

Gratitude and depressive symptoms: The role of positive reframing and positive emotion

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Eight studies ($N=2,973$) tested the theory that gratitude is related to fewer depressive symptoms through positive reframing and positive emotion. Study 1 found a direct path between gratitude and depressive symptoms. Studies 2–5 demonstrated that positive reframing mediated the relationship between gratitude and depressive symptoms. Studies 6–7 showed that positive emotion mediated the relationship between gratitude and depressive symptoms. Study 8 found that positive reframing and positive emotion simultaneously mediated the relationship between gratitude and depressive symptoms. In sum, these eight studies demonstrate that gratitude is related to fewer depressive symptoms, with positive reframing and positive emotion serving as mechanisms that account for this relationship.

Keywords: Gratitude; Depressive symptoms; Positive reframing; Positive emotion; Broaden-and-build theory.

The World Health Organization has identified depression as a serious and growing threat to well-being (Murray & Lopez, 1996). Depression is one of the few psychological disorders that can be fatal, as 10–15% of individuals with major depressive disorder eventually die by suicide (Maris, Berman, Maltzberger, & Yufit, 1992). In contrast, gratitude has been shown to have important implications for psychological well-being. In particular, gratitude predicted lower depression (Wood, Maltby, Gillett, Linley, & Joseph, 2008), as well as higher levels of prosocial behaviour (McCullough, Kilpatrick, Emmons, & Larson, 2001), sense

of coherence (Lambert, Graham, Fincham, & Stillman, 2009), decreased materialism (Lambert, Fincham, Stillman, & Dean, 2009) and positive relationship functioning (Lambert, Clark, Durtschi, Fincham, & Graham, 2010). The objective of the current studies was to examine the relationship between gratitude and depressive symptoms, and to identify the mechanisms by which gratitude affects depressive symptoms. Specifically, we proposed that positive reframing and positive emotion would mediate this relationship. Our reasons for suspecting these indirect paths from gratitude to depressive symptoms stem

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from Fredrickson's broaden-and-build theory of positive emotions (Fredrickson, 1998).

Theories of positive emotion

A useful theory in examining the role of a positive emotion such as state gratitude is the broaden-and-build theory of positive emotions. The broaden-and-build theory asserts that negative emotions, like the fear experienced in a threatening situation, narrow a person's momentary thought-action repertoire to promote quick and decisive action such as "fight or flight". In contrast, positive emotions broaden momentary thought-action repertoires, which widen the array of thoughts that come to mind. For instance, joy appears to broaden the thought-action repertoire by creating the urge to play, be creative, push the limits, and so on (Fredrickson, 2001). Likewise, a positive emotion such as curiosity creates the urge to explore, to take in new experiences and information, and to expand the self in the process. Fredrickson argued that such broadening emotions build enduring personal resources such as social bonds, health, and knowledge. Support for the broadening and building role of gratitude has been discussed extensively in the literature (e.g., Fredrickson, 2004; Wood & Tarrier, 2010). We propose that the positive emotion of gratitude will broaden and build other positive emotions, preventing or ameliorating depressive symptoms.

Gratitude and mental health

There is some evidence for gratitude building other positive emotions. In their groundbreaking study, Emmons and McCullough (2003) employed daily diary methods to experimentally determine the effect of gratitude on mental health over time, and found that those assigned to write about the things they were grateful for improved in mood, coping behaviours, and even in physical health symptoms compared to those who wrote about daily hassles or a neutral topic. This study triggered widespread interest in the effect of gratitude on mental health. A similar intervention was conducted among teenagers and found that

those in the gratitude condition (compared to a hassles condition or neutral control condition) reported more gratitude, optimism, life satisfaction, and decreased negative affect (Froh, Sefick, & Emmons, 2008).

Many gratitude interventions have included a hassles condition and/or have not found gratitude to produce an effect above and beyond the control. For instance, Sheldon and Lyubomirsky (2006) found that those who wrote about gratitude (compared to a control condition in which participants wrote about their best possible self) did not produce greater positive affect among participants during a four-week intervention. One purpose of the current studies was to examine the effect of gratitude on depression using neutral or positive (rather than negative) control conditions to increase experimental rigour.

Other non-intervention research has found similarly positive effects of gratitude on mental health, such as life satisfaction (McCullough, Emmons, & Tsang, 2002), materialism (Lambert, Fincham et al., 2009), and sense of coherence (perception of life as meaningful, manageable, and comprehensible) over time (Lambert, Graham et al., 2009). Watkins, Cruz, Holben, and Kolts (2008) requested that participants write about the positive consequences from an unresolved memory (an unpleasant memory that may intrude into the consciousness due to "unfinished business" associated with the memory, e.g., thinking of a recently lost wallet) that they felt they could now be grateful for. Compared to control participants, those in the gratitude condition reported more memory closure, less intrusiveness of the open memory, and less unpleasant emotional impact from the memory. In summary, there is strong support for the view that gratitude is related to mental health but few studies have focused on a specific syndrome or disorder.

We selected depressive symptoms as our primary target of focus for examining the effect of gratitude on mental health. Depression is defined in part as an absence of positive thoughts and plans, as well as an inability to experience positive emotions (National Institutes of Mental Health, 2009). We anticipated that gratitude

could fill the positive-emotion void experienced by depressed individuals, and tested a theoretical model to determine how gratitude relates to depressive symptoms. The model includes a direct negative relationship between gratitude and depressive symptoms, and two mediating mechanisms; positive reframing and positive emotion.

