

EMPIRICAL PAPER

Does gratitude writing improve the mental health of psychotherapy clients? Evidence from a randomized controlled trial

Y. JOEL WONG¹, JESSE OWEN², NICOLE T. GABANA¹, JOSHUA W. BROWN³, SYDNEY MCINNIS⁴, PAUL TOTH⁵, & LYNN GILMAN¹

¹Department of Counseling and Educational Psychology, Indiana University Bloomington, Bloomington, IN, USA; ²Department of Counseling Psychology, University of Denver, Denver, CO, USA; ³Department of Psychological and Brain Sciences, Indiana University Bloomington, Bloomington, IN, USA; ⁴University of Mississippi Medical Center, Jackson, MS, USA & ⁵Counseling and Psychological Services, Indiana University Bloomington, Bloomington, IN, USA

(Received 31 July 2015; revised 29 February 2016; accepted 1 March 2016)

Abstract

Although the past decade has witnessed growing research interest in positive psychological interventions (PPIs), their potential as adjunctive interventions for psychotherapy remains relatively unexplored. Therefore, this article expands the frontiers of PPI research by reporting the first randomized controlled trial to test a gratitude writing adjunctive intervention for psychotherapy clients. Participants were 293 adults seeking university-based psychotherapy services. Participants were randomly assigned to one of three conditions: (a) control (psychotherapy only), (b) a psychotherapy plus expressive writing, and (c) a psychotherapy plus gratitude writing. Participants in the gratitude condition wrote letters expressing gratitude to others, whereas those in the expressive writing condition wrote about their deepest thoughts and feelings about stressful experiences. About 4 weeks as well as 12 weeks after the conclusion of the writing intervention, participants in the gratitude condition reported significantly better mental health than those in the expressive and control conditions, whereas those in the expressive and control conditions did not differ significantly. Moreover, lower proportions of negative emotion words in participants' writing mediated the positive effect of condition (gratitude versus expressive writing) on mental health. These findings are discussed in light of the use of gratitude interventions as adjunctive interventions for psychotherapy clients.

Keywords: gratitude; psychotherapy; positive psychology; mental health; intervention

Positive psychology, defined as the scientific study of optimal human functioning, seeks to draw attention to positive subjective experiences, traits, and institutions (Seligman & Csikszentmihalyi, 2000). From its inception, positive psychology scholars have engaged in developing positive psychological interventions (PPIs)—activities that seek explicitly to foster positive emotions, behavior, cognitions, or meaning in life (Duckworth, Steen, & Seligman, 2005; Magyar-Moe, 2009; Wong, 2006). PPIs have also been applied to psychotherapy, for example, by encouraging therapists to focus on their clients' strengths (Cheavens, Strunk, Lazarus, & Goldstein, 2012; Flückiger & Grosse Holtforth, 2008; Rashid,

2015). In the same vein, counseling psychologists have identified the therapeutic processes by which therapists from diverse theoretical orientations utilize clients' strengths in psychotherapy (Gelso & Woodhouse, 2003; Scheel, Davis, & Henderson, 2013). Nevertheless, research has yet to test the use of PPIs as adjunctive interventions for psychotherapy clients.

Adjunctive interventions for psychotherapy are not considered the primary cause of change, but are intended to provide an incremental boost to treatment by incorporating the client's role as an active participant in the treatment process (Bohart & Wade, 2013). Additionally, they are typically

Correspondence concerning this article should be addressed to Y. Joel Wong, Indiana University Bloomington, Bloomington, IN, USA. Email: joelwong@indiana.edu

administered between rather than within psychotherapy sessions. Examples include physical exercise (e.g. Courneya et al., 2003) and writing activities (e.g. Graf, Gaudiano, & Geller, 2008).

The study of PPIs as adjunctive interventions for psychotherapy is important for several reasons. First, the rise of managed health care has exerted pressure for the provision of efficient and brief psychotherapy (Karon, 1995). Similarly, the demand for services at university counseling centers often exceeds available counseling resources (Hardy, Weatherford, Locke, DePalma, & D'Iuso, 2011). To this end, cost-effective PPIs could be a means to help clients derive the maximum possible benefit from treatment within the shortest amount of time.

Second, findings from a meta-analysis of psychotherapy component treatment studies might shed light on the benefits of adjunctive interventions (Bell, Marcus, & Goodlad, 2013). Bell et al. distinguished between studies in which a full treatment is compared to a dismantled treatment with at least one component removed and studies in which a new component is *added* to an existing treatment. Bell et al. found no differences between the full and dismantled treatments. However, treatments with added components yielded a significant, positive effect at follow-up, relative to existing treatments, and there was no significant difference in the effects at termination of treatment versus six-months follow-up (Flückiger, Del Re, & Wampold, 2015). This finding suggests that interventions added to existing treatments could enhance the effects of psychotherapy.

