\% \text{ CI } [.00, .14]$ .

A paired samples t- test was conducted looking at changes in caregiving measures at one- month follow-up. Results revealed a significant increase in positive aspects of caregiving from pre- intervention ( $M = 31.19, SD = 7.54$ ) to one- month follow-up ( $M = 34.77, SD = 7.85$ ) for those participants who received the modified exercises with instructions specifically applied to the caregiving situation,  $t(29) = -2.34, p = .03, d = -.36, 95\% \text{ CI } [.06, .79]$ .

In addition to the well-being, depression, and caregiving outcome measures, changes in participants' reported use of strengths was investigated. Results of a 3 x 3

repeated measures ANOVA showed that there was a significant increase in scores on the Strengths Use Scale across all groups,  $F(2, 174) = 7.97, p = .001, \eta_p^2 = .08, 90\% \text{ CI} [.03, .15]$ . When asked how often they used at least one of their signature strengths, participants at post- assessment reported that they used their signature strengths 77% ( $SD 21.63$ ) of the days over the past two weeks. And at one-month follow-up, participants reported that, on average, they used their signature strengths 74% of the days over the past month. More specifically, when asked about using at least one of their signature strengths in the caregiving situation, at post- assessment participants reported that, on average, they used their signature strengths in the caregiving situation approximately 74% ( $SD 26.01$ ) of the days over the past two week. Likewise, at one- month follow-up participants reported that they used their signature strengths in the caregiving situation on average 71% ( $SD 26.88$ ) of the days over the past month. When comparing these rates by group, there were no significant group difference differences in reported strengths use at post- assessment,  $F(2, 93) = .23, p = .79$ , or follow-up,  $F(2, 87) = 2.23, p = .11$ .

Lastly, participant satisfaction with the intervention was evaluated and participants, on average, were fairly satisfied with the intervention in each of the following areas: convenience ( $M = 5.81, SD = 1.07$ ), interest ( $M = 5.81, SD = 1.15$ ), usefulness ( $M = 5.06, SD = 1.37$ ), and practicality ( $M = 5.10, SD = 1.35$ ).

### Discussion

The present study tested the efficacy of a positive psychology intervention with informal caregivers of older adults. The “using signature strengths” exercise was tested in its original format as well as a modified format, and the two intervention conditions were

compared to a control condition. Participants who received the modified version were explicitly instructed to apply the signature strengths exercise to their caregiving situation.

### **Well-being**

This study hypothesized that participants who received the signature strengths exercises in either the original version or modified version would show significant increases in well-being, and these observed increases would be significantly greater for the intervention conditions compared to the survey- only control condition. This hypothesis was partially supported. Happiness scores did significantly increase from pre-assessment to one- month follow-up; however, this effect was seen for all groups and there was no evidence that participants' increased happiness was a direct result of the signature strengths intervention.

Well-being is a multi-faceted construct and the present study hypothesized that using signature strengths would improve affective, cognitive, and relational aspects of well-being. This hypothesis was partially supported. There were no significant changes in positive affect or relational aspects of well-being during the study, however, participants did report overall greater satisfaction with life at one-month follow-up. Similar to the findings for increased happiness, this effect was seen across groups and there was no direct evidence that changes in life satisfaction were attributable to the intervention.

Present results revealed that, after eight weeks, participants were happier and overall more satisfied with their lives compared to when they started, and this represents a promising finding for efforts to improve family caregivers' well-being. The lack of group level differences does, however, raise questions about the mechanisms responsible for participants improved well-being. A similar pattern of results has been seen in prior

studies; for example, Mongrain & Anselmo (2012) found increased happiness compared to baseline scores but no significant differences between the signature strengths intervention group and positive placebo. It may be that the case that group level differences were lost to the potency of the control group, which, in this case, included more rigorous controls than those employed in prior studies (Seligman et al., 2005). In addition, Seligman's et al. (2005) study used a convenience sample that consisted of over 500 people thus having greater power to detect a small intervention effect that might otherwise be undetected.

