CrossMark

ORIGINAL ARTICLE

What Predicts Positive Life Events that Influence the Course of Depression? A Longitudinal Examination of Gratitude and Meaning in Life

David J. Disabato[1] · Todd B. Kashdan[1] · Jerome L. Short[1] · Aaron Jarden[2]

© Springer Science+Business Media New York 2016

Abstract Decades of research have shown that positive life events contribute to the remission and recovery of depression; however, it is unclear how positive life events are generated. In this study, we sought to understand if personality strengths could predict positive life events that aid in the alleviation of depression. We tested a longitudinal mediation model where gratitude and meaning in life lead to increased positive life events and, in turn, decreased depression. The sample consisted of 797 adult participants from 43 different countries who completed online surveys at five timepoints. Higher levels of gratitude and meaning in life each predicted decreases in depression over 3 and 6 months time. Increases in positive life events mediated the effects of these personality strengths on depression over 3 months; however, not over 6 months. Goal pursuit and positive emotions are theorized to be the driving forces behind gratitude and meaning in life's effects on positive life events. We used the hedonic treadmill to interpret the short-term impact of positive life events on depression. Our findings suggest the potential for gratitude and meaning in life interventions to facilitate depression remission.

Keywords Depression · Positive life events · Gratitude · Meaning in life

Introduction

Depression is the fourth leading cause of disability in the world in terms of economic, societal, and interpersonal costs (Kessler 2012). Across 18 countries, the respective lifetime and yearly prevalence rates of major depressive disorder are 14.6 and 5.5 % in high-income countries, and 11.1 and 5.9 % in low- to middle-income countries (Bromet et al. 2011). Individuals that struggle with depression symptoms experience a higher probability of educational dropout, divorce, and unemployment. On average, individuals with depression are impaired nearly 30 % of their time in specific life roles (e.g., job) leading to less work productivity and a loss of human capital estimated between \$44.0 and \$51.5 billion (Alonso et al. 2010; Greenberg et al. 2003; Stewart et al. 2003).

Depression Remission Factors

Approximately 20 % of individuals with depression spontaneously remit, or experience significant decreases in symptoms, without any formal treatment (Posternak and Miller 2001). Predictors of remission from depressive episodes include lower levels of negative life events, hopelessness, self-blame, neuroticism, worrying, and interpersonal dependency as well as greater self-esteem (Scott et al. 1992; Iacoviello et al. 2013; Johnson et al. 2007; Kessler 1997). To better understand how people remit from depression, researchers can explore factors that predict decreased depressive symptoms over time. Learning about and changing remission factors could empower clinicians and individuals to reduce the length of major depressive episodes and prevent chronic depression (Dozois and Dobson 2004; Pettit and Joiner 2006; Lara and Klein 1999).

✉ Todd B. Kashdan
tkashdan@gmu.edu

[1] George Mason University, Fairfax, VA, USA

[2] Auckland University of Technology, Auckland, New Zealand

Recent research suggests that adaptive and maladaptive psychological processes are two separate dimensions, rather than a single continuum (Carver et al. 2000; Elliot and Thrash 2002; Huppert and Whittington 2003; Keyes 2005). Most of the known remission predictors are maladaptive processes; fewer studies have explored the role of adaptive processes in reducing depressive symptoms (Slade 2010; Wood and Tarrier 2010).

Positive Life Events and Depression

Research on adaptive processes has consistently found that the presence of positive life events lead to a reduction in depressive symptoms. In the 1970s, Lewinsohn's seminal studies found associations between more frequent pleasant activities and fewer depressive symptoms in the future (Lewinsohn and Graf 1973; Lewinsohn and Libet 1972). Since then, the frequency of positive experiences has been shown to predict fewer and less intense depressive symptoms in both clinical and non-clinical samples (Beevers and Meyer 2002; Haeffel and Vargas 2011; Spinhoven et al. 2012). In addition, internal attributions about the positive life events may moderate how beneficial they are (Needles and Abramson 1990; Johnson et al. 1998).

While positive life events are often therapeutic, it is unclear what generates positive life events. Research on the causes of negative life events has focused on personality traits. Individuals high on the personality trait of neuroticism generate their own negative events (i.e., stress generation; Hammen 1991). Individuals with clinical depression are theorized to create their own interpersonal stressors due to their negative attributions and emotions during social interaction (Hammen 2006). It then seems reasonable to hypothesize that personality traits could generate positive life events as well. Unlike stress generation, we do not believe positive event generation would be limited to interpersonal events. After all, research has shown that resilience is conferred by the presence of positive emotions (e.g., Fredrickson et al. 2003; Ong et al. 2006), which broadens and builds attention to facilitate social, achievement, and spiritual exploration (Ashby and Isen 1999; Fredrickson 2001).

Personality and Positive Life Events

Although considered static in the past, personality is now viewed as malleable. Research has shown that personality changes in response to life events and role changes (Mroczek and Spiro 2003; Roberts and Mroczek 2008; Roberts and Capsi 2003). Marriage, spousal death, career success, and becoming a parent have each predicted changes in personality. Interventions targeted at specific traits also change personality. For individuals with emotional disorders, psychotherapy decreases trait neuroticism (Barlow et al. 2014; Brown 2007; Warren et al. 1988). Assertiveness training increases assertiveness, a facet of extroversion (Glueckauf, and Quittner 1992). Writing down three things people are optimistic about for several days in a row increases optimism (Littman-Ovadia and Nir 2014). The desire to change one's personality influences behavior, and leads to actual changes in the desired direction (Hudson and Fraley 2015). Therefore, personality can serve an important role in clinical psychology where psychological interventions change individual's personality to reach their treatment goals.

Research on the five-factor model of personality lends support for one's ability to generate positive life events. Having high levels of extroversion and conscientiousness increase the chances of positive life events in the future (Lüdtke et al. 2011; Vaidya et al. 2002). Theory underlying the extroversion-life event link has focused on interpersonal life events, suggesting the desire to be with people naturally leads to more social interaction and positive experiences with others (Headey and Wearing 1989). Less research has focused on conscientiousness, although a strong work ethic may facilitate positive occupational events.

The five-factor model of personality is a cornerstone of personality research, although most of the existing work with clinical implications focuses on the broad dimensions and not lower-order facets or traits. In this study, we explored two personality strengths that are related to, but independent from, the five-factor model and could predict positive life events. We chose the personality strengths of gratitude and meaning in life because of their inverse associations with depression and malleability. We introduce each personality strength, discuss links to the five-factor model, and present a theoretical justification for why we expect them to increase positive life events.

Gratitude

Gratitude is defined as "noticing and appreciating the positive in the world"[1] (Wood et al. 2010, pp. 890). Although gratitude is sometimes conceptualized as an interpersonal behavior (e.g., saying thank you to a friend; McCullough et al. 2001), we chose to conceptualize it as an intrapersonal cognitive-affective construct. Gratitude's strongest correlations with big five traits are about .30 with extroversion, agreeableness, and openness to experience, suggesting gratitude is a distinct aspect of personality (e.g.,

---

[1] Note this is different than optimism, which is expecting the positive in the future. Gratitude is about noticing the positive in the present.

Breen et al. 2010; Wood et al. 2009). As a habitual focus on the positive, the life orientation conceptualization of gratitude is a useful personality strength to alter depression, which is characterized by ignoring and failing to respond to environmental rewards (Beck et al. 1979). Longitudinal studies suggest gratitude predicts reductions in depression over four months (Wood et al. 2008). Experimental tests of gratitude interventions, such as writing three things a week a person is grateful for, show gratitude is a malleable aspect of personality that leads to sustainable reductions in depressive symptoms (Emmons and McCullough 2003; Seligman et al. 2005).

Gratitude specifically may facilitate positive event generation via the motivation to give back (Wood et al. 2010). Grateful people view help from others as costly for the benefactor, motivated by genuine altruism, and valuable to themselves (McCullough et al. 2004; Wood et al. 2008). Importantly, "others" includes other people and spiritual entities, such as God (Krause et al. 2014). Gratitude is strongly related to how close one feels to God and appreciation for everything God (or other spiritual entities) has done for the individual (Emmons and Kneezel 2005). Because of this appreciation, grateful individual are motivated to give back to others and society via prosocial behaviors (Froh et al. 2010). This could include efforts as large as volunteer work and as small as saying "thank you" to a loved one. We hypothesize this motivation will serve as daily behavioral activation for those with depression that could then turn into positive life events over time (Fredrickson 2001).