PATHS FROM GRATITUDE TO DEPRESSIVE SYMPTOMS: A CONCEPTUAL MODEL

Consistent with prior research, there should be a direct link between gratitude and depressive symptoms (Path A). The proposed indirect path for the effect of gratitude on depressive symptoms through positive reframing is Path B. Specifically, we propose that individuals high in trait gratitude will have a greater tendency to positively reframe negative or neutral situations, which triggers within themselves a grateful state. Over time the accumulation of grateful states should either decrease depressive symptoms or prevent them from increasing. Path C shows that gratitude should generate positive emotions such as joy or happiness that are inimical to depressive symptoms and that these positive emotions will mediate the effect of gratitude on depressive symptoms. Although depression and positive emotions may coexist, the presence of positive emotions should prevent or attenuate the magnitude of depression. Our proposed conceptual model (see Figure 1) illustrates these paths. We now describe each of these paths in greater detail.

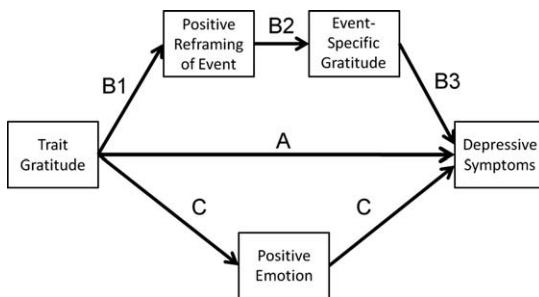


Figure 1. Theoretical model for the effect of gratitude on depressive symptoms.

Gratitude and depressive symptoms: The direct path

As noted, there is some evidence that gratitude is associated with fewer depressive symptoms (Krause, 2007; Wood, Maltby, Gillett, et al., 2008). Seligman, Steen, Park, and Peterson (2005) tested the effect of gratitude on depressive symptoms experimentally simply by having participants write and deliver a letter of gratitude to someone to whom they were grateful. Those who participated in this simple act of gratitude expression reported fewer depressive symptoms than control participants, lending credibility to the notion that gratitude can reduce depressive symptoms.

Nonetheless, it is surprising how little research has been conducted on the link between gratitude and depressive symptoms, given that such symptoms can have serious consequences for mental and physical health (e.g., suicide; Maris et al., 1992).

There is some empirical evidence indicating that higher levels of gratitude correspond to fewer depressive symptoms. Yet the means by which gratitude is negatively related to depressive symptoms have not been elucidated. We propose that the effects of gratitude on depressive symptoms occur via two indirect paths—positive reframing and positive emotion.

Indirect path through positive reframing

Gratitude and positive reframing

We propose that individuals higher in trait gratitude will be more inclined to positively reframe negative events or situations, which should elicit a grateful state and thereby reduce depressive symptoms. Positive reframing is to perceive something previously viewed as negative in a positive light. For example, people might come to think about a seemingly negative experience as an opportunity, a chance to learn something new, a chance to gain a new skill, or to deepen a relationship, and so on (Lambert, Graham et al., 2009). Positive reframing may be used as one method of achieving a grateful state. For example, consider an individual who is laid off

from paid employment, but who reframes the unfortunate situation as an unexpected opportunity to chart a new career path. Perceiving the positive aspects of a negative situation, like unemployment, should lead the individual to perceive the situation in a new light that makes it more meaningful and even valuable, thus eliciting a grateful state and reducing depressive symptoms.

There is some empirical evidence indicating a relationship between positive reframing and gratitude. For example, gratitude has been associated with making positive attributions (Wood, Maltby, Gillett et al., 2008; Wood, Maltby, Stewart, Linley, & Joseph, 2008). Wood, Joseph, and Linley (2007) found that gratitude was positively correlated with a coping style called positive reinterpretation and growth, which is conceptually similar to positive reframing. We propose that individuals high in trait gratitude will be inclined to positively reframe negative or neutral events, which will then elicit a grateful state, which, in turn leads them to experience fewer depressive symptoms (See Path B in Figure 1).

Positive reframing and depressive symptoms

Several studies have established the link between positive reframing and lower depression (e.g., Kraft, Claiborn, & Dowd, 1985; Manne et al., 2003; Wang, Lambert, & Lambert, 2007). Also, there is some evidence that gratitude is related to fewer depressive symptoms by encouraging people to positively reframe negative events. Lambert, Graham et al. (2009) found that positive reframing mediated the relationship between gratitude and sense of coherence, which has some ties to depressive symptoms. However, positive reframing is likely not the only mechanism in this relationship. We propose that positive emotion should also mediate the gratitude–depressive symptoms association.

Indirect path through positive emotion

Gratitude and positive emotion

Consistent with broaden-and-build theory (Fredrickson, 2001), gratitude may reduce depres-

sive symptoms inasmuch as it builds other positive emotions or states that are inimical to depressive symptoms, such as satisfaction with life or positive affect. As noted, some have found a correlation between gratitude and life satisfaction (McCullough et al., 2002) and participants primed with gratitude reported higher life satisfaction scores than control participants (Lambert, Fincham et al., 2009). Furthermore, Emmons and McCullough (2003) found that individuals who kept a gratitude journal for 13 days reported higher positive affect than control participants. Thus, there appears to be a relationship between gratitude and positive emotion.

Positive emotion and depressive symptoms

Depression is defined, in part, as an absence of positive thoughts and plans and an inability to experience positive emotions (National Institutes of Mental Health, 2009). Even though positive emotions and depression are not simply two ends of one continuum, positive emotions are at odds with a fundamental aspect of depression, namely low positive emotionality, defined as a dispositional tendency not to experience pleasurable emotional states (Watson, 2002). A chronic disinclination to experience positive emotions is a risk factor for developing a mood disorder such as major depression; individuals who demonstrated low positive emotionality initially were more likely than others to experience major depression months later (Clark, Watson, & Mineka, 1994; Watson, 2000). Similarly, melancholic temperament, which is chronic high levels of negative emotionality and low levels of positive emotionality, contributes to depression and other mental disorders (Watson & Clark, 1995).