Third, PPIs might be a particularly good fit for psychotherapy clients who tend to report greater distress than the general population. A meta-analysis of PPIs showed that depressed individuals benefited more from such interventions than non-depressed individuals (Sin & Lyubomirsky, 2009). Perhaps PPIs' emphasis on positivity might help reduce clients' excessive focus on negative thoughts and emotions. Moreover, Layous and Lyubomirsky (2014) argued that PPIs might work best for depressed individuals when used in conjunction with psychotherapy rather than as stand-alone interventions.

Despite these benefits, research on the efficacy of PPIs as adjunctive interventions remains sparse. A review of the 66 studies in Bell et al.'s (2013) meta-analysis of psychotherapy component treatment studies revealed no research that tested the efficacy of PPIs as adjunctive interventions for psychotherapy. Therefore, we sought to address this literature gap by evaluating a gratitude adjunctive intervention for psychotherapy.

Although many PPIs exist (Magyar-Moe, 2009), we focused on a gratitude intervention because it is

arguably the PPI that has garnered the most empirical support (for a review, see Wood, Froh, & Geraghty, 2010). Notably, a randomized controlled trial that tested five PPIs found that participants assigned to a gratitude writing intervention exhibited the largest benefit in mental health (Seligman, Steen, Park, & Peterson, 2005). What follows is a review of the literature on gratitude and how our study builds upon this body of research.

Gratitude is acknowledging the value of a benefit in one's life or that one has received something of value from another person (Lambert, Graham, & Fincham, 2009). A growing body of experimental intervention studies attests to the mental health benefits of gratitude (for a review, see Lomas, Froh, Emmons, Mishra, & Bono, 2014). Although most gratitude interventions have been conducted using non-clinical samples (Wood et al., 2010), gratitude interventions have also been found to be effective with clinically distressed samples, such as individuals' impaired body image (Geraghty, Wood, & Hyland, 2010a, 2010b). Most gratitude interventions can be classified into one of two types—writing letters expressing gratitude to another person and listing things one is grateful for (Kaczmarek et al., 2015). However, gratitude letter writing might be a particularly good fit for psychotherapy clients because it has the added advantage of focusing individuals' attention on positive interpersonal connections. Moreover, the process of detailing why one is grateful to another person in a letter might help create a narrative of the self that fosters a greater sense of meaning for clients (Toepfer, Cichy, & Peters, 2012).

The current study builds on this body of research by being the first to test an adjunctive gratitude intervention for psychotherapy clients. Our study also addresses several other important limitations in previous gratitude intervention research. Wood et al. (2010) observed that most gratitude intervention studies involved comparisons with placebo activities that were not intended to be clinically useful. They argued that to demonstrate the clinical utility of gratitude interventions, researchers should compare gratitude interventions with other evidence-based interventions as well as show that gratitude interventions when *added to* an effective treatment are more efficacious than the treatment without the gratitude intervention. Therefore, we sought to compare a gratitude adjunctive intervention with a psychotherapy only condition and an expressive writing adjunctive intervention for psychotherapy clients. Expressive writing, which involves writing about one's thoughts and feelings about distressing experiences, has been shown across numerous studies to produce positive mental health benefits (Pennebaker & Chung, 2011). Expressive writing is an ideal

intervention for comparison because of its broad similarity to gratitude letter writing—both are low-cost writing interventions. Of particular relevance to our study, a psychotherapy study found that clients who engaged in expressive writing reported greater reductions in anxiety and depression relative to those who only received psychotherapy (Graf et al., 2008). Despite these benefits, we hypothesized that gratitude letter writing would be more efficacious than expressive writing because the former’s emphasis on positive interpersonal connections might be particularly useful in helping clients shift their thoughts and feelings away from negative to positive experiences (Bono & McCullough, 2006).

Beyond our comparison with expressive writing, our study breaks new ground by testing a series of linguistic dimensions that might explain why our gratitude intervention might be more efficacious than expressive writing. Several mechanisms underlying the salutary effects of gratitude have been identified (Emmons & Mishra, 2011). Consistent with the relational nature of gratitude, previous research has shown that gratitude was positively associated with stronger social connections (Algoe, Haidt, & Gable, 2008). In addition, Emmons and Mishra theorized that gratitude reduces negative emotions because a focus on the benevolence of others is incompatible with toxic emotions such as resentment. Gratitude might also help cultivate positive emotions that serve as protective resources against psychological distress (Wood et al., 2010). Aligning with these notions, previous correlational and experimental research has demonstrated the link between gratitude and increased positive affect and reduced negative emotions (Emmons & McCullough, 2003; Wood et al., 2010).