Meaning in Life

Although measures of meaning in life depend on participants' personal definitions when completing a survey, we adopt the definition that the presence occurs when a life is "felt to have significance beyond the trivial or momentary, to have purpose, or to have a coherence that transcends chaos"[2] (King et al. 2006; pp. 180). Meaning in life's strongest correlations with big five traits are about .25 with extroversion and agreeableness, suggesting it represents a distinct aspect of personality (Steger et al. 2006; Stillman et al. 2011). Existential theory has highlighted the relevance of meaning in life for depression (Frankl 1984) and has led some researchers to classify "existential depression" as a subtype of depression characterized by meaninglessness (e.g., Addis and Jacobson 1996). Meaning in life predicted changes in depression over two months' time among non-clinically depressed college students (Mascaro and Rosen 2005). Although less popular today, logotherapy

and other existential therapies have shown that meaning in life is a malleable aspect of personality (Cho 2008; Delavari and Nasirian 2014). Clinicians and coaches use new meaning in life interventions, such as creating a portfolio of photos showcasing sources of profound life significance, that show acceptable efficacy (e.g., Lee et al. 2006; Steger and Dik 2009; Steger et al. 2013).

Meaning in life likely motivates goal pursuit leading to the generation of positive life events. A large part of meaning in life appears to be personally significant goals (Emmons 2003). Individuals high on meaning in life report greater time and effort dedicated towards pursuing life goals (Vallerand 2008). Having meaning in life may counter the anhedonia common in depression and sustain intrinsically motivated behavior (McKnight and Kashdan 2009). Achievement/work, relationship/intimacy, religion/spirituality, and self-transcendence/generativity are the four most common sources of meaning in life (Ebersole 1998; Emmons 1999; Wong 1998). We hypothesize when individuals with depression strive for meaningful goals in these life domains they will experience more positive life events.

Initial Levels of Depression

We sought to test our model of depression remission across depression levels. We tested initial levels of depression as a moderator of both the association between personality strengths and positive life events, and between positive life events and depression. Motivational anhedonia in clinical depression may be so overwhelming that personality strengths are not able to facilitate behavior activation (Treadway et al. 2012). Therefore, we hypothesized the effects of gratitude and meaning in life on increases in positive life events would be weaker for those with greater initial depression. Conversely, individuals with greater depression are impacted more by life events, whether they are positive or negative (Peeters et al. 2003; Bylsma et al. 2011). Therefore, we hypothesized the effect of positive life events on depression would be stronger for those with greater initial depression.

The Present Study

We tested whether the personality strengths of gratitude and meaning in life could predict increases in positive life events and, in turn, decrease depression. Using a multiwave, longitudinal study of international participants, we tested whether increases in positive life events mediated the relationships between both gratitude and meaning in life and decreased depression over time. Figure 1 illustrates our hypothesized model. This involved the personality

---

[2] Note this is different than the meaning *of* life, which is a philosophical issue.

strengths predicting increases in positive life events (i.e., hypothesis 1) as well as positive life events predicting decreases in depression (i.e., hypothesis 2). We tested our model by predicting both 3 and 6-month follow-up depression ratings. In addition, we hypothesized the effects of each personality strength on positive life events would be weaker for greater initial depression (i.e., hypothesis 3) while the effect of positive life events on depression would be stronger for greater initial depression (i.e., hypothesis 4). We did not have specific hypotheses about the direct effects of each personality strength on decreased depression or their moderation by initial depression; therefore these are considered exploratory tests.

Methods

Participants and Procedure

We used data from the International Wellbeing Study (IWS) collected by two of the authors Aaron Jarden and Todd Kashdan (Principal Investigators) and their colleagues (www.wellbeingstudy.com). The sample consisted of 797 adult participants (17.1 % male; mean age was 38.7 with a standard deviation of 14.3) who completed online self-report questionnaires between March 2009 and March 2013. Participants were from 43 different countries from six of the seven continents (Antarctica excluded). Countries were organized into world regions based on geographic proximity, common historical, cultural, and linguistic roots, and current economy (e.g., Tay and Diener

2011). Most participants were from Oceania, North America, and Europe (see Table 1).

Each participant completed the same assessment battery at five different time points separated by 3 months. Although participants entered the IWS at different times ranging from March 2009 to March 2012, all participants completed their five assessment time points consecutively within one year.

Participants were compensated with a chance to win one of fifteen $100 USD amazon.com vouchers, an email summary of their score reports compared to others, and the opportunity to take one of three different well-being intervention courses. Participants were recruited via emailed and printed advertisement posters distributed to investigator's colleagues, university departments, businesses, charitable organizations, listservs, and online forums.

Measures

The total IWS assessment battery included 19 scales (217 items) that participants completed in an average of 29 min. Four scales (33 items) were used for the present analyses. Participants completed the assessment battery in 13 different languages; English was the most common (70.8 %). We used the available 12 non-English language translations of scales. When no translation was available, scales were translated by a native speaker of that language who had a degree in psychology or higher (most translators were masters or doctoral students in psychology familiar with psychometrics). Upon translation, scales were cross-checked by an independent second translator and areas of disagreement identified and resolved between the two translators.

Depression

The Center for Epidemiological Studies Depression Scale (CES-D; Radloff 1977) is a 20-item measure of depressive symptoms that emphasizes cognitive-affective aspects of depression (Radloff 1977; see Ensel 1986, for an overview of the CES-D). Participants responded to items on a 4-point
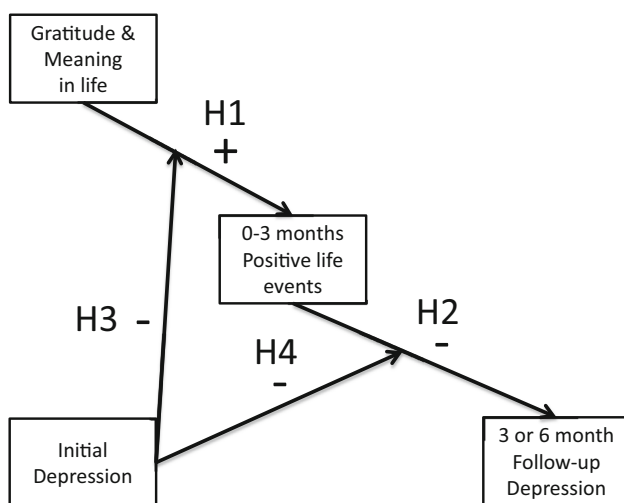

Fig. 1 Depiction of our hypothesized model. The direct effects and their moderation by initial depression are excluded because they are considered exploratory tests. *H1* hypothesis 1, *H2* hypothesis 2, *H3* hypothesis 3, *H4* hypothesis 4

Table 1 Participant world region

World region	Relative frequency (%)	Count
Oceania	41.0	327
Northern Europe and USA	26.6	212
Eastern Europe and Russia	18.2	145
Southern Europe	9.0	72
Latin America	3.3	26
East and South Asia	1.3	10
Africa and Middle East	0.1	5

Percentages do not add up to exactly 100 % due to rounding

Likert scale from $0 = rarely$ or $none$ of the $time$ to $3 = most$ or all of the $time$. An example item is, "I felt that everything I did was an effort." When completing the items, participants were asked to reference only the past week. All items were summed to create a total score, where higher scores indicated greater depression. The CES-D was created for use with general community rather than clinical populations (Radloff 1977). Because research has validated the CES-D in many non-American community populations (e.g., Cho and Kim 1998), researchers commonly use the CES-D for measuring depression in large international samples (e.g., Simon et al. 2004). Construct validity is evidenced by strong associations with other indices of well-being and internalizing symptoms such as the Bradburn Affect Balance Scale, Rosenberg's Self Esteem Scale, and Spielberger's Trait Anxiety inventory (Orme et al. 1986; Radloff 1977). In the present study, the Cronbach's alphas across the five time points ranged from .90 to .92.

Positive Life Events

A measure developed for this study assessed the frequency of positive life events. The measure was created to be briefer than existing life event measures (e.g., Cohen and Hoberman 1983), yet retain a variety of positive life events. The measure consists of 5-items asking whether specific life events occurred in the last three months: (1) "You had an experience that was very fun and exciting", (2) "You got emotionally closer to someone", (3) Your living conditions improved", (4) "You had more money", (5) "Your health or fitness improved". Participants responded whether events $0 = did$ not $happen$ or $1 = did$ $happen$. Items were summed to create a total scale score, where higher scores indicated greater frequency of positive life events. Life events are conceptualized as counts rather than latent constructs (e.g., Nezlek and Gable 2001) and thus, traditional reliability estimates do not apply.