Mood disorders, unlike most other forms of mental illness, have well-defined cycles which fluctuate daily (symptoms are worst in the morning) and seasonally (as evidenced by seasonal affect disorder). These same patterns are observed for positive emotionality, with positive emotionality at its lowest in the morning and during extended stretches of poor weather (Watson, 2002). It seems likely that the cyclical nature of mood disorders is at least partly attributable to the

cycle of experiencing positive emotions, with an absence of positive emotions contributing to more mood disorder symptoms.

In short, positive emotions are inimical to depression (cf. Watson, 2000; Watson, Clark, & Carey, 1988) and have been shown to undo the effects of negative emotions (Fredrickson, Mancuso, Branigan, & Tugade, 2000). When positive emotions are experienced, depression is less likely to be experienced. Of course, depressive symptoms can coexist with positive emotions, but the magnitude of the depressive symptoms is likely weakened by the presence of positive emotions. It is therefore reasonable to assume that increasing the frequency or intensity of positive emotions would diminish depressive symptoms or prevent them from increasing.

Overview of studies

A series of eight studies tested each path of our conceptual model. In Study 1, we tested Path A, the direct path between gratitude and depressive symptoms. Consistent with prior research (e.g., Wood, Maltby, Gillett, et al., 2008), we predicted that higher gratitude at Time 1 would predict fewer depressive symptoms at Time 2 after controlling for initial level of depressive symptoms.

Studies 2–5 examined the first mechanism proposed, positive reframing, and focused on Path B. Study 2 tested whether trait gratitude was positively associated with positive reframing (Path B1) and whether the association between gratitude and depressive symptoms was mediated by positive reframing (Path B). Studies 3 and 4 tested whether positive reframing induced state gratitude (Path B2) using experimental designs. In both studies, half of the participants engaged in positive reframing by writing about positive aspects of a negative event and control participants either wrote about notable aspects of the experience (Study 3) or about the positive aspects of their favourite TV show (Study 4). We hypothesised that participants who reframed their negative experience would report greater event-specific gratitude than would control participants. The

objective of Study 5 was to test whether state gratitude reduced state depressive symptoms (Path B3). Thus, we induced gratitude in participants and examined whether fewer depressive symptoms followed.

The purpose of Studies 6–7 was to test our second proposed mediator—positive emotion (Path C). In Study 6 we predicted that earlier gratitude would predict later depressive symptoms and that this longitudinal relation would be mediated by positive emotion. Study 7 was a journal study in which participants either kept a daily gratitude journal or wrote about things they had been learning in their classes. We predicted that increasing the frequency of their grateful thoughts would increase positive affect and reduce depressive symptoms over time.

Finally, Study 8 tested whether both mechanisms, positive reframing and positive emotion, simultaneously mediated the association between gratitude and depressive symptoms over time. We hypothesised that both Paths B and C would be relevant and that neither path would be significantly stronger than the other. All studies used independent samples.

GRATITUDE AND DEPRESSIVE SYMPTOMS: PATH A

Study 1: Path A

The primary objective of this study was to examine the direct relationship between gratitude and depressive symptoms (Path A), using a longitudinal design. Study 1 was a replication of prior studies that have found a relationship between gratitude and depressive symptoms over time (e.g., Wood et al., 2008). In the absence of a main effect of gratitude on depressive symptoms, further studies would not be warranted.

Method

Participants

Participants were 746 undergraduates (618 women) who completed an online survey for extra credit. Participant ages ranged from 17 to 28 with

a median age of 19. Participants completed all measures initially and then again six weeks later.

Measures

Gratitude. Trait gratitude was measured with the 6-item Gratitude Questionnaire (GQ-6; McCullough et al., 2002). Example items include, “I have so much in life to be thankful for” and “I am grateful for a wide variety of people”. Coefficient alpha for this measure in the present sample was .84 at Time 1.

Depressive symptoms. We measured depressive symptoms using the 10-item version of the Center for Epidemiologic Studies Depression Scale (Time 1 $\alpha = .83$; Time 2 $\alpha = .84$; Andersen, Malmgren, Carter, & Patrick, 1994). Participants were asked to report their experience during the previous week, with items such as, “I was bothered by things that usually don’t bother me” and “I felt depressed”.

Results and discussion

A descriptive report of all variables included in this study may be found in Table 1. We used hierarchical regression analysis to determine whether initial gratitude predicted later depressive symptoms when controlling for initial depressive symptoms. On the first step, we entered the control variable of initial depressive symptoms. On the second step, we entered baseline gratitude scores. As hypothesised, higher gratitude scores at Time 1 were associated with fewer depressive symptoms scores six weeks later, controlling for initial depressive symptoms ($\beta = -0.10$, $p < .01$).

Table 1. Study 1 correlations and descriptive information

Variables	1	2	3
1. Time 1 gratitude	–		
2. T1 depressive symptoms	-.35***	–	
3. T2 depressive symptoms	-.29***	.60***	–
<i>M</i>	6.27	1.88	1.84
<i>SD</i>	0.82	0.55	0.54

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

Thus, Study 1 provided evidence for Path A of our theoretical model, which depicts a direct relationship between gratitude and depressive symptoms. This replicates prior research that has also found this relationship. Now that we had established the main effect of gratitude on depressive symptoms, we sought to examine potential mechanisms that might account for this relationship. Specifically, we predicted that thinking of the positive aspects of negative events or situations would mediate between gratitude and depressive symptoms.