In the present study, cognitive aspects of well-being were more responsive to change than other aspects of well-being; this finding suggests that effects on positive emotions and positive relationships may involve processes that develop over a longer period of time. The need for more time is supported by fact that the effects seen for happiness and satisfaction with life were strongest at one-month follow-up. Having a small or non-significant effect at immediate post- assessment increase to a moderate effect at follow-up has been found in other studies as well (Gander et al., 2013; Mongrain & Anselmo- Matthews, 2012; Seligman et al., 2005). With regard to this observed trend over time, Seligman et al. (2005) hypothesized that delayed effects may be due to continued use of signature strengths after the intervention period noting that the exercise is self-reinforcing. To this point, Gander et al., (2013) found that participants continued to practice the intervention on their own and that continued practice was related to increased happiness scores up to six-months later. This was also seen in the present study where, at one-month follow-up, participants reported they had been using their signature strengths, on average, approximately 74% of days out of the past month. This observed

rate of ongoing use of strengths was without explicit instruction to do so. Further support for this comes from secondary analyses which revealed that participants in the present study significantly increased their strengths use over the course of the study.

Still, a lack of group differences on well-being outcomes makes it unclear whether participants' enhanced well-being is a result of receiving the intervention exercises in addition to taking the survey itself. These findings could, perhaps, be otherwise explained as an artifact of expectancy effects, repeated testing, or a priming effect due to questions posed in the well-being measures. Further research is needed to clarify the mechanism of action responsible for the observed improvements in caregivers' well-being.

### **Mental health**

This study hypothesized that the signature strengths intervention would improve mental health by reducing depressive symptoms. Participants who received the intervention were expected to show significant reduction in depressive symptoms from baseline to post- assessment, and greater improvement in their depressive symptoms compared to the control group. This hypothesis was not supported. Depressive symptoms were not significantly lower at post- assessment for any group. Based on the significant effects for well-being measures found at one-month follow-up, supplemental analyses were conducted looking at changes in depressive symptoms at one-month follow-up. For supplemental analyses, the two intervention conditions (original and modified) were collapsed into one combined intervention condition. These results showed that, at one-month follow-up, participants who received the signature strengths intervention reported fewer depressive symptoms compared to the control group, and this was a small but

significant intervention effect. Based on this observed delayed intervention effect, it appears that participants may benefit from having more time and practice using signature strengths. It is interesting to note that the impact of positive psychology interventions on depressive symptoms was theorized to be through an increase of positive emotions, although there was not a significant increase in positive emotions found in the present study. Behavioral activation may represent another way that using signature strengths impacts depressive symptoms; using signature strengths is believed to be self-reinforcing and would, therefore, be expected to increase participants' engagement with rewarding activities. Therefore, it could be that post- assessment did not yet afford enough time for using signature strengths to produce the self- reinforcing and rewarding experience that comes with continued practice.

It is interesting to compare results from the present supplemental analyses with prior studies, many of which found a significant change in depressive symptoms over time but failed to find intervention effects at the group level (Gander et al., 2013; Mongrain et al., 2012; Seligman et al., 2005). Population characteristics may be partly responsible for these different findings; for instance, Seligman et al.'s (2005) sample was "mildly depressed" and Mongrain et al.'s (2012) sample were, on average, above the cut off for clinical significance, whereas participants in the present sample fell, on average, just below this cut off. In addition, the present study had the added component, "celebrating signature strengths with others," which involved a planned positive social interaction. Hence, the present study included an additional source of behavioral activation that earlier studies did not include. Investigating behavioral activation as a

proposed mechanism of action for the signature strengths intervention remains to be tested.

### **Positive aspects of caregiving**

Lastly, the present study hypothesized that a modified version of the signature strengths intervention in which participants were explicitly instructed to use their signature strengths in the caregiving domain would increase positive aspects of caregiving. This hypothesis was not supported. No significant changes were seen in participants' positive appraisals of the caregiving situation nor frequency of positive interactions with the care recipient. Nor were there any differences found on positive caregiver outcomes between the group that received the modified version and those that did not. There may be several reasons why this hypothesis did not turn out as predicted. First, a lack of intervention effect on the dyadic relationship may be largely due to the complexity of this relationship. The dyadic relationship is one in which both the caregiver and care recipient affect and are affected by each other (Sebern & Witlach, 2007). Hence, the signature strengths intervention may have lacked strength to produce significant changes on this measure since only one member of the relationship received the intervention. There are also many contextual factors to consider with any intervention designed to improve positive relationships, including the family and relationship history that preceded the current caregiving relationship. Beyond that, a majority of women in the present study reported that they felt they had no choice in assuming the caregiving role. Another unique factor to consider is the nature of the dyadic relationship when the care recipient has memory problems. The severity of the care recipient's cognitive impairment may result in feeling a loss of relationship with their loved one and the

dementia caregiver in this study may have been limited by the range of positive interactions she could create with her older loved one.