Gratitude

The Gratitude Survey–six item form (GQ-6; McCullough et al. 2002) is a measure of one's general tendency to appreciate the positive in the world. Participants responded to items on a 7-point Likert scale from $1 = strongly$ $disagree$ to $7 = strongly$ $agree$. An example item is "I am grateful to a wide variety of people." All items were summed to create a total score where higher scores indicate greater gratitude. Positive associations with life satisfaction, positive affect, forgiveness, and empathy, as well as negative associations with revenge and negative affect demonstrates GQ-6's construct validity (Kashdan and Breen 2007; McCullough et al. 2004; Polak and McCullough 2006). In addition, the GQ-6 has demonstrated

predictive validity of well-being above and beyond the big five traits (Wood et al. 2009). In the present study, Cronbach's alphas ranged from .79 to .82 across the five timepoints.

Meaning in Life

The *Presence* subscale (MLQ-P) of The Meaning in Life Questionnaire (MLQ; Steger et al. 2006) is a five item measure of feeling one's life is meaningful. An example item is "I understand my life's meaning." Participants responded to items on a 7-point Likert scale from $1 = absolutely$ $untrue$ to $7 = absolutely$ $true$. Items within the subscale were summed to create total scores, where higher scores indicated greater presence of meaning in one's life. Positive associations of the MLQ-P with measures of purpose in life, religiosity, personal growth, and well-being indicate convergent validity (Steger et al. 2006). Negligible associations of the MLQ-P with conformity, universalism, hedonism, and achievement indicate discriminant validity (Steger et al. 2006). In the present study, Cronbach's alphas ranged from .90 to .93 across the five timepoints.

Results

Data Analytic Overview

We tested whether gratitude and meaning in life could increase the frequency of positive life events to, in turn, decrease depression. We conducted two separate set of longitudinal mediation models. In the first, gratitude was the predictor and in the second, meaning in life was. For each predictor, the mediator was positive life events 0–3 months later; however, there were two outcomes: depression at 3 and 6 months later. Although positive life events 0–3 months later were reported at the same time as depression 3 months later, the life events occurred in the past 3 months while the depression measure was only about the past 2 weeks. Therefore, both 3 and 6 month follow-up depression scores have some degree of temporal precedence.

To control for the stability of the mediator and outcomes, positive life events and depression at 0 months were controlled for in each model (Cole and Maxwell 2007). Drawing from Baron and Kenny (1986), we present the *a path* from gratitude or meaning in life to positive life events, the *b path* from positive life events to depression, and the *c' path* from gratitude and meaning in life to depression. Consistent with recent approaches, we also report the estimates and significance of the total, direct, and indirect effects (Hayes 2013).

Due to the nested nature of the data, timepoints nested within persons, we used multi-level models, which adjust the standard errors for dependencies (Nezlek [2011]). We did not have any hypotheses about random slopes and thus only estimated random intercepts.[3] All total scores were converted to standardized "z-scores" across all five time-points to allow for the multi-level regression coefficients to be interpreted similar to standardized coefficients (i.e., Betas) in linear regression. Ten thousand non-parametric quasi-bayesian sample draws were used to estimate the confidence intervals of the total, direct, and indirect effects. The R packages "lme4", "lmerTest" and "mediation" were all used to conduct the following statistical analyses (Bates et al. [2015]; Kuznetsova et al. [2015]; Tingley et al. [2014]).

In addition, to the average mediation effect, conditional mediation effects were calculated (Preacher et al. [2006], [2007]). Zero month, or initial, depression was used as a moderator to determine if the total, direct, or in direct effects differ across low, average, and high depression symptoms. The product of the z-scores between gratitude or meaning in life and initial depression as well as 0–3 months positive life events and initial depression were added to each multi-level regression model (Aiken et al. [1991]).

Descriptive Statistics

Means, standard deviations, and the observed correlation matrix between personality strengths at time 1, positive life events at time 1 and time 2, and depression at time 1, time 2, and time 3 are all reported in Table [2]. As expected, depression was slightly, positively skewed (skewness coefficients ranged from 1.17 to 1.34 across the five timepoints) with a median of 10 at each timepoint. Both time 1 gratitude and meaning in life had moderate to large, negative correlations with depression at the first three timepoints. In addition, both personality strengths at time 1 had small to moderate, positive correlations with positive life events at the first two timepoints. Positive life events at time 1 had a small to moderate, negative correlation with depression at time 1; however, the relationship decreased at time 2 and time 3 to the point that time 1 positive life events did not predict time 3 depression.

3-Month Follow-Up Depression

Gratitude

The results from the multi-level regressions for the mediator and outcome models are presented in Table [3]. The effect of gratitude on increases in positive life events (i.e., *a path*) and the effect of positive life events on decreases in depression (i.e., *b path*) were both significant. This supports hypothesis 1 and hypothesis 2 for gratitude. Greater initial depression did not attenuate the effect of gratitude on increased positive life events; however greater initial depression did enhance the effect of positive life events on decreased depression. This does not support hypothesis 3, but does support hypothesis 4, for gratitude. The average standardized total effect, indirect effect, and directs effect are presented in Table [4] under the rows labeled "Moderate Depression".[4] The significant total effect indicates gratitude predicts decreased depression at 3 months. The variance explained by gratitude was 1.5 % (LaHuis et al. [2014]). The significant indirect effect suggests increased positive life events mediate this relationship. The percent mediation indicates 13.2 % of gratitude's effect is through increased positive life events.

The rows in Table [4] labeled "Low Depression" and "High Depression" represent the conditional mediation results at one standard deviation below and above mean (i.e., moderate) initial depression. The conditional total effects were both significant, suggesting gratitude predicts decreased depression for people with low or high amounts of initial depression. The conditional indirect effects were also significant, suggesting increased positive life events mediate this relationship for people with low or high amounts of initial depression. Interestingly, the percent mediation was greater for individuals with high initial depression, but lower for individuals with low initial depression.

Meaning in Life

The results from the multi-level regressions for the mediator and outcome models are presented in Table [3]. The effect of meaning in life on increases in positive life events (i.e., *a path*) and the effect of positive life events on decreases in depression (i.e., *b path*) were both significant. This supports hypothesis 1 and hypothesis 2 for meaning in life. Greater initial depression did not attenuate the effect of meaning in life on increased positive life events; however greater initial depression did enhance the effect of

---

[3] When estimating random effects for both the predictor and mediation, the covariance of the random effects is added to the indirect effect (Kenny et al. [2003]); however, because we did not estimate these random effects, there was no covariance to add.

[4] Within a moderated mediation framework, the regular mediation results are equal to the moderated mediation results when the moderator is equal to its mean.

Table 2 Zero-order correlations, means, and standard deviations

	1	2	3	4	5	6	7
1. T1 depression	–						
2. T1 positive life events	−.19***	–					
3. T1 gratitude	−.45***	.16***	–				
4. T1 meaning in life	−.43***	.18***	.49***	–			
5. T2 positive life events	−.18***	.44***	.15***	.20***	–		
6. T2 depression	.62***	−.12***	−.36***	−.32***	−.23***	–	
7. T3 depression	.57***	−.06	−.33***	−.28***	−.08*	.58***	–
Mean	13.01	3.13	35.98	25.21	3.08	12.75	12.92
SD	10.45	1.46	5.53	6.74	1.50	10.54	10.35

T1 = baseline, T2 = 3 months after baseline, T3 = 6 months after baseline

* $p < .05$; ** $p < .01$; *** $p < .001$

Table 3 Multi-level regression results for 3 and 6 month follow-up depression

Variables			3-month follow-up depression				6-month follow-up depression			
Personality strength	Dependent variable	Predictor	Coef	SE	t value	p value	Coef	SE	t value	p value
Gratitude	Mediator: PLE 0—3 months later	PLE	.206	.018	11.69	<.001	.433	.019	22.54	<.001
		Grat	**.101**	**.022**	**4.66**	**<.001**	**.083**	**.021**	**3.91**	**<.001**
		Depression	.005	.021	0.23	.818	.018	.021	0.87	.386
		Grat * depression	**−.005**	**.015**	**−0.32**	**.751**	**.015**	**.016**	**0.92**	**.358**
	Outcome: depression symptoms 3 or 6 months later	Depression	.554	.016	34.30	<.001	.433	.021	20.83	<.001
		Grat	−.101	.016	−6.32	<.001	−.128	.021	−5.99	<.001
		PLE	.113	.016	7.13	<.001	.054	.019	2.79	.005
		PLE 0 -3 months later	**−.153**	**.016**	**−9.77**	**<.001**	**−.019**	**.019**	**−1.00**	**.316**
		Grat * depression	.016	.012	1.29	.196	.035	.016	2.20	.028
		PLE 0—3 months later * depression	**−.054**	**.013**	**−4.04**	**<.001**	**−.014**	**.017**	**−0.85**	**.396**
Meaning in Life	Mediator: PLE 0—3 months later	PLE	.210	.018	11.89	<.001	.435	.019	22.73	<.001
		Meaning in life	**.073**	**.021**	**3.41**	**<.001**	**.075**	**.021**	**3.66**	**<.001**
		Depression	−.004	.020	−0.22	.826	.009	.021	0.42	.677
		Meaning in life * depression	**.005**	**.016**	**0.35**	**.729**	**.011**	**.017**	**0.66**	**.511**
	Outcome: depression symptoms 3 or 6 months later	Depression	.572	.016	36.40	<.001	.459	.021	22.26	<.001
		Meaning in life	−.076	.015	−4.96	<.001	−.086	.021	−4.12	<.001
		PLE	.110	.016	6.94	<.001	.051	.019	2.61	.009
		PLE 0—3 months later	**−.156**	**.016**	**−9.98**	**<.001**	**−.023**	**.019**	**−1.20**	**.232**
		Meaning in life * depression	.030	.013	2.38	.017	.043	.016	2.62	.009
		PLE 0—3 months later * depression	**−.058**	**.013**	**−4.36**	**<.001**	**−.018**	**.017**	**−1.08**	**.281**