POSITIVE REFRAMING: PATH B

Study 2: Path B

The primary objective of Study 2 was to provide evidence that trait gratitude is associated with positive reframing (Path B1) and that positive reframing was associated with fewer depressive symptoms. We hypothesised that trait gratitude would predict later positive reframing, which would mediate the relationship between earlier gratitude and later depressive symptoms.

Method

Participants

Participants were 739 undergraduates (580 women) who completed an online survey for extra credit. Participant ages ranged from 18 to 28 with a median age of 19. Participants completed all measures initially and then again 12 weeks later.

Measures

Gratitude. Trait gratitude was again measured with the 6-item Gratitude Questionnaire (GQ-6; McCullough et al., 2002). Coefficient alpha for this measure in the present sample was .79 at Time 1.

Depressive symptoms. We again measured depressive symptoms using the Center for Epidemiologic Studies Depression Scale (Time 1 $\alpha = .78$; Time 2 $\alpha = .83$; Andersen et al., 1994).

Positive reframing. Positive reframing was assessed with a 4-item measure (Lambert, Graham et al., 2009) and included items such as, “I’ve been trying to see my challenges in a different light, to make them seem more positive” and “I find it comes naturally for me to see the silver lining on storm clouds”. Coefficient alpha for this measure in the present sample was .88 at Time 2.

Results

Gratitude and depressive symptoms

A descriptive report of all variables included in this study may be found in Table 2. We used hierarchical regression analysis to determine whether initial gratitude predicted later depressive symptoms when controlling for initial depressive symptoms. On the first step, we entered the control variable of initial depressive symptoms. On the second step, we entered baseline gratitude scores. As predicted, higher gratitude expression at Time 1 was associated with fewer depressive symptoms scores twelve weeks later, controlling for initial depressive symptoms ($\beta = -0.08$, $p < .01$).

Positive reframing as a mediator

To test whether positive emotion functioned as a mediator between gratitude and depressive symptoms, we used the method developed by Preacher and Hayes (2008). Mediation is typically tested using the Sobel method (1982), which assumes that the product of coefficients constituting the indirect effect is normally distributed. However, this distribution tends to be skewed and leptokurtic (Preacher & Hayes, 2008). As a result, resampling or bootstrapping methods are replacing prior methods for testing mediation (Shrout & Bolger, 2002). A confidence interval for the size of the indirect path is generated and if the values between the upper and lower confidence limit do not include zero this indicates a statistically significant mediation effect. The indirect path through Time 2 positive reframing was statistically significant, as indicated by finding that the 95% Confidence Interval (bias corrected) for the indirect path through this mediator did not include zero (-0.28 to -0.04), thus indicating that it significantly mediated the proposed relationship.

Discussion

Our hypothesis was supported as these longitudinal data are consistent with an indirect path between gratitude and depressive symptoms through positive reframing. Even when controlling for initial levels of depressive symptoms, gratitude predicted later depressive symptoms and this effect was mediated by positive reframing. These results should be interpreted with caution, however, given that we had only two time points in our study, which precludes temporal ordering of independent, mediating and outcome variables. This lack of temporal ordering for the mediator could confound the interpretation of the results. Also, Studies 1 and 2 are limited to correlational data. For example, it is unclear whether there is a causal relationship between positive reframing and gratitude and between gratitude and depressive symptoms. Studies 3–5 therefore used experimental methods to determine whether positive reframing influenced state gratitude (Path B2) and whether state gratitude produced fewer state depressive symptoms (Path B3).

Discussion

Study 3: Path B2

Study 3: Path B2

The primary objective of Study 3 was to test whether positive reframing generated state grati-

Table 2. Study 2 correlations and descriptive information

Variables	1	2	3	4
1. Time 1 gratitude	–			
2. T1 depressive symptoms	-.21***	–		
3. T2 depressive symptoms	-.18***	.47***	–	
4. Positive reframing	.22***	-.12**	-.17***	–
<i>M</i>	6.21	1.76	1.74	5.31
<i>SD</i>	0.81	0.47	0.49	1.13

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

tude (Path B2). We hypothesised that positive reframing of negative life situations would result in higher state levels of gratitude relative to a control activity.

Method

Participants

Participants were 95 undergraduates (75 women) who completed the study for extra credit. Participant ages ranged from 18 to 34 with a median age of 20.

Procedure

All participants in this study wrote (in an online log) three paragraphs describing a major life challenge they had to overcome and were then randomly assigned to one of two conditions in which they wrote about either (1) the positive aspects of this negative experience (positive reframing condition), or (2) about notable aspects of the experience (control condition). Pennebaker, Kiecolt-Glaser, and Glaser (1988) have found that simply writing about negative or traumatic experiences can be beneficial and can alleviate physical health ailments; hence the study used a rigorous control condition. Following the manipulation, participants completed the following materials.

Measures

State gratitude. Event-specific state levels of gratitude were assessed by summing the scores of two questions, "How grateful are you for this experience?" and "How much do you appreciate having had this experience?" These two items correlated at $r = .84$.

Negativity of event. We also assessed the amount of negative affect currently experienced with the question, "How negatively does recalling this memory affect you now?" with scores ranging from "1 = *Not at all*" to "7 = *Very much*".

Results and discussion

Those who positively reframed their negative experience reported feeling more grateful for

the negative event ($M = 10.06$, $SD = 3.72$) than those who did not reframe it ($M = 8.3$, $SD = 4.4$), $F(1, 89) = 4.08$, $p < .05$; $\eta_p^2 = .04$. In addition, those who engaged in positive reframing reported a marginally less negative effect of recalling the event on their current state ($M = 6.04$, $SD = 2.3$) than those who did not reframe ($M = 5.1$, $SD = 2.4$), $F(1, 90) = 3.9$, $p = .05$; $\eta_p^2 = .04$, which should have implications for depressive symptoms.