There are also important reasons to consider for why the hypothesized group level differences between the original and modified conditions did not turn out as predicted. Namely, supplemental analyses revealed that participants in all groups reported that they used their signature strengths in the caregiving domain. Therefore, this suggests that a modified version of the exercise was not necessary for participants to apply their strengths in the caregiving situation.

Secondary analyses did, however, find that participants who received the modified version of the exercise showed a significant increase in positive aspects of caregiving from pre- assessment to one-month follow-up. Finding a significant change was remarkable considering the ceiling effects often seen with measures of positive outcomes. Drawing any conclusions about the mechanisms for this observed change, however, is limited, although one speculation is that the caregiving situation likely provides opportunities for caregivers to use their signature strengths and, thereby, experience feelings of accomplishment and sense of meaning and purpose.

As previously mentioned, there are relatively few studies that have been designed specifically to improve positive aspects of caregiving. Cheng, Fung, Chan, & Lam (2016) recently tested an intervention in which dementia caregivers were taught skills for positive reframing of difficult situations in order to find meaning and benefits in their caregiving; these researchers found that their benefit finding intervention promoted psychological well-being and decreased depressive symptoms and burden. Cheng, Mak, Fung, Kwok, Lee, & Lam (2017) again showed that an intervention targeted at increasing



positive thoughts about the caregiving situation was an effective treatment to increase positive gains and reduce caregivers' depressive symptoms. It is noteworthy that the Cheng et al. (2016; 2017) studies were rigorous double-blind randomized controlled studies that produced moderate intervention effects on depression and positive gains. Overall, the majority of caregiver studies have focused on reducing caregiver distress. Gallagher- Thompson & Coon's (2007) review of evidence-based treatments found that interventions focused on caregiver skills development or use of cognitive-behavioral techniques for reducing caregiver depression tended to show overall large effects sizes. Caregivers in those studies tended to have higher levels of distress than participants in the present study. Compared to the present study, interventions targeting reduction of distress tend to be more powerful than the small to medium size effects seen for the current positive psychology intervention.

The contrast between the larger effects sizes for established interventions and the smaller effect sizes observed in the present study underscores the recognition that positive psychology interventions are not meant to be alternates to the established interventions, but, rather, a way to supplement or enhance existing interventions. These findings reinforce the conceptualization of mental illness and mental well-being as two separate dimensions. The present study contributes to the caregiving literature by demonstrating there are effective interventions to improve caregivers' well-being and that increasing positive aspects of caregiving is possible.

### **General implications of findings**

The PERMA model (Seligman, 2011) suggests that "using signature strengths in new ways" would improve well-being through positive emotions, increased engagement,

better relationships, greater meaning and purpose in life, and sense of accomplishment. In the present study, increased positive emotion was hypothesized as one possible mechanism for the intervention effect on well-being. The broaden-and-build theory (Fredrickson, 1998; 2001) explains that discrete positive emotions, including joy, interest, contentment, pride, and love, function to broaden one's thought and action responses, and, thereby, build one's personal resources over time. The reciprocal relationship between increased positive emotion and enhanced coping creates an "upward spiral of positive emotion" (Fredrickson & Joiner, 2001). According to the broaden-and-build theory, it was predicted that using signature strengths would improve well-being by giving rise to positive emotions, such as interest and pride, and enhancing caregivers' coping resources; however, the present results did not support this. Positive affect did not significantly change in this study. It is worth noting that the PANAS is a measure of activation of emotion and includes only two of the five emotions that Fredrickson's theory is based on (i.e. "interested" and "proud") (Watson, Clark, & Tellegen, 1988). It is possible that using signature strengths does increase participants' positive emotion and broadens their coping responses, while the full effect of the "upward spiral of positive emotion" will require more time to be detected.

The PERMA model emphasizes the role of engagement and this facet of well-being represents a primary hypothesized mechanism of action in the present study. The character strengths literature holds that using signature strengths is a self-reinforcing behavior, therefore, it was expected that the intervention would improve well-being by increasing participants' levels of engagement. Results revealed that approximately seventy-five percent of participants reported continued use of their signature strengths

after the intervention period and there was a significant increase in participants reported use of strengths over the course of the study. These findings suggest that participants found the intervention to be a fulfilling and rewarding experience that motivated their continued engagement with the exercise. Although not a formal test for mediation, significant intervention effects at one-month follow-up suggest that increased engagement was a likely mechanism for the increased happiness and lower depressive symptoms observed.