PLE = positive life event. All variables were standardized before entry resulting in standardized regression coefficients. The bolded rows refer to the coefficients testing our four moderated mediation model hypotheses

positive life events on decreased depression. This does not support hypothesis 3, but does support hypothesis 4, for meaning in life. The average standardized total effect, indirect effect, and direct effect are presented in Table 4

under the rows labeled "Moderate Depression". The significant total effect indicates meaning in life predicts decreased depression at 3 months. The variance explained by meaning in life was 0.9 %. The significant indirect

Table 4 Multi-level moderated mediation results with 3 and 6 month follow-up depression

Variables			3-month follow-up depression				6-month follow-up depression			
Personality strength	Moderator	Effect	Estimate	95 % CI lower	95 % CI upper	% Med	Estimate	95 % CI lower	95 % CI upper	% Med
Gratitude	Low depression (CESD = 2.3)	Total	−.128*	−.173	−.085	8.0	−.162*	−.219	−.105	0.1
		Indirect	−.010*	−.019	−.004		−.000	−.005	.004	
		Direct	−.118*	−.163	−.075		−.162*	−.219	−.105	
	Moderate depression (CESD = 12.7)	Total	−.117*	−.149	−.085	13.2	−.129*	−.170	−.088	1.1
		Indirect	−.015*	−.023	−.009		−.002	−.005	.001	
		Direct	−.101*	−.133	−.070		−.128*	−.169	−.086	
	High depression (CESD = 23.1)	Total	−.105*	−.142	−.068	18.8	−.096*	−.142	−.050	3.2
		Indirect	−.020*	−.031	−.010		−.003	−.009	.001	
		Direct	−.085*	−.121	−.050		−.093*	−.139	−.047	
Meaning in life	Low depression (CESD = 2.3)	Total	−.113*	−.156	−.071	5.7	−.130*	−.185	−.073	0.1
		Indirect	−.007*	−.013	−.001		−.000	−.004	.003	
		Direct	−.107*	−.149	−.065		−.129*	−.185	−.073	
	Moderate depression (CESD = 12.7)	Total	−.088*	−.118	−.057	12.8	−.088*	−.129	−.047	1.8
		Indirect	−.011*	−.019	−.005		−.002	−.005	.001	
		Direct	−.076*	−.107	−.046		−.086*	−.128	−.045	
	High depression (CESD = 23.1)	Total	−.063*	−.100	−.024	26.6	−.047*	−.095	−.000	6.8
		Indirect	−.017*	−.028	−.006		−.003	−.009	.001	
		Direct	−.046*	−.082	−.009		−.043	−.091	.004	

CESD = Center for Epidemiological Studies of Depression, CI = quasi-bayesian confidence interval, % Med = percent mediation

* 95 % confidence interval does not include 0

effect suggests increased positive life events mediate this relationship. The percent mediation indicates 12.8 % of meaning in life's effect is through increased positive life events.

The rows in Table 4 labeled "Low Depression" and "High Depression" represent the conditional mediation results at one standard deviation below and above mean (i.e., moderate) initial depression. The conditional total effects were both significant, suggesting meaning in life predicts decreased depression for people with low or high amounts of initial depression. The conditional indirect effects were also significant, suggesting increased positive life events mediate this relationship for people with low or high amounts of initial depression. Similar to gratitude, the percent mediation was greater for individuals with high initial depression, but lower for individuals with low initial depression.

6-Month Follow-Up Depression

Gratitude

The results from the multi-level regressions for the mediator and outcome models are presented in Table 3. The

effect of gratitude on increases in positive life events (i.e., *a path*) was essentially the same as in the 3-month follow-up model and supports hypothesis 1 for gratitude. On the contrary, the effect of positive life events on decreases in depression (i.e., *b path*) was not significant and did not support hypothesis 2 for gratitude. Greater initial depression did not attenuate the effect of gratitude on increased positive life events and greater initial depression did not enhance the effect of positive life events on decreased depression. This does not support either hypothesis 3 or hypothesis 4 for gratitude. The average standardized total effect, indirect effect, and direct effect are presented in Table 4 under the rows labeled "Moderate Depression." The significant total effect indicates gratitude predicts decreased depression at 6 months. The variance explained by gratitude was 1.3 %. The non-significant indirect effect suggests increased positive life events did not mediate this relationship. The percent mediation indicates only 1.1 % of gratitude's effect is through increased positive life events.

The rows in Table 4 labeled "Low Depression" and "High Depression" represent the conditional mediation results at one standard deviation below and above mean (i.e., moderate) initial depression. The conditional total effects were both significant, suggesting gratitude predicts

decreased depression for people with low or high amounts of initial depression. The conditional indirect effects were both non-significant, suggesting increased positive life events do not mediate this relationship for people with low or high amounts of initial depression. Note, the percent mediation was less than 4 % for both low and high initial depression.

Meaning in Life

The results from the multi-level regressions for the mediator and outcome models are presented in Table 3. The effect of meaning in life on increases in positive life events (i.e., *a path*) was essentially the same as in the 3-month follow-up model and supports hypothesis 1 for meaning in life. On the contrary, the effect of positive life events on decreases in depression (i.e., *b path*) was not significant and did not support hypothesis 2 for meaning in life. Greater initial depression did not attenuate the effect of meaning in life on increased positive life events and greater initial depression did not enhance the effect of positive life events on decreased depression. This does not support either hypothesis 3 or hypothesis 4 for meaning in life. The average standardized total effect, indirect effect, and direct effect are presented in Table 4 under the rows labeled "Moderate Depression". The significant total effect indicates meaning in life predicts decreased depression at 6 months. The variance explained by meaning in life was 0.7 %. The non-significant indirect effect suggests increased positive life events did not mediate this relationship. The percent mediation indicates only 1.8 % of meaning in life's effect is through increased positive life events.

The rows in Table 4 labeled "Low Depression" and "High Depression" represent the conditional mediation results at one standard deviation below and above mean (i.e., moderate) initial depression. The conditional total effects were both significant, suggesting meaning in life predicts decreased depression for people with low or high amounts of initial depression. The conditional indirect effects were both non-significant, suggesting increased positive life events do not mediate this relationship for people with low or high amounts of initial depression. Note, the percent mediation was less than 7 % for both low and high initial depression.

Discussion

The primary aim of this study was to examine whether two personality strengths—gratitude and meaning in life—could facilitate increased positive life events to decrease depression over time. Whether these mediation effects differed across initial levels of depression was also of interest. For low, moderate, and high initial depression, increased positive life events mediated the relationships between both personality strengths and decreased depression at 3 months. Positive life events did not predict decreased depression at 6 months though. Therefore, positive life events did not mediate the relationship between personality strengths and decreased depression at 6 months for any level of initial depression.

Personality and Positive Life Events

In all mediation models, both gratitude and meaning in life significantly predicted increases in positive life events from 0 to 3 months; however, the effect sizes were small (i.e., hypothesis 1). The positive life events in our measure are arguably dependent life events, implying individuals are partially in control of their occurrence. For example, a person that takes the initiative to run every day will increase their health or fitness, one of the positive life events in the measure. However, for the positive life events to occur individuals need to be motivated toward approach behaviors, something that is difficult for individuals with depression. The two personality strengths of gratitude and meaning in life may motivate individuals with depression to perform the behaviors, such as running, necessary to generate positive life events.