Although the above hypothesized mechanisms can be tested using self-report questionnaires, one limitation in gratitude research is a neglect of the content of gratitude writing. This omission is striking because there is mounting evidence from the field of psycholinguistics that the words people use offer important clues about their psychosocial functioning (Tausczik & Pennebaker, 2010). Collectively, more than 100 language-based studies have demonstrated that the percentage of certain types of words people use are associated with their well-being and social cognitive processes (Tausczik & Pennebaker, 2010). For instance, a study found that mothers with a pre-occupied attachment state of mind used more anger words (e.g. *angry*) than those with a dismissing attachment state of mind during the Adult Attachment Interview (Cassidy, Sherman, & Jones, 2012).

We surmise that the theorized mechanisms of improved social connections, increased positive emotions, and reduced negative emotions would be reflected in increased use of first person plural

words (hereafter known as *we* words) and positive emotion words, as well as reduced use of negative emotion words in gratitude letter writing. Moreover, these three linguistic dimensions have been linked to various psychosocial outcomes, as reflected in research demonstrating (a) the association between the use of *we* words and greater health benefits (Rohrbaugh, Mehl, Shoham, Reilly, & Ewy, 2008), (b) the positive link between use of negative emotion words and depression (Rude, Gortner, & Pennebaker, 2004), and (c) the relationship between use of positive emotion words and better family adjustment and health (Danner, Snowdon, & Friesen, 2001; Pennebaker & Francis, 1996).

Against this backdrop, this randomized controlled trial evaluated the efficacy of a gratitude letter writing intervention as an adjunctive intervention for psychotherapy clients. Participants were randomly assigned to a psychotherapy only condition, a psychotherapy plus expressive writing condition, and a psychotherapy plus gratitude writing condition. First, we hypothesized that at 4 and 12 weeks after the conclusion of the writing interventions, gratitude clients would report better mental health than control and expressive writing clients. Second, we hypothesized that differences in mental health outcomes between gratitude and expressive writing participants 12 weeks after the writing interventions would be mediated by lower use of negative emotion words and greater use of positive emotion words and *we* words in the gratitude letters relative to the expressive essays.

Method

Participants

Participants consisted of 293 adults (*M* age = 22 years, *SD* = 5 years) seeking individual psychotherapy at either a counseling center or a community-based training clinic at Indiana University, USA (see Table I for participants’ demographic information).

Table I. Participants’ demographic characteristics (*N* = 293).

Site for receiving psychotherapy	Counseling center	277 (95%)
	Training clinic	16 (5%)
Gender	Female	190 (65%)
	Male	99 (34%)
	Unspecified	4 (1%)
Race	Asian/Asian American	24 (8%)
	Black/African American	11 (4%)
	Latino(a)/Hispanic American	16 (6%)
	Native American/American Indian	1 (<1%)
	White/European American	230 (79%)
	Unspecified	11 (4%)

Participants were eligible for the study if they were new clients seeking psychotherapy, were at least 18 years old, and intended to attend at least three sessions of therapy at the time of recruitment. On average, participants exhibited clinical levels of distress just before their intake session (Time 1), as evidenced by scores below the clinical cutoff score of 2.78 on the General Mental Health (GMH) Index of the Behavioral Health Measure-20 (see Table III; Kopta, Owen, & Budge, 2015).

Procedures

Participants were recruited just before their psychotherapy intake session to a study entitled, "Writing and counseling." To avoid expectancy effects, neither therapists nor clients were told that the goal of the study was to evaluate a gratitude intervention. Participants were told their therapists would not be informed about whether they participated in the study. Participants were randomly assigned to one of three conditions: gratitude writing, expressive writing, or control (see CONSORT flowchart in Figure 1). For both writing conditions, participants were asked to complete three writing assignments. The first assignment was sent to participants on the day of recruitment, the second assignment one week later, and the third a week after that. Participants were instructed to write continuously for at least 20 minutes in each session and could use more time if needed.

In the gratitude condition, participants were asked in each writing session to write a letter expressing gratitude to a person they had not properly thanked. The instructions were adapted from those described by Magyar-Moe (2009). Participants were encouraged to describe specific things the person did for them, how the person impacted their lives, and how they felt toward the person. Participants could write to the same person or different individuals across their three letters. Across the three writing sessions, the most common intended recipients were friends (28%, 35%, and 41%), mothers (31%, 22%, and 20%), and fathers (17%, 12%, and 9%—percentages were based on the first, second, and third letters, respectively). Following Huffman et al. (2011), participants were given the option of whether to send their letters to their intended recipients (only 23% delivered their letter to at least one recipient).

The instructions in the expressive writing condition were similar to those in previous expressive writing studies (Pennebaker, 1994). Participants were instructed to write about the most stressful and upsetting experiences of their lives for all three sessions. Participants in the control group did not complete any writing assignments.