The PERMA model also proposes that better relationships would improve well-being, which is especially pertinent to the caregiving experience. According to this theory, the intervention would affect well-being by creating opportunities for more frequent positive interaction between the caregiver and care recipient. In the present study, positive dyadic interaction was associated with measures of well-being, including happiness, positive affect, and satisfaction with life. However, the intervention did not produce a significant change in the dyadic relationship and conclusions about the mediating effect of the role of dyadic positive relationships on caregivers' well-being could not be drawn. Further research is needed to clarify the relationship between signature strengths and positive relationships.

Finally, the PERMA model recognizes that optimal well-being involves having a sense of meaning and feelings of accomplishment. The importance of these factors is also found within the caregiving literature; for instance, the Positive Aspects of Caregiving model (Carboneau, Caron, & Desrosiers, 2010) holds that well-being is enhanced through the interaction of positive experiences in the dyadic relationship and daily feelings of accomplishment, and together these create a sense of meaning in caregiver role. This

theory predicted that using signature strengths would provide novel opportunities for caregivers to experience feelings accomplishment and derive meaning from their daily caregiving tasks, and thereby increase positive aspects of caregiving. Although results did show increased positive aspects of caregiving at one-month follow-up, it was not possible to draw firm conclusions about the role that accomplishment and sense of meaning played in this change. Nevertheless, it would be interesting to know whether caregivers did in fact experience feelings of accomplishment from using their signature strengths, and, if doing so provided a greater sense of meaning to their caregiving experience. Nevertheless, it could also be the case that merely participating in the research project and completing assigned project activities produced a sense of accomplishment not directly attributable to the signature strengths intervention.

The PERMA model is a useful framework for this work and theoretical advances will be made by testing proposed mechanisms of action and analyzing mediation effects. In the present study, there were several theorized mechanisms by which the signature strengths intervention affected well-being. There was some preliminary evidence supporting increased engagement as a possible mechanism of action, while other proposed mechanisms, such as positive affect and positive relationships, received less empirical support. Furthermore, the lack of group level differences in this study raises the possibility of whether taking the VIA Survey was itself an active intervention component that affected improved well-being.

The clinical implications of this study are equally important to consider. As noted before, caregiver distress and caregiver well-being are not two ends of a continuum but, rather, represent two separate dimensions. While the primary aim of positive psychology

interventions is to increase positive outcomes, finding that the intervention had a significant effect on depressive symptoms is particularly relevant to caregivers who experience higher levels of depression compared to non-caregivers. Therefore, the positive psychology intervention tested here not only has the potential to improve caregivers' well-being as a stand alone intervention, but also as a meaningful supplemental exercise to enhance existing caregiver interventions. It would remain to be seen whether the addition of a positive psychology exercise to an existing caregiver intervention would show incremental effects above and beyond what each produces on its own. If so, incorporating this exercise into existing interventions may be one way to reach caregivers with higher distress levels who might not as easily benefit from a self-directed positive psychology exercise online, but, who otherwise would benefit from an intervention aimed to increase happiness and satisfaction with life.

The issue of caregivers' accessibility to an intervention is another important area to consider. The present study demonstrated that the online VIA Survey is easily accessible and represents a cost efficient intervention that could be implemented widely. There are also clinical implications for effectiveness and optimal dosage. Based on the present findings, there is at least some indication that a lower dose of the intervention would be effective; more specifically, it appears that, for some, taking the VIA Survey may be all that is needed to benefit from improved well-being. Perhaps, the most obvious barrier to implementation of this intervention would be heavy reliance on participants' self- motivation and self- direction. Hence, it may be that caregivers in a position to gain the most from the intervention, namely those providing more care and reporting less happiness in their lives, may lack the requisite resources to benefit from a self-directed

exercise. This again may be where considerations about adding a positive psychology intervention to existing caregiver interventions may come in.