Gratitude may motivate individuals to pursue goals that are of benefit to other people (Froh et al. 2010). Grateful individuals may want to perform prosocial behaviors such as supporting their friends and family, volunteering, and giving to charity. These grateful acts would build emotional intimacy with others, one of the positive life events in the measure. Gratitude also builds social ties in the context of goal pursuit. Experimental evidence suggests gratitude makes individuals work harder at cooperative goals (Jia et al. 2014). Increased effort towards cooperative work goals could then lead to positive life events such as more money and improved living conditions. Furthermore, the greater number of grateful moments an individual experiences while behaving may serve as an emotional reward. When engaging in social and non-social behaviors, grateful individuals with depression would be more likely to feel the hedonic benefit of gratitude. That may be why individuals who completed a gratitude intervention spent more time exercising (Emmons and McCullough 2003). This extends to perceived hedonic benefit where grateful individuals are better able to make smart economic decisions that involve choosing future monetary rewards over current ones (DeSteno et al. 2014). Through the process of operant conditioning, individuals would be more likely to engage in future behaviors. This behavioral activation process could then put individuals in situations where positive life events are possible.

Meaning in life may motivate individuals to continue striving for their life goals (Emmons 2003). Other than religion or spirituality, some of the most common sources of meaning in life are pleasure, intimacy, achievement, and health (Schnell 2011). By striving for self-improvement in each of these areas, individuals set themselves up for increased fun experiences, emotional closeness, more money, and better health/fitness—four of the positive life events in the measure. The self-concordance model of goal strivings suggest striving for goals due to intrinsic motivation leads to more goal attainment, a potential catalyst of positive life events (Sheldon and Lyubomirsky 2006). Indeed, meaning in life predicts intrinsic strivings at each stage of life (Morgan and Robinson 2013).

Contrary to our hypotheses, initial depression severity did not attenuate the association between the two personality strengths and increases in positive life events (i.e., hypothesis 3). Instead, the influence of personality strengths was the same for those with low, moderate, and high initial depression. This suggests that the motivational anhedonia associated with higher levels of depression does not hinder the influence of personality strengths on positive life events. Personality strengths, such as gratitude and meaning in life, may still be able to motivate individuals with clinical depression to engage in positive life events.

Positive Live Events and Depression

Positive life events predicted changes in depression at 3-months follow up (i.e., hypothesis 2). This is consistent with past research finding a moderate, negative correlation between positive life events and depression (Lewinsohn and Graf 1973). Needles and Abramson's (1990) recovery model of depression argues that positive life events alone are not enough to decrease depression. The individual must also make internal, stable, and global attributions about the positive life events. This was represented by Needles and Abramson (1990) finding no main effect of positive life events, but a simple effect for those with internal, stable, and global attributions. However, it appears that our results go against their results by finding a main effect of positive life events. Indeed, there is no indication that participants attributed the cause of the positive life events to themselves, believed the positive life event would continue, or generalized the positive life event to their overall lives. Therefore, it may be that positive life events alone decrease depression, but that attribution style enhances their effects. Note, Needles and Abramson (1990) had very low statistical power for testing their model with only 42 participants. Therefore, their confidence intervals for the main effect of positive life events likely included our obtained effect size.

Although increases in positive life events predicted decreased depressive symptoms at 3-months follow-up, it did not at 6-months follow up. This suggests that positive life events may only have a temporary effect on depression. A meta-analysis found the effects of positive life events on subjective well-being sharply diminished over time (Luhmann et al. 2012). The effects of positive life events may be thwarted by the hedonic treadmill, where the elevated level of positive affect cannot be maintained long-term (Diener et al. 2006). This highlights the importance of developing a lifestyle with consistent positive life events month after month for preventing a resurgence of depression (e.g., Mochon et al. 2008). This is especially important given how common depression relapse is (Richards 2011). Our findings also point to the necessity of moving beyond cross-sectional and brief prospective studies with only two timepoints. Over the course of lengthier time periods, findings that seem prominent in cross-sectional and brief follow-up studies may diminish or disappear.

Consistent with hypotheses, the association between positive life events and decreases in depression increased as a function of initial levels of depression (i.e., hypothesis 4). It may be that individuals with clinical depression are not able to hold onto any hedonic benefits for very long (Bylsma et al. 2011). Then, when a hedonic benefit occurs—for example a positive life event—their negative emotion sharply declines; however, the decline is only temporary before the high negative emotion returns. On the contrary, individuals without many depression symptoms are able to keep hedonic benefits for longer periods of time, resulting in consistently low negative emotions. When a positive life event occurs, it does not decrease their already low negative emotions. Of course, one could think of this theoretical explanation as solely a statistical artifact where individuals with low initial depression hit a floor effect on follow-up depression.

Personality and Depression

Although they were not substantive hypotheses, we still tested the total and direct effects of personality on decreases in depression. For both 3 and 6 month follow up depression, gratitude and meaning in life each predicted decreased depression regardless of the initial level of depression. This is consistent with prior research showing that both higher gratitude and meaning in life can lead to less depression over time (Mascaro and Rosen 2005; Wood et al. 2008). The direct effects showed a similar trend except that the direct effect of meaning in life on 6 month follow up depression fell short of statistical significance. More interesting, initial depression attenuated the direct effects of personality on depression in three out of the four outcome models. This suggests that the unique effects of personality strengths,

independent of positive life events, are weaker for those with greater depression. It may be that personality strengths, such as gratitude and meaning in life, are better at preventing depression in individuals with relatively few symptoms compared with remitting depression in those with many symptoms. This explanation would be consistent with research that optimism is a better prevention factor than recovery factor in depression (Carver and Gaines 1987).

Clinical Implications

We believe our results present several clinical implications for using interventions that can increase gratitude and meaning in life (for more information, see Emmons and Stern (2013) on gratitude interventions and Steger et al. (2013) on meaning in life interventions). Increasing gratitude and meaning in life provides individuals with a potential avenue for spontaneous remission from depression. The positive life events arising from gratitude and meaning in life could provide individuals with depression the hedonic boost they need to overcome depression. We note the effects of positive life events appear short-lived indicating the need for aspects of personality (e.g., gratitude and meaning in life) that can consistently generate positive life events in a person's life month to month.

Although traditional psychotherapy reduces depressive symptoms below diagnostic thresholds, residual subclinical symptomatology often remain and are a robust predictor of future depression (Fava et al. 2007; Zimmerman et al. 2012). Well-being oriented therapies may be more effective at bringing individuals from subclinical depression to full functioning (Fava and Ruini 2003; Sin and Lyubomirsky 2009). Many of these well-being treatment manuals already emphasize gratitude and meaning in life and show promising results. Cognitive-behavioral therapies could benefit from incorporating these and other well-being components into their treatments for depression. Future research into cognitive-behavioral therapy for depression could assess the incremental validity of adding modules to increase the personality strengths of gratitude and meaning in life. Doing so could help relapse prevention, a continued problem for depression treatments (Gortner et al. 1998). Many authors have written about the potential benefit focusing on gratitude and meaning in life—as well as other personality strengths—could have for cognitive-behavioral therapy (e.g., Bono and McCullough 2006).

Limitations

There are limitations to the presented findings. The first is the possibility for a depressive cognitive style (e.g., ignoring the positive) and mood-congruent memory to confound the relationship between positive life events and 3 month follow-up depression. Both measures were completed by participants at the same time. This means that more depressed participants may have inaccurately reported the occurrence of positive life events due to not attending to them. For example, it is possible a depressed participant became closer to a friend emotionally, but did not report this occurring due to their core belief of social incompetence leading them to only attend to negative social interactions. In addition, more depressed participants may have attended to the positive enough to encode a life event as positive, but failed to remember the event when completing the life event measure (e.g., Bradley et al. 1995). It is possible depressive cognitive style and mood-congruent memories are the only reasons positive life events and 3-month follow-up depressive symptoms are related. However, it seems more likely depressive cognitive style may have simply overestimated the effect, particularly for the two more subjective positive life events: (1) "You had an experience that was very fun and exciting", (2) "You got emotionally closer to someone". Future research should obtain interview or informant reports of life events for depressed participants to prevent such confounds (De Los Reyes et al. 2013; Lewinsohn et al. 2003).

A second limitation was the small percentage of men in the sample (i.e., 17 %). Unfortunately, we lacked the statistical power to test separate mediation models for men and women due to the small proportion of men (Cohen 1992). Depression in men can take on a different form with increased externalizing behaviors and substance use, thus it is unclear if the results would generalize to men (Addis 2008). Third, the effects of gratitude and meaning in life on increased positive life events are small, indicating the need for replication with different measures and samples. As Meehl (1990) pointed out, the strength by which a theoretical hypothesis is tested diminishes with large sample sizes—like the present study.