A measure of GMH was administered to all participants just before the intake session (Time 1), 3 weeks after the intake (1 week after the final writing session; Time 2), as well as 4 weeks (Time 3), and 12 weeks (Time 4) after the last writing session. Time 1 questionnaires were completed online using computers at the counseling center/training clinic. All other questionnaires and writing activities were completed online using computers of participants' choice. Participants were compensated a minimum of \$10 and a maximum of \$40, depending on the number of surveys and writing activities they completed.

Intake and psychotherapy sessions were typically 50 minutes long. Participants attended an average of two individual psychotherapy sessions at Time 2 ($SD = 1.02$). At the counseling center, therapists were master's level counselors/clinical social workers, doctoral-level psychologists, and doctoral students training to be psychologists. At the training clinic, the therapists were master's and doctoral trainees in counseling and counseling psychology, respectively. In both sites, the therapists' theoretical orientation was diverse, although most therapists identified as integrative/eclectic and incorporated cognitive-behavioral, psychodynamic, and/or family systems theories in their treatment approach.

Measures

Behavioral Health Measure-20 (BHM-20; Kopta & Lowry, 2002). The BHM-20 is a 21-item client-report clinical outcome measure comprised of three main clusters of items: well-being (e.g. "How satisfied have you been with your life?"), psychological symptoms (clinical symptoms, such as depression, anxiety, and substance use), and life functioning (relationships, life enjoyment, and work/school functioning). We utilized the GMH index, which is the average score of all items except the twenty-first item, which is only answered by clients who reported suicidal tendencies. The items are rated on a Likert-type scale ranging from 0 to 4, with higher scores indicating better mental health. The psychometric properties of the BHM-20 have been supported in prior studies (e.g. strong correlations ($r_s > .81$) with a variety of psychological functioning and therapy outcomes measures; see Kopta & Lowry, 2002). In this study, Cronbach's alphas were .90 at Times 1 and 2 and .92 at Times 3 and 4).

Linguistic inquiry word count (LIWC; Pennebaker, Booth, & Francis, 2007; Pennebaker, Chung, Ireland, Gonzales, & Booth, 2007). We used LIWC a computer text analysis software that enables researchers to study people's psychological profiles in a non-intuitive way that obviates the problem of