### **General limitations of the study**

This study employed a randomized controlled design, however, there were several factors present that limit the conclusions that can be drawn. Diffusion of treatment was the most significant threat to internal validity in the present study. Based on prior research, taking the VIA Survey without adding the “using signature strengths in new ways” exercise was assumed to be inert. Therefore, a survey only condition was introduced into the present study as a more rigorous control. The survey-only control group was used to demonstrate that study effects were attributable to unique components of the intervention above and beyond any benefits of taking the VIA Survey and learning one’s strengths. However, the lack of group differences in the present study raised a question of whether diffusion of treatment was responsible for a weakening of observed intervention effects.

In the present study, participants completed the VIA Survey through the VIA Institute of Character website which contains a wealth of resources on character strengths. Study participants perusing these materials would potentially have access to the active ingredients in the signature strengths exercises; namely, information about positive outcomes associated with character strengths and different ways to increase use of various character strengths. In addition, participants could register to receive emails from the VIA Institute. Therefore, it is possible that participants in the control condition received the active ingredients of the standard signature strengths exercise, although presumably without the same level of organization than if they had received the exercise

through the study. Secondary analyses further point to possible diffusion of treatment and revealed that participants in the control condition reported using their signature strengths at similar levels to participants who received the intervention. Given the likely diffusion of treatment through the VIA website, it is not possible to determine to what extent participants' improved well-being was a result of "using signature strengths in new ways" or due to other study factors.

In addition to the information participants had access to through the VIA website, the project orientation video represents another possible diffusion of treatment in the present study. All participants were sent the video prior to randomization and all three study conditions viewed the same video. The VIA Character Strengths video was selected for inclusion in the present study as a way to increase engagement. The video presented research on character strengths, including the information that using signature strengths in new ways improves well-being; thus, participants in the control condition had already received an active ingredient of the signature strengths intervention by watching the video. Discussion about diffusion of treatment threats raises a larger question about which study components were really responsible for observed study effects. Dismantling these multiple components will be important for future research to identify the primary mechanism of change and remove any extraneous components of the current intervention.

For example, it is possible that merely completing well-being measures may have influenced participants' follow-up scores on these measures. With regard to assessment effects, results of one meta-analysis suggested that the assessment situation had a relatively weak effect on measurement of life satisfaction and that changes over longer time intervals reflected true changes in life satisfaction judgments (Schimmack & Oishi,

2005). However, future studies in the area of positive psychology interventions ought to include an assessment only comparison group in order to control for any positive effects of completing well-being measures.

Additional internal validity threats in the present study included expectancy effects, demand characteristics, and attrition. Participants were aware of the purpose of this study from recruitment advertising (i.e. “Do you want to be happier?”); therefore, it is possible that participants’ expectations to be happier may have been responsible for their observed increases in happiness ratings. Additionally, introducing the study as “Learn Your Strengths” may have presented demand characteristics that artificially elevated participants’ reported strengths use during the study period.

Study attrition posed another potential threat to internal validity. Secondary analyses revealed that participants who dropped out of the study prematurely reported providing a higher percentage of care and had a higher burden of care index compared to study completers. There were no differences in baseline well-being, depression, or positive measures of caregiving between completers and non-completers. Results showed that rates of attrition were equally dispersed across groups and, therefore, this threat was effectively controlled for through random assignment. Lastly, it is noted that participants in this study were not screened on any pre- assessment measures, therefore, making the observed changes in well-being measures and depressive symptoms less likely to be merely due to regression to the mean.

Potential concerns about external validity also need to be considered in the present study, including its generalizability and effectiveness. The population sample in the present study was representative of the typical family caregiver today (NAC,2015),



thus, current findings point to the generalizability of positive psychology interventions to family caregivers. However, the low representation of minority participants in the present study is a limitation. Notably, the lack of minority caregivers restricts current conclusions that can be drawn about the intervention's impact on positive aspects of caregiver since positive aspects of caregiving have been shown to be higher in minority caregivers (Tarlow et al., 2004). Furthermore, as noted above, participants who dropped out of the study early tended to report providing a higher percentage of care and had a higher burden of care index compared to study completers. The higher rate of attrition among the most burdened participants in this study limits the generalizability of the present findings. It is unknown whether improved well-being and reduced depressive symptoms seen here would hold for caregivers with higher levels of distress. Related to this point, there was one adverse event reported during the study in which a participant indicated that the steps involved with initiating the intervention were stressful and increased her overall experience of distress. Hence, future research is needed to determine what factors are recommended to make the intervention more feasible and helpful for those caregivers with the highest levels of caregiving demand and burden.