Our hypothesis was supported in that positively reframing a negative event or situation increased state gratitude relative to a control group. However, one limitation of the current study is that it could simply be thinking positive thoughts, rather than positively reframing negative situations, that increases gratitude.

Study 4: Path B2

This study attempted to rule out the possibility that simply thinking positive thoughts accounted for the results of Study 3. We hypothesised that those who wrote about their grateful thoughts (vs. those who wrote about positive thoughts) would report less negative perceptions of a negative event.

Method

Participants

Participants were 178 undergraduates (149 women) who completed the study for extra credit. Participant ages ranged from 18 to 29 with a median age of 19.

Procedure

All participants wrote (onto an online log) about a major life challenge and the experimental participants were randomly assigned to reframe this negative event as before. However, this time, control participants were randomly assigned to write about positive aspects of their favourite TV show to ensure any results obtained for state gratitude and state depressive symptoms were due to reframing rather than simply positive thinking.

Measures

State gratitude. Event-specific state levels of gratitude were again assessed by summing the scores of two questions, “How grateful are you for this experience?” and “How much do you appreciate having had this experience?” These two items correlated at $r = .84$.

Negativity of event. This time we assessed participants’ perception of the event as negative with the question, “How negative was this experience?” with scores ranging from “1 = *Not at all*” to “7 = *Very negative*”.

Results and discussion

Those who positively reframed their negative experience again reported feeling more grateful for the negative event ($M = 10.1$, $SD = 3.9$) than those who did not reframe ($M = 8.7$, $SD = 4.3$), $F(1, 175) = 5.03$, $p < .05$; $\eta_p^2 = .03$. In addition, those who engaged in positive reframing reported perceiving the event marginally less negatively ($M = 4.2$, $SD = 2.0$) than those who did not reframe it ($M = 4.7$, $SD = 2.0$), $F(1, 174) = 3.71$, $p = .056$; $\eta_p^2 = .02$, which again should have implications for depressive symptoms.

Studies 3 and 4 provided evidence for our theoretical model that positive reframing leads to event-specific gratitude (Path B2) and lower event-specific negative feelings that should impact depressive symptoms. Study 5 tested more directly whether state gratitude was causally related to fewer depressive symptoms compared to a control group.

Study 5: Path B3

Given the evidence from Studies 3 and 4 indicating that state gratitude mitigated the negative perceived effect of the event on the participants, Study 5 sought to establish a direct link between state feelings of gratitude and state depressive symptoms. We hypothesised that state gratitude would be causally related to fewer state depressive symptoms relative to a neutral control.

Method

Participants

Participants were 112 undergraduates (98 women) who completed an online survey for extra credit. Participant ages ranged from 18 to 37 with a median age of 19.

Procedure

The experimental group of participants was randomly assigned to think and write about their opportunities and blessings (gratitude condition) and the control group was randomly assigned to think and write about some of the things they had been learning in their human development class (neutral control condition). The purpose of this control condition was to rule out the possibility that actively thinking and writing about something mildly positive (e.g., learning) was leading to reduced depressive symptoms. Participants then completed the manipulation check and a state depressive symptoms measure.

Measures

Manipulation check. To assess whether the manipulation successfully induced feelings of gratitude, we asked participants to rate their agreement with the statement, “Right now I feel a profound sense of gratitude”.

State depressive symptoms. We used a 4-item adapted version of the depressive symptoms measure used in prior studies with phrases such as “right now” added (i.e., “Right now I feel depressed”, “Right now I feel hopeful for the future”, “Right now I feel lonely”, “Right now I feel happy”). The alpha in the current study was .71.

Results and discussion

Manipulation check

Participants who had thought and written about opportunities and blessings reported higher gratitude scores ($M = 6.2$, $SD = 1.3$) than control participants ($M = 3.9$, $SD = 1.8$), $F(1, 107) = 58.63$, $p < .01$; $\eta_p^2 = .35$.

State depressive symptoms

Consistent with our hypothesis, participants who were put in a grateful state reported fewer depressive symptoms ($M=2.4$, $SD=1.0$) than control participants ($M=2.8$, $SD=1.2$), $F(1, 110) = 4.04$, $p < .05$; $\eta_p^2 = .04$.

Our hypothesis was confirmed, as participants in the gratitude condition reported fewer state depressive symptoms (Path B3). This provided more direct evidence that built on the findings of Studies 3 and 4, demonstrating a causal relationship between state gratitude and state depressive symptoms.

POSITIVE EMOTION: PATH C**Study 6**

The objective of this study was to test the indirect path involving the mechanism of positive emotion (Path C) using a longitudinal design. We hypothesised that positive emotion would mediate the relationship between gratitude and depressive symptoms.

Method*Participants*

Participants were 753 undergraduate students (568 women) who completed the study for extra credit. Participant ages ranged from 18 to 26 with a median age of 19. Participants completed all measures at Time 1 and then again 12 weeks later.

Measures

Gratitude. Trait gratitude was again measured with the 6-item Gratitude Questionnaire (GQ-6; McCullough et al., 2002; Time 1 $\alpha = .82$).

Depressive symptoms. We used the 10-item depressive symptoms measure from Study 1 (e.g., "I feel depressed"; Time 1 $\alpha = .75$; Time 2 $\alpha = .80$; Andersen et al., 1994).

Positive emotion. We measured positive emotion using the 10-item positive dimension of the Positive and Negative Affect Scale (PANAS;

Time 2 $\alpha = .93$; Watson, Clark, & Tellegen, 1988).