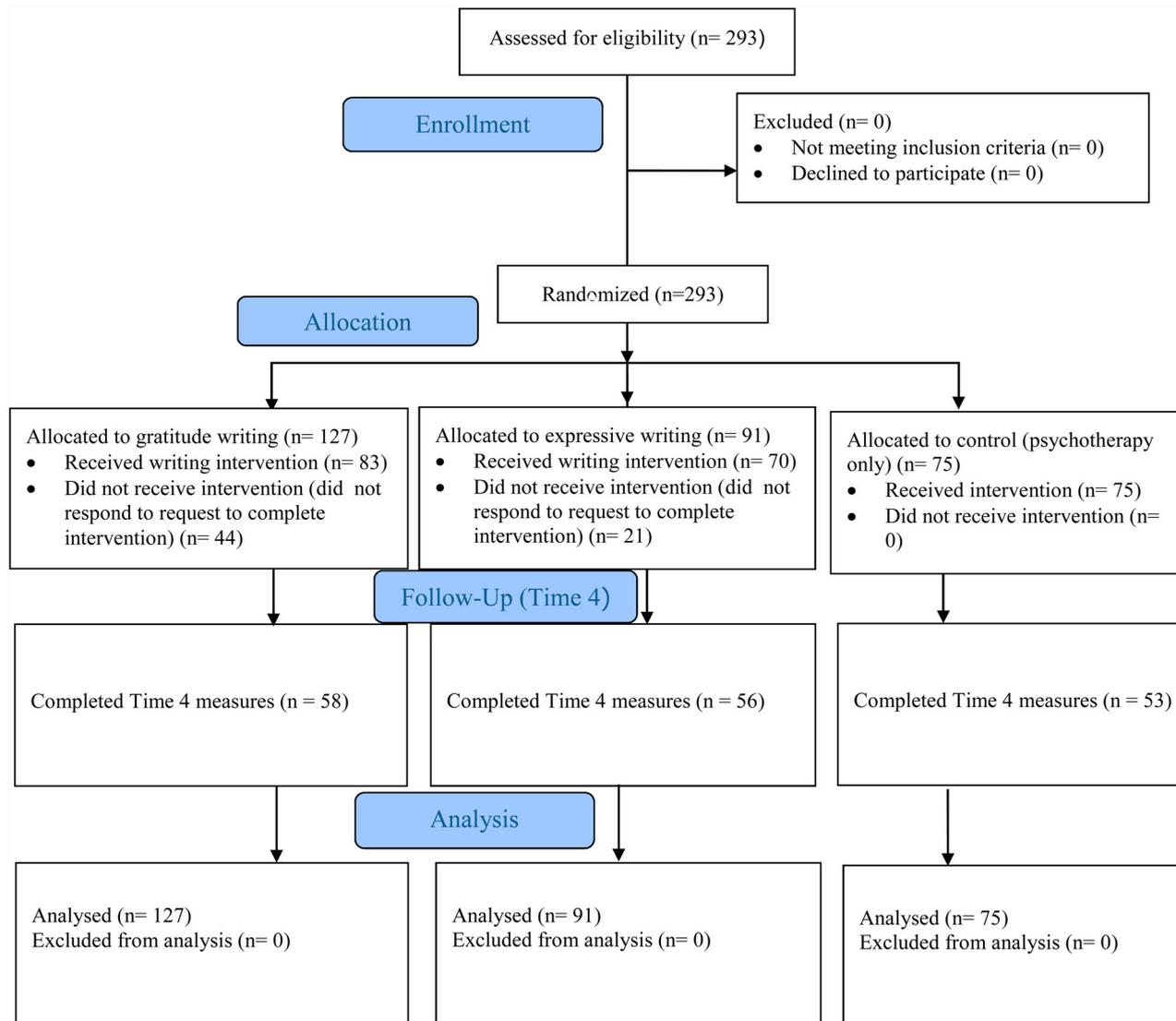


Figure 1. CONSORT Flow Diagram. We used the intent-to-treat principle for data analysis, which preserved randomized data from all participants regardless of attrition or noncompliance (Atkins, 2009). Missing data were addressed using the FIML method.

response bias (e.g. self-deception and social desirability) present in self-report measures (Pennebaker, Mehl, & Niederhoffer, 2003). LIWC categorizes words into meaningful linguistic dimensions based on proportion of use. We focused on the percentage of positive emotion (e.g. *love, happy*), negative emotion (e.g. *sad, angry*), and *we* words (e.g. *we, our*) in participants' writing samples across all writing sessions in the gratitude and expressive writing conditions. Evidence for the reliability and validity of the LIWC linguistic dimensions based on more than 100 studies was summarized by Tausczik and Pennebaker (2010). For example, use of *we* words have been associated with higher group identity, social connection, and integration (Pennebaker et al., 2003). Also, across three studies, Kahn, Tobin, Massey, and Anderson (2007) provided validity evidence that LIWC's computation of positive and emotion words are accurate markers of individuals' emotional expression. For instance, sad and amusing autobiographical writing samples differed in the proportion of positive and negative emotion words in expected ways.

Statistical Analysis

Before testing our hypotheses, we first examined whether the treatment conditions had similar GMH scores at Time 1. This test was conducted to determine whether the randomization procedures were adequate. We also conducted analyses to determine whether the control condition was statistically different than the expressive writing condition in outcomes at GMH Time 4 or in the rate of change (i.e. slope). We did so as the main focus of our study was on the gratitude writing condition as compared to alternatives. This first step also allowed us to provide more parsimonious tests of the hypotheses.

To test our hypotheses, we conducted multilevel growth curve models (i.e. time nested within clients).¹ This approach presents several advantages over ordinary least square analyses (e.g. repeated measures ANOVA and ANCOVA), including the ability to accommodate partially missing data (e.g. data for only one out of four repeated measures), unequally spaced time points in repeated measures, non-constant correlations among repeated measures, and interdependencies of multiple time points for each client (Curran, Obeidat, & Losardo, 2010). We tested four multilevel growth curve models. The only difference in the models is the centering of the intercept at Time 1, Time 2, Time 3, or Time 4. We did this to illustrate the differences in the intercept between the conditions over time. Specifically, we tested whether the treatment condition would predict the intercept (i.e. GMH scores at the four

time points in the respective models) as well as the slope (i.e. rate of change).

Next, we added the three linguistic variables to the growth curve model described above. Specifically, the multiple mediation model included: (a) a test of treatment condition on the three linguistic variables, which are paths a1 (positive emotion words), a2 (negative emotion words), and a3 (*we* words); (b) a test of the three linguistic variables on the intercept (i.e. Time 4 GMH), which represents paths b1 (positive emotion words), b2 (negative emotion words), and b3 (*we* words); (c) a test of three linguistic variables on slope (i.e. rate of change), which include d1 (positive emotion words), d2 (negative emotion words), and d3 (*we* words); (d) a test of treatment condition on intercept (i.e. Time 4 GMH) and slope (i.e. rate of change), which are denoted by c1' (intercept) and c2' (slope); and lastly, (e) a test of the indirect effects for $a1*b1$, $a2*b2$, $a3*b3$, $a1*d1$, $a2*d2$, and $a3*d3$. Confidence intervals were produced via accelerated bootstrap estimates, using 5000 bootstraps.