Future Directions

Several future directions for research follow from our study. Depression remission research would benefit from more fine grained assessments of change processes. The relatively long three-month duration between time points in our study dampened our ability to compute growth curves and trajectories of change: all the change occurred in the first three months. Future research should assess participants on a weekly or biweekly basis to provide better opportunities to capture natural change processes that lead to depression remission.

Although the effects of positive life events are short-lived, individuals with prior clinical depressive episodes

are at an increased risk of developing more depressive episodes in the future (i.e., kindling hypothesis; Kendler et al. 2000). Therefore, more research is needed to understand how to sustain the effects of prior positive life events or foster consistent generation of positive life events. In addition, future research should focus on dependent life events because independent life events (e.g., winning the lottery) are likely to suffer the most from the limitations of the hedonic treadmill.

Conclusion

Research on depression remission has differentially focused on maladaptive factors rather than adaptive ones. Our results are the first of its kind to predict increases in positive life events and decreases in depression in a single model. The present study suggests the personality strengths of gratitude and meaning in life are remission factors that can decrease depression. In addition to their direct effects on depression, gratitude and meaning in life increase positive life events in individuals' lives. These positive life events then act as naturalistic interventions to help individuals overcome depression. Consistent with the hedonic treadmill, the effect of positive life events were short-lived (i.e., 3 months), suggesting future research should focus on how to help individuals consistently experience positive life events. We look forward to further research on how positive life events can help individuals overcome depression.

References

Addis, M. E. (2008). Gender and depression in men. *Clinical Psychology: Science and Practice, 15*(3), 153–168.

Addis, M. E., & Jacobson, N. S. (1996). Reasons for depression and the process and outcome of cognitive–behavioral psychotherapies. *Journal of Consulting and Clinical Psychology, 64*(6), 1417–1424.

Aiken, L. S., West, S. G., & Reno, R. R. (1991). *Multiple regression: Testing and interpreting interactions*. Thousand Oaks, CA: Sage.

Alonso, J., Petukhova, M., Vilagut, G., Chatterji, S., Heeringa, S., Üstün, T. B., et al. (2010). Days out of role due to common physical and mental conditions: Results from the WHO World Mental Health surveys. *Molecular Psychiatry, 16*, 1234–1246.

Ashby, F. G., & Isen, A. M. (1999). A neuropsychological theory of positive affect and its influence on cognition. *Psychological Review, 106*, 529–550.

Barlow, D. H., Sauer-Zavala, S., Carl, J. R., Bullis, J. R., & Ellard, K. K. (2014). The nature, diagnosis, and treatment of neuroticism back to the future. *Clinical Psychological Science, 2*, 344–365.

Baron, R. M., & Kenny, D. A. (1986). The moderator–mediator variable distinction in social psychological research: Conceptual, strategic, and statistical considerations. *Journal of Personality and Social Psychology, 51*, 1173–1182.

Bates, D., Maechler, M., Bolker, B., & Walker, S. (2015). *lme4: Linear mixed-effects models using Eigen and S4*. R package version 1.1-9.

Beck, A. T., Rush, A. J., Shaw, B. F., & Emery, G. (1979). *Cognitive therapy of depression*. New York: Guilford.

Beevers, C. G., & Meyer, B. (2002). Lack of positive experiences and positive expectancies mediate the relationship between BAS responsiveness and depression. *Cognition and Emotion, 16*, 549–564.

Bono, G., & McCullough, M. E. (2006). Positive responses to benefit and harm: Bringing forgiveness and gratitude into cognitive psychotherapy. *Journal of Cognitive Psychotherapy, 20*, 147–158.

Bradley, B. P., Mogg, K., & Williams, R. (1995). Implicit and explicit memory for emotion-congruent information in clinical depression and anxiety. *Behaviour Research and Therapy, 33*, 755–770.

Breen, W. E., Kashdan, T. B., Lenser, M. L., & Fincham, F. D. (2010). Gratitude and forgiveness: Convergence and divergence on self-report and informant ratings. *Personality and Individual Differences, 49*, 932–937.

Bromet, E., Andrade, L. H., Hwang, I., Sampson, N. A., Alonso, J., de Girolamo, G., et al. (2011). Cross-national epidemiology of DSM-IV major depressive episode. *BMC Medicine, 9*, 90.

Brown, T. A. (2007). Temporal course and structural relationships among dimensions of temperament and DSM–IV anxiety and mood disorder constructs. *Journal of Abnormal Psychology, 116*, 313–328.

Bylsma, L. M., Taylor-Clift, A., & Rottenberg, J. (2011). Emotional reactivity to daily events in major and minor depression. *Journal of Abnormal Psychology, 120*, 155–167.

Carver, C. S., & Gaines, J. G. (1987). Optimism, pessimism, and postpartum depression. *Cognitive Therapy and Research, 11*, 449–462.

Carver, C. S., Sutton, S. K., & Scheier, M. F. (2000). Action, emotion, and personality: Emerging conceptual integration. *Personality and Social Psychology Bulletin, 26*(6), 741–751.

Cho, S. (2008). Effects of logo-autobiography program on meaning in life and mental health in the wives of alcoholics. *Asian Nursing Research, 2*, 129–139.

Cho, M. J., & Kim, K. H. (1998). Use of the center for epidemiologic studies depression (CES-D) scale in Korea. *The Journal of Nervous and Mental Disease, 186*, 304–310.

Cohen, J. (1992). A power primer. *Psychological Bulletin, 112*, 155–159.

Cohen, S., & Hoberman, H. M. (1983). Positive events and social supports as buffers of life change stress. *Journal of Applied Social Psychology, 13*, 99–125.

Cole, D. A., & Maxwell, S. E. (2007). Bias in cross-sectional analyses of longitudinal mediation. *Psychological Methods, 12*, 23–44.

De Los Reyes, A., Thomas, S. A., Goodman, K. L., & Kundey, S. M. (2013). Principles underlying the use of multiple informants' reports. *Annual Review of Clinical Psychology, 9*, 123–149.

Delavari, H., & Nasirian, M. (2014). Logo therapy effect on anxiety and depression in mothers of children with cancer. *Iranian Journal of Pediatric Hematology and Oncology, 4*, 42–48.

DeSteno, D., Li, Y., Dickens, L., & Lerner, J. S. (2014). Gratitude a tool for reducing economic impatience. *Psychological Science, 25*, 1262–1267.

Diener, E., Lucas, R. E., & Scollon, C. N. (2006). Beyond the hedonic treadmill: Revising the adaptation theory of well-being. *American Psychologist, 61*, 305–314.

Dozois, D. J. A., & Dobson, K. S. (2004). *The prevention of anxiety and depression*. Washington, DC: American Psychological Association.

Ebersole, P. (1998). Types and depth of written life meanings. In P. Wong & P. Fry (Eds.), *The human quest for meaning: A handbook of psychological research and clinical applications* (pp. 179–191). Mahwah, NJ, US: Lawrence Erlbaum Associates Publishers.

Elliot, A. J., & Thrash, T. M. (2002). Approach-avoidance motivation in personality: Approach and avoidance temperaments and goals. *Journal of Personality and Social Psychology, 82*, 804–818.

Emmons, R. A. (1999). *The psychology of ultimate concerns: Motivation and spirituality in personality*. New York, NY: Guilford Press.

Emmons, R. A. (2003). Personal goals, life meaning, and virtue: Wellsprings of a positive life. In C. L. M. Keyes & J. Haidt (Eds.), *Flourishing: Positive psychology and the life well-lived* (pp. 105–128). Washington, DC: American Psychological Association.

Emmons, R. A., & Kneezel, T. E. (2005). Giving thanks: Spiritual and religious correlates of gratitude. *Journal of Psychology and Christianity, 24*, 140–148.

Emmons, R. A., & McCullough, M. E. (2003). Counting blessings versus burdens: An experimental investigation of gratitude and subjective well-being in daily life. *Journal of Personality and Social Psychology, 84*, 377–389.

Emmons, R. A., & Stern, R. (2013). Gratitude as a psychotherapeutic intervention. *Journal of Clinical Psychology: In Session, 69*, 846–855.

Ensel, W. M. (1986). Measuring depression: The CES-D scale. In N. Lin, A. Dean, & W. Ensel (Eds.), *Social support, life events, and depression* (pp. 51–70). New York, NY: Academic Press.

Fava, G. A., & Ruini, C. (2003). Development and characteristics of a well-being enhancing psychotherapeutic strategy: Well-being therapy. *Journal of Behavioral Therapy and Experimental Psychiatry, 34*, 45–63.

Fava, G. A., Ruini, C., & Belaise, C. (2007). The concept of recovery in major depression. *Psychological Medicine, 37*, 307–317.