Results and discussion*Gratitude and depressive symptoms*

A descriptive report of all variables included in this study appears in Table 3. We used hierarchical regression analysis to determine whether initial gratitude predicted later depressive symptoms when controlling for initial depressive symptoms. On the first step, we entered the control variable of initial depressive symptoms. On the second step, we entered baseline gratitude scores. As predicted, higher gratitude expression at Time 1 was associated with fewer depressive symptoms scores twelve weeks later, controlling for initial depressive symptoms ($\beta = -0.13$, $p < .01$).

Positive emotion as a mediator

To test whether positive emotion functioned as a mediator between gratitude and depressive symptoms, we again used the method developed by Preacher and Hayes (2008). The indirect path through Time 2 positive affect was statistically significant, as indicated by finding that the 95% Confidence Interval (bias corrected) for the indirect path through these mediators did not include zero (-0.03 to -0.01).

This indicates that positive emotion functioned as a significant mediator in this relationship. Of course, the current study was limited to correlational data. Thus, for example, it is unclear whether there is a causal relationship between

Table 3. Study 6 correlations and descriptive information

Variables	1	2	3	4
1. Time 1 gratitude	–			
2. T1 depressive symptoms	-.24***	–		
3. T2 depressive symptoms	-.24***	.49***	–	
4. Positive emotion	.09**	-.14***	-.25***	–
<i>M</i>	6.14	1.80	1.83	2.88
<i>SD</i>	0.92	0.45	0.50	0.92

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

gratitude and depressive symptoms and depressive symptoms and positive emotion.

Study 7

The objective of this study was to provide experimental data to test path C in our theoretical model; the study comprised a longitudinal, experimental, design that included pre- and post-test assessments and random assignment to one of two conditions.

Method

Participants

Participants were 89 undergraduate students (73 women) who completed the study for extra credit. Participant ages ranged from 17 to 29 with a median age of 20 and reported having a relationship partner.

Procedure

All participants received a URL link to an online journal twice a week with instructions and with space to copy and paste what they had been writing as part of their daily assignment. Experimental participants ($n = 61$) were randomly assigned to complete a gratitude journal each day for four weeks. In their daily journals, these participants answered several questions designed to trigger grateful emotion (e.g., “What life experiences are you grateful for?” “What are some things that you normally take for granted that you are grateful for?”), and the focus of the questions changed twice a week. There was a slight alteration in the instructions given to one subset of participants (i.e., one group was required to share their gratitude journal with a partner) for the purpose of a broader study that is not relevant in the present context. These groups did not differ on depression ($F < 1$, $p > .05$), so the gratitude conditions were combined for all analyses.

Control participants ($n = 28$) were randomly assigned to a neutral condition and they kept a daily journal of insights that they had gained in their college courses and shared these insights with a relationship partner. The purpose of this

control condition was to ensure that engaging in daily reflection and writing was not driving the study results. Participants in all groups signed into an online journal twice a week and transferred their daily journal record into this online format as a way to ensure that they actually completed their assigned task.

Measures

State depressive symptoms. We again used our state adapted version of the depressive symptoms measure used in Study 5 (Time 1 $\alpha = .80$; Time 2 $\alpha = .79$; Andersen et al., 1994).

Sleep. Given that sleep quality is with a robust predictor of depressive symptoms (e.g., Baglioni et al., in press; Tsuno, Besset, & Ritchie, 2005), we asked about the quality of participants sleep at Time 1, “Please rate the quality of your sleep over the past week from very poor to excellent”, and controlled for this in all analyses.

Positive affect. In this study, we again operationalised positive emotion using the positive dimension of the Positive and Negative Affect Scale (Time 1 $\alpha = .92$; Time 2 $\alpha = .93$; Watson, Clark, & Tellegen, 1988).

Results and discussion

Frequency of participation by condition

To ensure that any results were not due simply to the experimental condition eliciting a higher level of participation, we examined whether there were differences in frequency of participation on a scale from “1 = *Never completed assigned activities*” to “7 = *Never missed a single activity*”. Analysis revealed that gratitude participants ($M = 5.7$, $SD = 1.3$) did not differ in their level of participation compared to control participants ($M = 5.7$, $SD = 1.1$) on the frequency of their participation in the manipulation, $F(1, 87) = 0.00$, $p = .98$; $\eta_p^2 = .00$.

Gratitude and depressive symptoms

Gratitude participants ($M = 2.41$, $SD = 1.35$) and control participants ($M = 2.7$, $SD = 1.2$) did not

significantly differ in their depressive symptoms at Time 1, $F(1, 86) = 1.04, p = .30; \eta_p^2 = .01$. Consistent with hypotheses, participants who kept a daily gratitude journal for four weeks tended to report fewer state depressive symptoms at Time 2 ($M = 2.50, SD = 1.63$) than control participants ($M = 3.0, SD = 1.2$), $F(1, 85) = 2.97, p = .09; \eta_p^2 = .03$, controlling for Time 1 state depressive symptoms.

Gratitude and positive emotion

Gratitude participants ($M = 27.4, SD = 9.4$) and control participants ($M = 26.8, SD = 9.8$) were relatively equivalent in their positive emotions at Time 1, $F(1, 83) = 0.11, p = .75; \eta_p^2 = .00$. As predicted, participants who kept a daily gratitude journal for four weeks reported marginally higher Time 2 positive affect ($M = 28.6, SD = 8.9$) than control participants ($M = 25.1, SD = 10.0$), $F(1, 83) = 3.18, p = .077; \eta_p^2 = .03$, controlling for Time 1 positive affect.