Level of motivation may be another factor that limits the generalizability of the current findings. In a research study such as this one, it may be assumed that participants either have an intrinsic motivation for self-improvement or external motivation for a nominal monetary incentive. However, in reality, many family caregivers may lack the motivation or internal resources to fully engage with this intervention. A further consideration of external validity regards the long-term effects of the intervention. In the present study, participants reported that they continued using their signature strengths

one-month after they stopped receiving the email exercises, and other studies have shown continued use of strengths up to six months after the intervention (Gander et al., 2013). This speaks to the self-reinforcing nature of using one's signature strengths; however, it remains unknown how long these effects truly last for.

The measures of well-being used in this study were reliable with demonstrated validity and captured the multifaceted nature and current theories of this construct. In previous research, positive measures had a tendency to be negatively skewed and have problems with ceiling effects; however, this was not seen in the present study. One reason for this may have been use of the Authentic Happiness Inventory (AHI) as a primary outcome measure. The AHI was intentionally designed to have a high ceiling and sensitivity to intervention effects; thus, the sensitivity of this instrument allowed for detecting even small changes in participants' happiness in the present study. Positive measures in the caregiving literature have similarly had problems with negative skew and ceiling effects making it difficult to detect changes in positive aspects of caregiving. To address this limitation in measurement, Cheng et al. (2016; 2017) developed a qualitative analyses approach to measure intervention effects on caregiver gains. In the present study, the journal entries were designed to increase participant engagement, however, they also serve as a potential source for qualitative analyses akin to that of Cheng et al.

While most of the analyses in the present study were adequately powered, multivariate analyses were slightly underpowered due to a smaller sample size as a result of attrition. The study controlled for type one error by employing multivariate analyses and using Bonferroni corrected alpha values when appropriate. This study used non-intent-to-treat analyses to examine the effects of adhering to the intervention compared to

a control condition, and analyses excluded any non-adherers (Ten Have et. al., 2008).

According to Ten Have et. al., (2008), non-intent-to-treat analysis is appropriate when the research interest is primarily on the efficacy of the intervention when followed and intent-to-treat analyses would potentially weaken treatment effects. In the present study, non-adherence was defined as failure to complete the VIA Survey or completely missing an assessment time point (i.e. post- assessment or follow-up).

### **Future directions**

Based on the present findings, there are many issues that need to be considered for future directions. Dismantling studies are needed to clarify the specific intervention components that drive treatment effects and then test for theorized mechanisms of change. Another area for future studies would be to investigate the specific character strengths that are most strongly correlated with positive aspects of caregiving, and then, from that, develop focused interventions aimed at cultivating those specific strengths. In addition, future studies should incorporate use of qualitative analyses methods (Cheng et al., 2016; 2017) in order to more accurately capture changes in positive aspects of caregiving. Lastly, the field of caregiver interventions would benefit from research investigating the combined effect of adding a positive psychology exercise to established interventions.

### **Conclusions**

The need to support informal caregivers is critical to the future of our health care system. Caregivers experience high levels of distress and are less happy than non-caregivers (van Campen et al., 2013). There are numerous effective interventions to remediate the negative effects of caregiving, however, reduced distress does not equate

with well-being. Distress and well-being are not two ends of a continuum, but, rather, two separate dimensions to address. Currently, there are relatively few interventions that exist to increase positive aspects of caregiving. The present study investigated the efficacy of a positive psychology intervention with family caregivers of older adults. Caregivers in this study reported increased happiness and greater satisfaction with life after one month. Improvements in well-being were seen across groups with no significant differences between participants who received the “using signature strength in news ways” exercise and those who did not. The present study also looked at caregivers’ mental health and found that, by one-month follow-up, participants who received the “using signature strengths in new ways” intervention reported significantly fewer depressive symptoms compared to a control condition. In addition to well-being and depression, the current study was interested in the impact of a positive psychology intervention on positive caregiving experiences. To this aim, the present study tested a modified version of the “using signature strengths in new ways” exercise in which participants were explicitly instructed to use their signature strengths in their caregiving. Caregivers who received the modified version of the signature strengths exercise showed increased positive aspects of caregiver at one-month follow-up. However, results showed that the modified version of the exercise did not perform better than the original version. Further, the signature strengths intervention did not have a significant effect on the frequency of positive interactions in the dyadic relationship.