Frankl, V. E. (1984). *Man's search for meaning* (3rd ed.). New York: First Washington Square Press. **(Original work published 1963)**.

Fredrickson, B. L. (2001). The role of positive emotions in positive psychology: The broaden-and-build theory of positive emotions. *American Psychologist, 56*, 218–226.

Fredrickson, B. L., Tugade, M. M., Waugh, C. E., & Larkin, G. R. (2003). What good are positive emotions in crisis? A prospective study of resilience and emotions following the terrorist attacks on the United States on September 11th, 2001. *Journal of Personality and Social Psychology, 84*, 365–376.

Froh, J. J., Bono, G., & Emmons, R. (2010). Being grateful is beyond good manners: Gratitude and motivation to contribute to society among early adolescents. *Motivation and Emotion, 34*, 144–157.

Glueckauf, R. L., & Quittner, A. L. (1992). Assertiveness training for disabled adults in wheelchairs: Self-report, role-play, and activity pattern outcomes. *Journal of Consulting and Clinical Psychology, 60*, 419–425.

Gortner, E. T., Gollan, J. K., Dobson, K. S., & Jacobson, N. S. (1998). Cognitive–behavioral treatment for depression: Relapse prevention. *Journal of Consulting and Clinical Psychology, 66*, 377–384.

Greenberg, P. E., Kessler, R. C., Birnbaum, H. G., Leong, S. A., Lowe, S. W., Berglund, P. A., & Corey-Lisle, P. K. (2003). The economic burden of depression in the United States: How did it change between 1990 and 2000? *Journal of Clinical Psychiatry, 64*, 1465–1475.

Haeffel, G. J., & Vargas, I. (2011). Resilience to depressive symptoms: The buffering effects of enhancing cognitive style and positive life events. *Journal of Behavior Therapy and Experimental Psychiatry, 42*, 13–18.

Hammen, C. (1991). Generation of stress in the course of unipolar depression. *Journal of Abnormal Psychology, 100*(4), 555–561.

Hammen, C. (2006). Stress generation in depression: Reflections on origins, research, and future directions. *Journal of Clinical Psychology, 62*, 1065–1082.

Hayes, A. F. (2013). *Introduction to mediation, moderation, and conditional process analysis: A regression-based approach*. New York, NY: Guilford Press.

Headey, B., & Wearing, A. (1989). Personality, life events, and subjective well-being: Toward a dynamic equilibrium model. *Journal of Personality and Social Psychology, 57*, 731–739.

Hudson, N. W., & Fraley, R. C. (2015). Volitional personality trait change: Can people choose to change their personality traits? *Journal of Personality and Social Psychology, 109*, 490–507.

Huppert, F. A., & Whittington, J. E. (2003). Evidence for the independence of positive and negative well-being: Implications for quality of life assessment. *British Journal of Health Psychology, 8*, 107–122.

Iacoviello, B. M., Alloy, L. B., Abramson, L. Y., Choi, J. Y., & Morgan, J. E. (2013). Patterns of symptom onset and remission in episodes of hopelessness depression. *Depression and Anxiety, 30*, 564–573.

Jia, L., Tong, E. M., & Lee, L. N. (2014). Psychological "gel" to bind individuals' goal pursuit: Gratitude facilitates goal contagion. *Emotion, 14*, 748–760.

Johnson, J. G., Han, Y., Douglas, C. J., Johannet, C. M., & Russell, T. (1998). Attributions for positive life events predict recovery from depression among psychiatric inpatients: An investigation of the Needles and Abramson model of recovery from depression. *Journal of Consulting and Clinical Psychology, 66*, 369–376.

Johnson, S. L., Joormann, J., & Gotlib, I. H. (2007). Does processing of emotional stimuli predict symptomatic improvement and diagnostic recovery from major depression? *Emotion, 7*, 201–206.

Kashdan, T. B., & Breen, W. E. (2007). Materialism and diminished well-being: Experiential avoidance as a mediating mechanism. *Journal of Social and Clinical Psychology, 26*, 521–539.

Kendler, K. S., Thornton, L. M., & Gardner, C. O. (2000). Stressful life events and previous episodes in the etiology of major depression in women: An evaluation of the "kindling" hypothesis. *American Journal of Psychiatry, 157*, 1243–1251.

Kenny, D. A., Korchmaros, J. D., & Bolger, N. (2003). Lower level mediation in multilevel models. *Psychological Methods, 8*, 115–128.

Kessler, R. C. (1997). The effects of stressful life events on depression. *Annual Review of Psychology, 48*, 191–214.

Kessler, R. C. (2012). The costs of depression. *Psychiatric Clinics of North America, 35*, 1–14.

Keyes, C. L. (2005). Mental illness and/or mental health? Investigating axioms of the complete state model of health. *Journal of Consulting and Clinical Psychology, 73*, 539–548.

King, L. A., Hicks, J. A., Krull, J. L., & Del Gaiso, A. K. (2006). Positive affect and the experience of meaning in life. *Journal of Personality and Social Psychology, 90*, 179–196.

Krause, N., Bruce, D., Hayward, R. D., & Woolever, C. (2014). Gratitude to god, self-rated health, and depressive symptoms. *Journal for the Scientific Study of Religion, 53*, 341–355.

Kuznetsova, A., Brockhoff, P. B., & Christensen, R. H. B. (2015). *lmerTest: Tests in linear mixed effects models*. R package version 2.0-29.

LaHuis, D. M., Hartman, M. J., Hakoyama, S., & Clark, P. C. (2014). Explained variance measures for multilevel models. *Organizational Research Methods, 17*, 433–451.

Lara, M. E., & Klein, D. N. (1999). Psychosocial processes underlying the maintenance and persistence of depression: Implications for understanding chronic depression. *Clinical Psychology Review, 19*, 553–570.

Lee, V., Cohen, S. R., Edgar, L., Laizner, A. M., & Gagnon, A. J. (2006). Meaning-making intervention during breast or colorectal cancer treatment improves self-esteem, optimism, and self-efficacy. *Social Science and Medicine, 62*, 3133–3145.

Lewinsohn, P. M., & Graf, M. (1973). Pleasant activities and depression. *Journal of Consulting and Clinical Psychology, 41*, 261–268.

Lewinsohn, P. M., & Libet, J. (1972). Pleasant events, activity schedules, and depressions. *Journal of Abnormal Psychology, 79*, 291–295.

Lewinsohn, P. M., Rohde, P., & Gau, J. M. (2003). Comparability of self-report checklists and interview data in the assessment of stressful life events in young adults. *Psychological Reports, 93*, 459–471.

Littman-Ovadia, H., & Nir, D. (2014). Looking forward to tomorrow: The buffering effect of a daily optimism intervention. *The Journal of Positive Psychology, 9*, 122–136.

Lüdtke, O., Roberts, B. W., Trautwein, U., & Nagy, G. (2011). A random walk down university avenue: Life paths, life events, and personality trait change at the transition to university life. *Journal of Personality and Social Psychology, 101*, 620–637.

Luhmann, M., Hofmann, W., Eid, M., & Lucas, R. E. (2012). Subjective well-being and adaptation to life events: A meta-analysis. *Journal of Personality and Social Psychology, 102*, 592–615.

Mascaro, N., & Rosen, D. H. (2005). Existential meaning's role in the enhancement of hope and prevention of depressive symptoms. *Journal of Personality, 73*, 985–1014.

McCullough, M. E., Emmons, R. A., & Tsang, J. A. (2002). The grateful disposition: A conceptual and empirical topography. *Journal of Personality and Social Psychology, 82*, 112–127.

McCullough, M. E., Kilpatrick, S. D., Emmons, R. A., & Larson, D. B. (2001). Is gratitude a moral affect? *Psychological Bulletin, 127*, 249–266.

McCullough, M. E., Tsang, J. A., & Emmons, R. A. (2004). Gratitude in intermediate affective terrain: Links of grateful moods to individual differences and daily emotional experience. *Journal of Personality and Social Psychology, 86*, 295–309.

McKnight, P. E., & Kashdan, T. B. (2009). Purpose in life as a system that creates and sustains health and well-being: An integrative, testable theory. *Review of General Psychology, 13*, 242–251.

Meehl, P. E. (1990). Appraising and amending theories: The strategy of Lakatosian Defense and the two principles that warrant it. *Psychological Inquiry, 1*, 108–141.

Mochon, D., Norton, M. I., & Ariely, D. (2008). Getting off the hedonic treadmill, one step at a time: The impact of regular religious practice and exercise on well-being. *Journal of Economic Psychology, 29*, 632–642.

Morgan, J., & Robinson, O. (2013). Intrinsic aspirations and personal meaning across adulthood: Conceptual interrelations and age/sex differences. *Developmental Psychology, 49*, 999–1010.