Gratitude and depressive symptoms mediated by positive emotion

To test whether positive emotion functioned as a mediator between gratitude and depressive symptoms, we again used the method developed by Preacher and Hayes (2008). The indirect path through positive affect was statistically significant, as indicated by finding that the 95% Confidence Interval (bias corrected) for the indirect path through these mediators did not include zero. Specifically, the indirect path through Time 2 positive affect was -0.34 to -0.01 , which was significant.

These results indicate that increasing the frequency of grateful thoughts over time increased (or prevented a decrease) of positive emotion and prevented an increase of depressive symptoms. Furthermore, the positive emotion resulting from the daily grateful reflections mediated the relationship between gratitude and depressive symptoms (Path C). This study provided further evidence consistent with the view that positive emotion mediates the relationship between gratitude and depressive symptoms. However, one

limitation of this and prior studies is the lack of any direct comparisons between the proposed mediators of positive reframing and positive emotion.

TEST OF FULL MODEL

Study 8

The objective of Study 8 was to test all three paths (A, B, & C) simultaneously to see if positive reframing and positive emotion both function as mediators if included in a single model. We again utilised a longitudinal design in which we measured gratitude, positive reframing, and positive emotion initially and then once more four weeks later.

Method

Participants

Participants were 261 undergraduate students (230 women) who completed the study for extra credit. Participant ages ranged from 17 to 31 with a median age of 20.

Measures

Gratitude. Trait gratitude was again measured with the 6-item Gratitude Questionnaire (GQ-6; McCullough et al., 2002). Coefficient alpha for this measure in the present sample was .81.

Depressive symptoms. We again measured depressive symptoms using the 10-item version of the Center for Epidemiologic Studies Depression Scale (Time 1 $\alpha = .84$; Time 2 $\alpha = .84$; Andersen et al., 1994).

Positive emotion. This time, positive emotion was operationalised as life satisfaction with a 5-item measure (Time 2 $\alpha = .86$; Diener, Emmons, Larsen, & Griffin (1985).

Positive reframing. Positive reframing was again assessed with a 4-item measure (Time 2 $\alpha = .76$; Lambert, Graham et al., 2009).

Results

Gratitude and depressive symptoms

A descriptive report of all variables included in this study appears in Table 4. We again used hierarchical regression analysis to determine whether initial gratitude predicted that person's later depressive symptoms when controlling for that person's initial depressive symptoms. On the first step, we entered the control variable of initial depressive symptoms. On the second step, we entered baseline gratitude scores. As predicted, higher gratitude expression at Time 1 was associated with fewer depressive symptoms scores twelve weeks later, controlling for initial depressive symptoms ($\beta = -0.18, p < .01$).

Positive reframing and positive emotion as mediators

We used the method developed by Preacher and Hayes (2008) to test multiple mediator models. The indirect paths of positive emotion, and positive reframing were statistically significant, as indicated by the finding that the 95% Confidence Interval (bias corrected) for the indirect path through these mediators did not include zero. Specifically, the indirect path through Time 2 positive reframing was -0.02 to -0.01 and for Time 2 satisfaction with life it was -0.03 to -0.01 and both were significant mediators.

Table 4. Study 8 correlations and descriptive information

Variables	1	2	3	4	5
1. Time 1 gratitude	–				
2. T1 depressive symptoms	-.40***	–			
3. T2 depressive symptoms	-.36***	.55***	–		
4. Positive reframing	.36***	-.32***	-.54***	–	
5. Positive emotion	.41***	-.39***	-.58***	.51***	–
<i>M</i>	6.22	1.86	1.81	5.35	5.31
<i>SD</i>	0.81	0.55	0.55	1.13	1.09

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

Furthermore, the contrast between satisfaction with life and positive reframing did pass through zero, indicating that the magnitude of no single mediator was significantly greater than the other.

Testing an alternative model

Although our theoretical model focused on a specific direction of effects, we acknowledge that the variables included in this study likely have bidirectional effects and other models are plausible. For example, it could be that depression mediates the relationship between gratitude and positive reframing or between gratitude and positive emotion. We tested both of these alternative models and found that the indirect path from Time 1 gratitude to Time 2 positive reframing through Time 2 depression was significant (.08 to .35) as was the path from Time 1 gratitude to Time 2 positive emotion through Time 2 depression (.05 to .32). This indicates that despite the large amount of evidence for our model, there are alternative models that also fit the data.

Discussion

Consistent with our theoretical model, both positive reframing (Path B) and positive emotion (Path C), simultaneously mediated the relationship between gratitude and depressive symptoms. This final study synthesised the results of our prior studies and provided additional evidence supporting our theoretical framework of the effect of gratitude on the important mental health outcome of depressive symptoms. We also demonstrated the viability of models with alternate sequencing of the variables.

GENERAL DISCUSSION

Gratitude has been extolled as a virtue by many secular and religious thinkers. In the current work, we found evidence that gratitude has practical benefits. In particular, we found that gratitude decreased (or prevented an increase) in reports of depressive symptoms. We also found evidence for

two mechanisms through which gratitude relates to depressive symptoms. Namely, gratitude prompts people to reframe otherwise negative experiences as potentially positive experiences. This reframing, in turn, is related to fewer depressive symptoms. Yet positive reframing was not the only mediator. We also predicted, and found, that gratitude increases (or prevents a decrease) in positive emotion, which, in turn, is related to fewer depressive symptoms.