Findings from the present study were mixed. Improvements in well-being, depressive symptoms, and positive aspects of caregiving were seen; however, there was a lack of clear evidence demonstrating that improved well-being, mental health, and positive

caregiving outcomes were directly attributable to the intervention and not other factors. Diffusion of treatment represents a potential threat that may have weakened observed treatment effects in the present study. This study's findings raise important questions about active ingredients in the signature strengths intervention. Future research is needed to determine the mechanisms responsible for the observed improvements in well-being, mental health, and positive aspects of caregiving. In summary, the present study provides initial support for the effectiveness of a positive psychology intervention to enhance caregivers' well-being, and future studies should investigate the combined effects of a positive psychology intervention with existing caregiver interventions to promote optimal functioning.

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## Appendix A

## The VIA Classification of Character Strengths (Peterson &amp; Seligman, 2004)

1. Wisdom and knowledge.
  - Creativity
  - Curiosity
  - Judgment
  - Love of Learning
  - Perspective
2. Courage
  - Bravery
  - Perseverance
  - Honesty
  - Zest
3. Humanity
  - Love
  - Kindness
  - Social Intelligence
4. Justice
  - Teamwork
  - Fairness
  - Leadership
5. Temperance
  - Forgiveness
  - Humility
  - Prudence
  - Self- regulation
6. Transcendence
  - Appreciation of beauty and excellence
  - Gratitude
  - Hope
  - Humor
  - Spirituality



Appendix B  
Examples for Using Character Strengths

<b>Strength</b>	<b>Standard</b>	<b>Caregiver</b>
Appreciation of Beauty & Excellence	Keep a “beauty log.” When you believe you are seeing something beautiful- whether it is from nature, human-made, or the virtuous behavior of others- write it down. Describe the beauty in a few sentences.	Keep a “beauty log.” When you believe you are seeing something beautiful- whether it is from nature, human-made, or beauty in your older loved one - write it down. Describe the beauty in a few sentences.
Bravery	Ask difficult questions that help you and others face reality. Be gentle and kind, but don’t keep questions inside merely because they are hard to express or answer.	Ask the difficult questions that help you and your family members face reality. Be gentle and kind, but don’t keep these questions inside merely because they are hard to express or difficult to answer.
Creativity	Compile an original and practical list of solutions or tips that will address common challenges faced by you and your peers. Share your list with others.	Compile an original and practical list of solutions or tips that will address common challenges faced by family caregivers. Share your list with others in a similar situation.
Curiosity	Practice active curiosity and explore your current environment, paying attention to anything that you may often ignore or take for granted.	Practice active curiosity for your older family members, paying attention to anything that you may often ignore or take for granted in their behavior.
Fairness	Self-monitor to see whether you think about or treat people of all ages stereotypically.	Self-monitor to see whether you think about or treat people of all ages stereotypically.

Forgiveness	Think of someone who wronged you recently. Put yourself in their shoes and try to understand their perspective.	Think of a family member who has wronged you recently. Put yourself in their shoes and try to understand their perspective.
Gratitude	Talk with your loved ones about two good things that happened to them during the day.	Talk with your older loved one about two good things that happened to them during the day.
Honesty	Honor your commitments in all of your relationships. If you agree to do something or schedule a time to meet with someone, be reliable and follow through.	Honor commitments in your relationship with this older adult. If you agree to do something or schedule a time to meet, be reliable and follow through.
Hope	Write about a good event and why it will last and spread. How is this event linked to your actions?	Write about a good aspect of your caregiving situation and consider how this can continue to grow. How is this linked to your actions?
Humility	Compliment sincerely when you find someone is better than you in some ways.	Sincerely compliment your family members and recognize when someone is better than you at something.
Humor	Bring a smile to someone's face through jokes, gestures, and playful activities. Be observant of the moods of others and respond to them.	Bring a smile to your older loved one's face through jokes, gestures, and playful activities. Be observant of his or her moods and respond to them.
Judgment	Before making a decision, consider the following first: "There is another way I could look at this," or "There's probably something I'm not seeing" in order to	Before making a decision about your caregiving situation, consider the following first: "There is another way I could look at this," or "There's probably something I'm