Mroczek, D. K., & Spiro, A. (2003). Modeling intraindividual change in personality traits: Findings from the normative aging study. *Journal of Gerontology: Psychological Sciences, 58B*, 153–165.

Needles, D. J., & Abramson, L. Y. (1990). Positive life events, attributional style, and hopefulness: Testing a model of recovery from depression. *Journal of Abnormal Psychology, 99*, 156.

Nezlek, J. B. (2011). *Multilevel modeling for social and personality psychology*. Thousand Oaks, CA: Sage Publications.

Nezlek, J. B., & Gable, S. L. (2001). Depression as a moderator of relationships between positive daily events and day-to-day psychological adjustment. *Personality and Social Psychology Bulletin, 27*, 1692–1704.

Ong, A. D., Bergeman, C. S., Bisconti, T. L., & Wallace, K. A. (2006). Psychological resilience, positive emotions, and successful adaptation to stress in later life. *Journal of Personality and Social Psychology, 91*, 730–749.

Orme, J. G., Reis, J., & Hertz, E. J. (1986). Factorial and discriminant validity of the center for epidemiological studies depression (CES-D) scale. *Journal of Clinical Psychology, 42*, 28–33.

Peeters, F., Nicolson, N. A., Berkhof, J., Delespaul, P., & deVries, M. (2003). Effects of daily events on mood states in major depressive disorder. *Journal of Abnormal Psychology, 112*, 203–211.

Pettit, J. W., & Joiner, T. E. (2006). *Chronic depression: Interpersonal sources, therapeutic solutions*. Washington, DC: American Psychological Association.

Polak, E. L., & McCullough, M. E. (2006). Is gratitude an alternative to materialism? *Journal of Happiness Studies, 7*, 343–360.

Posternak, M. A., & Miller, I. (2001). Untreated short-term course of major depression: A meta-analysis of outcomes from studies using wait-list control groups. *Journal of Affective Disorders, 66*, 139–146.

Preacher, K. J., Curran, P. J., & Bauer, D. J. (2006). Computational tools for probing interaction effects in multiple linear regression, multilevel modeling, and latent curve analysis. *Journal of Educational and Behavioral Statistics, 31*, 437–448.

Preacher, K. J., Rucker, D. D., & Hayes, A. F. (2007). Addressing moderated mediation hypotheses: Theory, methods, and prescriptions. *Multivariate Behavioral Research, 42*, 185–227.

Radloff, L. S. (1977). The CES-D scale a self-report depression scale for research in the general population. *Applied Psychological Measurement, 1*, 385–401.

Richards, D. (2011). Prevalence and clinical course of depression: A review. *Clinical Psychology Review, 31*, 1117–1125.

Roberts, B. W., & Capsi, A. (2003). The cumulative-continuity model of personality development: Striking a balance between continuity and change in personality traits across the life course. In U. M. Staudinger & U. Lindenberger (Eds.), *Understanding human development: Dialogues with lifespan psychology* (pp. 183–214). Dordrecht: Kluwer Publishers.

Roberts, B. W., & Mroczek, D. (2008). Personality trait change in adulthood. *Current Directions in Psychological Science, 1*, 31–35.

Schnell, T. (2011). Individual differences in meaning-making: Considering the variety of sources of meaning, their density and diversity. *Personality and Individual Differences, 51*, 667–673.

Scott, J., Eccleston, D., & Boys, R. (1992). Can we predict the persistence of depression? *The British Journal of Psychiatry, 161*, 633–637.

Seligman, M. E., Steen, T. A., Park, N., & Peterson, C. (2005). Positive psychology progress: Empirical validation of interventions. *American Psychologist, 60*, 410–421.

Sheldon, K. M., & Lyubomirsky, S. (2006). How to increase and sustain positive emotion: The effects of expressing gratitude and visualizing best possible selves. *The Journal of Positive Psychology, 1*(2), 73–82.

Simon, G. E., Fleck, M., Lucas, R., & Bushnell, D. M. (2004). Prevalence and predictors of depression treatment in an international primary care study. *American Journal of Psychiatry, 161*, 1626–1634.

Sin, N. L., & Lyubomirsky, S. (2009). Enhancing well-being and alleviating depressive symptoms with positive psychological interventions: A practice-friendly meta-analysis. *Journal of Clinical Psychology: In Session, 65*, 467–487.

Slade, M. (2010). Mental illness and well-being: The central importance of positive psychology and recovery approaches. *BMC Health Services Research, 10*, 1–14.

Spinhoven, P., Elzinga, B., Roelofs, K., Hovens, J., van Oppen, P., Zitman, F. G., & Penninx, B. W. J. H. (2012). The effects of neuroticism, extraversion, and positive and negative life events on a one-year course of depressive symptoms in euthymic previously depressed patients versus healthy controls. *The Journal of Nervous and Mental Disease, 199*, 684–689.

Steger, M. F., & Dik, B. J. (2009). If one is looking for meaning in life, does it help to find meaning in work? *Applied Psychology: Health and Well-Being, 1*, 303–320.

Steger, M. F., Frazier, P., Oishi, S., & Kaler, M. (2006). The meaning in life questionnaire: Assessing the presence of and search for meaning in life. *Journal of Counseling Psychology, 53*, 80–93.

Steger, M. F., Sheline, K., Merriman, L., & Kashdan, T. B. (2013). Using the science of meaning to invigorate values-congruent, purpose driven action. In T. B. Kashdan & J. Ciarrochi (Eds.), *Mindfulness, acceptance, and positive psychology: The seven foundations of well-being* (pp. 240–266). Oakland, CA: New Harbinger Publications Inc.

Stewart, W. F., Ricci, J. A., Chee, E., Hahn, S. R., & Morganstein, D. (2003). Cost of lost productive work time among US workers with depression. *JAMA, 289*, 3135–3144.

Stillman, T. F., Lambert, N. M., Fincham, F. D., & Baumeister, R. F. (2011). Meaning as magnetic force: Evidence that meaning in life promotes interpersonal appeal. *Social Psychological and Personality Science, 2*, 13–20.

Tay, L., & Diener, E. (2011). Needs and subjective well-being around the world. *Journal of Personality and Social Psychology, 101*, 354–365.

Tingley, D., Yamamoto, T., Hirose, K., Keele, L., & Lmai, K. (2014). Mediation: R package for causal mediation analysis. *Journal of Statistical Software, 59*(5), 1–39.

Treadway, M. T., Bossaller, N. A., Shelton, R. C., & Zald, D. H. (2012). Effort-based decision-making in major depressive disorder: A translational model of motivational anhedonia. *Journal of Abnormal Psychology, 121*, 553–558.

Vaidya, J. G., Gray, E. K., Haig, J., & Watson, D. (2002). On the temporal stability of personality: Evidence for differential stability and the role of life experiences. *Journal of Personality and Social Psychology, 83*, 1469–1484.

Vallerand, R. J. (2008). On the psychology of passion: In search of what makes people's lives most worth living. *Canadian Psychology, 49*, 1–13.

Warren, R., McLellarn, R., & Ponzoha, C. (1988). Rational-emotive therapy vs general cognitive-behavior therapy in the treatment of low self-esteem and related emotional disturbances. *Cognitive Therapy and Research, 12*, 21–37.

Wong, P. T. (1998). Implicit theories of meaningful life and the development of the personal meaning profile. In P. Wong & P. Fry (Eds.), *The human quest for meaning: A handbook of psychological research and clinical applications* (pp. 111–140). Mahwah, NJ: Lawrence Erlbaum Associates Publishers.

Wood, A. M., Froh, J. J., & Geraghty, A. W. (2010). Gratitude and well-being: A review and theoretical integration. *Clinical Psychology Review, 30*, 890–905.

Wood, A. M., Joseph, S., & Maltby, J. (2009). Gratitude predicts psychological well-being above the big five facets. *Personality and Individual Differences, 46*, 443–447.

Wood, A. M., Maltby, J., Gillett, R., Linley, P. A., & Joseph, S. (2008). The role of gratitude in the development of social support, stress, and depression: Two longitudinal studies. *Journal of Research in Personality, 42*, 854–871.

Wood, A. M., & Tarrier, N. (2010). Positive clinical psychology: A new vision and strategy for integrated research and practice. *Clinical Psychology Review, 30*, 819–829.

Zimmerman, M., Martinez, J. A., Attiullah, N., Friedman, M., Toba, C., Boerescu, D. A., & Rahgeb, M. (2012). Why do some depressed outpatients who are in remission according to the hamilton depression rating scale not consider themselves to be in remission? *The Journal of Clinical Psychiatry, 73*, 790–795.