For all analyses, we used the intent-to-treat principle, which seeks to analyze all randomized data regardless of participant attrition or noncompliance (Atkins, 2009). This approach is more rigorous than the practice of deleting data from participants who dropped out of the study or who were noncompliant because in real world clinical settings, the effects of treatments are often muted by a lack of compliance by those who are supposed to receive treatment (Atkins, 2009). To address missing data in our growth curve models, we utilized the full information maximum likelihood (FIML) method. The FIML method provides estimations for missing data based on all available data (Schlomer, Bauman, & Card, 2010). This method assumes the data is missing at random (MAR). Our data meet the MAR assumption because there is no evidence that the values of the variables that were missing were associated with the reason why they were missing. The FIML method is superior to conducting a listwise deletion and is one of the best methods for handling missing data because it has been shown to provide unbiased parameter estimates and standard errors (Schlomer et al., 2010). In our discussion section, we address the issue of participant attrition and missing data in more detail. A one-tailed test was used for our main analyses because our hypotheses were directional in nature.

Results

Preliminary Results

As to be expected with randomization, there were no significant differences in Time 1 GMH scores across

Table II. Fixed effects of gratitude condition versus expressive writing and control conditions on mental health.

	Model 1 Coefficient (SE) Time 1	Model 2 Coefficient (SE) Time 2	Model 3 Coefficient (SE) Time 3	Model 4 Coefficient (SE) Time 4
Intercept	2.30 (0.05)***	2.48 (0.04)***	2.67 (0.05)***	2.86 (0.06)***
Gratitude	0.05 (0.08)	0.10 (0.07)	0.14 (.08)*	0.19 (0.10)*
Slope	0.19 (0.02)***	0.19 (0.02)***	0.19 (0.02)***	0.19 (0.02)***
Gratitude	0.05 (0.04)	0.05 (0.04)	0.05 (0.04)	0.05 (0.04)

Note. Gratitude = gratitude conditions versus other conditions.

*** $p < .001$.

* $p < .05$.

the three conditions ($ps > .50$). Although all clients completed the GMH at Time 1, some clients did not complete the GMH assessments at Times 2, 3, and 4. Overall, 41% ($n = 52$) of clients in the gratitude condition provided complete data at all four time points, which was a lower proportion than the clients in the expressive condition (57%, $n = 52$, $p < .05$) and the control condition (67%, $n = 50$, $p < .05$). However, Time 1 GMH scores were not significantly related to whether GMH scores at Times 2, 3, and 4 were missing, $p > .05$. Additionally, we assessed participants' trait gratitude at Time 1 based on the Gratitude Questionnaire-6 (McCullough, Emmons, & Tsang, 2002); there was however no evidence that participants who had missing GMH data at Times 2, 3, and 4 had different levels of trait gratitude than those with complete GMH data at these time points, $p > .05$.²

In our initial test of differences between the expressive writing and control conditions, there were no significant differences between these conditions in either slope ($b = .0001$, $SE = .04$, $p = .50$) or at Time 4 ($b = .046$, $SE = .12$, $p = .35$). Therefore, we combined participants from both conditions into one group in our subsequent comparisons with the gratitude condition. Regardless of condition, clients from Time 1 to Time 4 demonstrated a large-size growth in GMH scores (Cohen's $d = 0.98$; see Table III).

Primary Analyses

In the growth curve models, the slope was statistically significant, $b = 0.19$, $SE = 0.02$, $p < .001$. The clients in the expressive writing/control conditions gained 0.19 points on the GMH at each wave and clients in the gratitude condition gained 0.24 points on the GMH at each wave (0.19 slope effect + .05 condition \times slope effect). Although those in the gratitude condition gained more at each wave, there was not a statistically significant time \times condition effect ($p > .05$). As seen in Table II, there was no significant

difference between the conditions when the intercept was centered to reflect Time 1 or Time 2 GMH scores, $d = 0.08$ ($p = .507$), $d = 0.16$ ($p = .156$), respectively. However, at Times 3 and 4, clients in the gratitude condition reported significantly higher GMH scores than those in the other two conditions, $d = 0.22$ ($p = .031$), $d = 0.30$ ($p = .027$), respectively (see Table III).

We also conducted a multiple mediation model with the three linguistic variables (positive and negative emotion words, as well as *we* words) as the mediators between condition and GMH scores (see above). In this analysis, only clients in the gratitude and expressive writing conditions were included (clients in the control condition did not participate in writing exercises, so they were excluded from the analysis). The means and standard deviations for the three linguistic variables are displayed in Table III.