	see it from all sides.	not seeing” in order to see it from all sides.
Kindness	Smile when answering the phone and sound happy to hear from the person on the other end of the line. Greet others with a smile. When you ask people how they are, really listen for their response rather than conversing on “autopilot.”	Smile when your older family member calls and sound happy to hear from them. Greet them with a smile. When you ask your older loved one how they are, really listen for their response rather than conversing on “autopilot.”
Leadership	When two people are in an argument, mediate by inviting others to share their thoughts and emphasizing problem solving. Set a respectful, open-minded tone for the discussion.	When family members are in an argument, mediate by inviting each person to share their thoughts and by emphasizing problem solving. Set a respectful, open-minded tone for the discussion.
Love	Nurture close relationships by practicing an active-constructive response when someone shares news about an event. This means that you ask questions about the event or the person’s experience; show a sense of genuine enthusiasm and energy for their experience, and comment on the meaning it may have for them.	Nurture your relationship by practicing an active-constructive response when your older loved one shares about an experience. This means that you ask questions about the event or the person’s experience; show a sense of genuine enthusiasm and energy for their experience, and comment on the meaning it may have for them.
Love of Learning	Read aloud with your loved ones. Take turns picking the reading material in order to share your interests with others.	Read aloud with your older loved one. Take turns picking the reading material in order to share your interests with each

		other.
Perseverance	Share your goals with loved ones. Let them inspire you with encouragement and advice.	Share your personal goals with your older loved one. Let them inspire you with their encouragement and advice.
Perspective	In your interactions, first focus on listening carefully and then focus on sharing your ideas and thoughts.	In your interactions with this older adult, first focus on listening carefully to what he or she is saying and then focus on sharing your ideas and thoughts.
Prudence	Think twice before saying anything. Do this exercise at least ten times a week and note its effects.	Think twice before saying anything. Do this exercise at least ten times a week and note its effects in your caregiving situation.
Self-regulation	Congratulate yourself when you successfully resist a temptation or indulgence.	Congratulate yourself when you successfully resist a temptation or indulgence.
Social Intelligence	Ask someone close to you about times when you did not emotionally understand him/ her and how he/she would like to be emotionally understood in the future.	Ask your older loved one about times when you did not emotionally understand him/ her and how he/she would like to be emotionally understood in the future.
Spirituality	Cultivate sacred moments in which you set aside time to “just be” with a special/ sacred object or space/ environment.	Cultivate sacred moments in which you and your older loved one set aside time to “just be” with a special/ sacred object or space/ environment.

Teamwork	Help someone close to you set a goal and periodically check on their progress. Offer help and encouragement whenever you think it is needed. If the person reciprocates, allow them to help you achieve one of your goals.	Help this older adult set a goal and periodically check on their progress. Offer help and encouragement whenever you think it is needed. If your older loved one reciprocates, allow them to help you achieve one of your goals.
Zest	Do a physical activity of your choice, one that you don't "have to do" and that you are not told to do. Notice how this affects your energy level. If you enjoy it, plan to do it regularly.	Do an activity with your older loved one that you don't "have to do" and that you are not told to do. Notice how this affects your energy level. If you enjoy it, plan to do it regularly.

Appendix C  
Sample Intervention Email

Email subject: Caregiver Project- Using Your Strengths!

Dear caregiver,

Now that you've learned what your Signature Strengths are, it is time to start using them in new ways!

This week you are being asked to use one or more of your Signature Strengths in a new way each day for the next seven days/ [modified version: with your caregiving situation]. Then you will be answering a few short reflections in your online journal. Here are just a few examples of ways to use your top strengths this week. The possibilities are endless!

Example 1	
Example 2	
Example 3	
Example 4	
Example 5	

Take some time now to come up with specific situations this week where you can practice using these strengths either at work, home, or in leisure/ [modified version: in caring for your older family member or friend.] Write one of those ideas down for yourself now.

We want to know how this week goes for you. At some point during this week, we ask that you report your progress online in Journal 2.

The journal questions are also available on the project homepage as well as additional examples for new ways to use your strengths  
[http://www.umsl.edu/~steffena/c\\_welcome.html](http://www.umsl.edu/~steffena/c_welcome.html)

Sincerely,

Project staff

Appendix D  
Weekly Journal Reflections

How did you use your Signature Strengths in new ways this week?

Consider the following questions:

What strengths did you use?

How did you feel before, during, and after engaging in the activity?

Was it challenging? Easy?

Did you lose your sense of self-consciousness?

Do you plan to do that activity again?