As seen in Table IV, gratitude clients used a greater proportion of positive emotion words ($d = 1.56$) (a1) and *we* words ($d = 0.81$) (a3), and a lower percentage of negative emotion words ($d = -1.06$) (a2) than expressive writing clients ($ps < .001$). However, only negative emotion words were significantly associated with the intercept ($p = .047$) and none of the

Table III. Descriptive statistics.

	Gratitude writing <i>M</i> (SD)	Expressive writing/ control <i>M</i> (SD)
GMH T1	2.31 (0.46)	2.24 (0.35)
GMH T2	2.66 (0.41)	2.58 (0.32)
GMH T3	2.91 (0.33)	2.75 (0.41)
GMH T4	2.99 (0.40)	2.84 (0.38)
	Gratitude Writing	Expressive Writing
Positive Emotions	5.02 (1.42)	2.17 (0.75)
Negative Emotions	1.45 (0.68)	2.96 (0.89)
<i>We</i> words	1.25 (0.91)	0.60 (0.44)

Note: GMH = General Mental Health Index of the Behavioral Health Measure-20.

Table IV. Multiple mediation model predicting mental health outcome at time 4.

Paths a1–a3	Positive	Negative	We
	Coefficient (SE)	Coefficient (SE)	Coefficient (SE)
Gratitude	1.56 (0.10)*** (a1)	-1.38 (0.12)*** (a2)	0.82 (0.14)*** (a3)
Paths b1–b3 & d1–d3	Intercept	Slope	
	Coefficient (SE)	Coefficient (SE)	
Positive	-0.10 (0.10) (b1)	0.01 (0.04) (d1)	
Negative	-0.19 (0.10)* (b2)	-0.01 (0.03) (d2)	
We	-0.01 (0.08) (b3)	-0.01 (0.03) (d3)	
Path c'	Intercept	Slope	
	Coefficient (SE)	Coefficient (SE)	
Gratitude	0.09 (0.23) (c1)	0.02 (0.08) (c2)	
Indirect Effects	Intercept	Slope	
	Coefficient (SE)	Coefficient (SE)	
Positive	-0.14 (0.15) (a1*b1)	0.07 (0.22) (a1*d1)	
Negative	0.24 (0.12)* (a2*b2)	0.04 (0.14) (a2*d2)	
We	-0.01 (0.06) (a3*b3)	-0.01 (0.09) (a3*d3)	

Note. Gratitude = gratitude versus expressive writing condition.

*** $p < .001$.

* $p < .05$.

linguistic variables was associated with the slope ($ps > .05$). The only significant indirect effect was for the path from condition to negative emotion words to intercept, $a2*b2 = 0.24$, $p = .025$, 95% $CI = [0.035, 0.468]$.

The following excerpt illustrates the writing of a participant in the gratitude condition whose GMH scores increased from Time 1 through Time 4:

Dear mom, I want to thank you for all the things you have done for me. You have always been there for me. No matter what. Even when I've treated you badly or not been fair to you, you have always been there for me. I thank you because even during bad times, you have kept by my side and have not let my negative comments or attitudes affect you ...

Discussion

To our knowledge, this is the first randomized controlled trial to test the efficacy of a positive psychological adjunctive intervention for psychotherapy clients. Our study extends the frontiers of positive psychology and the science of gratitude in several ways. For one, to address the clinical utility of a gratitude intervention, we followed Wood et al.'s (2010) recommendation to compare a gratitude intervention with another evidence-based intervention (expressive writing) as well as to use an additive component treatment design. Participants from the gratitude condition and the other

conditions did not differ significantly in their levels of mental health just before the intake session and 3 weeks after the intake. However, as hypothesized, we found that at 4 and 12 weeks after the writing intervention, psychotherapy clients who were randomly assigned to participate in gratitude writing reported better mental health than those who were assigned to expressive writing and to the control group. The effect size for the change in all participants' self-reported mental health from Time 1 to Time 4 was large ($d = 0.98$), whereas the difference between the gratitude condition and the other two conditions at Time 4 was small ($d = 0.30$). Nonetheless, Bell et al. (2013) observed that small effects are common in component design treatment studies because the component that is added or removed from an existing treatment is not expected to be the only ingredient that is effective. In our study, psychotherapy was assumed to be the primary cause of change, whereas gratitude writing was intended as an adjunctive intervention to provide an incremental boost.

One interesting finding is that the benefits derived from the gratitude intervention gradually accrued over time. Although there were no significant differences in mental health outcomes at Time 2, gratitude clients reported better mental health than those in the other two conditions 4 weeks after the writing interventions at Time 3 ($d = 0.22$), and this difference peaked at Time 4, 12 weeks after the writing interventions ($d = 0.30$). This finding is encouraging because

in Seligman et al.'s (2005) study, the benefits from a gratitude intervention dissipated three months after the intervention. Perhaps gratitude clients in our study could harness the full potential of the writing intervention over time by discussing with their therapists insights they had gained from their writing.

Contrary to previous findings (see Pennebaker & Chung, 2011), expressive writing conferred no additional mental health benefits than psychotherapy only. Perhaps clients already had the opportunity to discuss their stressful experiences in their therapy intake session, and therefore expressive writing provided no further benefits.

Our study also tested three linguistic dimensions in participants' writing that might explain why our gratitude intervention was efficacious. One benefit of our linguistic approach is that we could assess clients' psychological profiles in a way that avoids the problem of response bias present in self-report measures (Pennebaker et al., 2003). Gratitude participants used a greater proportion of *we* words and positive emotion words and a lower percentage of negative emotion words than expressive writing participants. Nonetheless, the reduced use of negative emotion words was the only linguistic dimension that predicted better mental health at Time 4 and the only mediator of differences in mental health between participants in the gratitude and expressive writing conditions. As theorized by Emmons and Mishra (2011), by focusing on the positive qualities of one's benefactor, gratitude might help to reduce toxic emotions, such as resentment and envy, which in turn promotes better mental health.

Several limitations and directions for future research should be acknowledged. First, we did not have sufficient data to test for therapist effects—we do not know whether differences among therapists were associated with client outcomes. Previous research has found that therapist effects accounted for a far larger amount of variance in client outcomes than the type of treatment clients received (see Baldwin & Imel, 2013). However such research involves comparisons of psychotherapy treatments administered by therapists. In contrast, both gratitude and expressive writing in our study were self-directed interventions which did not involve therapists; therefore, it is less probable that the treatment effect we found would disappear if therapist effects had been accounted for.

Second, most of our participants were White/European American, and our sample was too small to assess cultural differences. Given the relational nature of gratitude, we recommend that future research address the possibility that clients from more collectivistic backgrounds (e.g. Asian Americans) might benefit more from a gratitude letter writing intervention than clients from more individualistic backgrounds.

Third, our attrition rate for the gratitude writing condition exceeded that of the expressive writing condition. This did not affect the methodological rigor of our comparisons between both conditions because we used the intent-to-treat principle (Atkins, 2009) and the FIML estimation method to address missing data. In addition, the drop-out rate for self-administered Internet-based interventions tend to be high because participants do not receive face-to-face encouragement to persist in the intervention (see Geraghty et al., 2010a). Notably, our attrition rate was lower than that of a recent gratitude diary intervention for body dissatisfaction, which had a 70% attrition rate (Geraghty et al., 2010a). Nevertheless, some participants may have struggled with the gratitude writing intervention. A recent study found that college students felt less efficacious about writing a gratitude letter as compared to keeping a gratitude journal, which in turn predicted lower rates of completing the gratitude letter writing intervention (Kaczmarek et al., 2015). Therefore, future research could examine whether keeping a gratitude journal (listing things one is grateful for) might yield similar mental health benefits for psychotherapy clients relative to gratitude letter writing, while reducing the attrition rate.

Fourth, a recent meta-analysis found that, overall, the effect size of gratitude interventions remain relatively small (Davis et al., 2016). Researchers should therefore consider strategies to enhance the effects of gratitude interventions, such as psychoeducational groups that use a time-intensive curriculum to help individuals cultivate gratitude (Davis et al., 2016).

In terms of clinical implications, we encourage therapists to consider gratitude letter writing as a low-cost intervention that can complement the benefits of psychotherapy. To be clear, we do not recommend the indiscriminate use of gratitude letter writing by therapists. Some but not all clients would find this intervention meaningful. Perhaps clients who recognize the value of interpersonal relationships might be most motivated to write letters of gratitude. In the context of psychotherapy, a therapist could recommend gratitude letter writing as homework to her or his clients. Therapists who take the time and effort to explain the rationale and benefits of a gratitude intervention are likely to be more successful in motivating clients to complete and derive benefits from this activity (Wampold & Imel, 2015). Overall, we call for more clinical attention to the promise of PPIs for psychotherapy clients.

Funding

The authors of this study gratefully acknowledge that this research was supported by the Expanding the

Science and Practice of Gratitude Project run by the Greater Good Science Center with funding from the John Templeton Foundation.

Notes

- ¹ We asked clients to report the names of their therapists; however, in over 50% of the cases, the clients did not report this information. Accordingly, we were unable to nest clients within therapists in our analyses.
- ² We also tested whether participants differed in the main measures in our study – GMH for Times 1–4, and the percentage of positive emotion, negative emotion, and *we* words – as a function of their site for seeking services (counseling center versus training clinic), gender (female versus male), and race (White versus other). A series of 21 *t*-tests (with a conservative significance test of $p < .01$) revealed no significant differences.

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