We tested elements of our dual-mediator model in a series of studies culminating in a final study that included the complete model. To test our hypothesis that gratitude was related to fewer depressive symptoms and that positive reframing and positive emotion mediate this relationship, we conducted eight studies. In Study 1, we tested Path A, the direct path between gratitude and depressive symptoms. Consistent with prior research (e.g., Wood et al., 2008), we found that higher gratitude at Time 1 predicted fewer depressive symptoms at Time 2 controlling for initial level of depressive symptoms.

Studies 2–5 examined whether positive reframing (Path B) mediated this relationship. In Study 2, we used a longitudinal design and found that trait gratitude was positively associated with positive reframing (Path B1), and that the association between gratitude and depressive symptoms was mediated by positive reframing (Path B). The objective of Studies 3 and 4 was to test whether positive reframing would induce state gratitude (Path B2). In both studies, half of the participants engaged in positive reframing by writing about positive aspects of a negative event. Study 3 sought to rule out the competing explanation that simply writing about a negative experience would lead participants to feel more grateful for it. Study 4 sought to ensure that actual positive reframing (rather than simply positive thoughts) was responsible for higher state gratitude. In both cases, positive reframing resulted in higher reported state gratitude and less negativity relating to the event. The objective of Study 5 was to test whether state gratitude reduced state depressive symptoms (Path B3). Consistent with predictions, we found that inducing gratitude

in participants reduced their state depressive symptoms.

The purpose of Studies 6 and 7 was to test our second proposed mediator—positive emotion (Path C). In Study 6 we conducted a longitudinal analysis and found that earlier gratitude predicted later depressive symptoms and that this temporal relationship was mediated by positive emotion. Study 7 was a journal study in which participants either kept a daily gratitude journal or wrote about things they had been learning in their classes. Those who kept a daily gratitude journal reported marginally higher positive affect and marginally fewer depressive symptoms at the end of the four weeks than control participants. Positive affect mediated the effect of gratitude on depressive symptoms.

Finally, in Study 8 we tested whether our proposed mediators, positive reframing, and positive emotion, simultaneously mediated the association between gratitude and depressive symptoms over time. Our hypotheses were supported as positive reframing and positive emotion simultaneously mediated the relationship between gratitude and depressive symptoms and neither path was significantly stronger than the other. In sum, these eight studies provide strong evidence for a relationship between gratitude and depressive symptoms and indicate that positive reframing and positive emotion function as mechanisms that account for this relationship. In short, we have presented a theoretical model illustrating how gratitude may be related to depressive symptoms and have found empirical evidence to support our model.

Upward spirals of broadening and building

Our findings support the broaden-and-build theory as illustrated in the dual role of the positive emotion of gratitude in building other positive emotions (e.g., positive affect, life satisfaction, positive reframes). For example, in Study 7, participants who kept a daily gratitude journal reported higher positive affect over time relative to a neutral control group, suggesting that experiencing gratefulness built other positive

emotions and this affect mediated the effect of gratitude on depressive symptoms. In other studies, we found that those who reported experiencing gratitude more regularly also reported higher levels of positive affect and a greater tendency to positively reframe negative events. Thus, we found evidence that gratitude builds other positive emotions over time.

Could an upward spiral result from a repetition of broadening and building? There is a growing body of evidence supporting this building process. In fact, one recent study demonstrated an upward spiral over a two-month period in which positive affect, broad-minded coping (which contains positive reframing as one of the subscales), interpersonal trust, and social support reciprocally and prospectively predicted one another. This upward spiral was partially based in changes in dopaminergic functioning (Burns et al., 2008). Another study found that initial positive affect predicted broad-minded coping and that positive affect and broad-minded coping serially enhanced one another over time (Fredrickson & Joiner, 2008). Thus, it appears that these upward spirals based on positive emotion do occur and this may have partially accounted for the longitudinal relationship between gratitude and depressive symptoms that we found in several of our studies.

We are not advocating gratitude-inductions or positive reframing as a therapeutic intervention to help patients overcome depressive symptoms because we did not investigate clinical samples or examine the duration of effects. However, we interpret our findings as suggesting that one way to increase happiness and decrease the likelihood of experiencing depressive symptoms is to consider the things in life for which one is grateful. We propose that increasing gratitude and engaging in positive reframing might act as buffers against the development of depressive symptoms and hopelessness. Gratitude and positive reframing may be useful strategies for building the positive, rather than simply addressing the negative. We turn now to consider applications of positive reframing.

Application of positive reframing

The effects of state gratitude, positive reframing, and positive emotion on depressive symptoms have important implications for application that need further exploration. Future studies ought to examine whether engaging in such a process repeatedly could enhance one's trait gratitude and reduce or prevent depressive symptoms. How might regular engagement in such a process affect mental health in comparison to, say, regularly focusing on accentuating the positive aspects of life experiences? Given that the natural tendency to positively reframe has been related to so many positive mental health outcomes, e.g., lower distress (Fife, 1995; Ho, Chan, & Ho, 2004; Katz, Flasher, Cacciapaglia, & Nelson, 2001; Taylor, Lichtman, & Wood, 1984; Urcuyo, Boyers, Carver, & Antoni, 2005; Vickberg, Bovbjerg, DuHamel, Currie, & Redd, 2000), greater perceived well-being (Carpenter, Brockopp, & Andrykowski, 1999; Curbow, Somerfield, Baker, Wingard, & Legro, 1993; Urcuyo et al., 2005), and fewer symptom reports and medical appointments (Stanton, Kirk, Cameron, & Danoff-Burg, 2000) to name a few, such a thorough examination of the expanding the use of positive reframing in intervention or therapy should be a priority.

Furthermore, it is important to establish boundary conditions regarding whether some life experiences are better left untouched by such positive reframing processes. For example, in our studies, we specifically instructed participants not to positively reframe serious, traumatic life experiences such as abuse. Yet it remains to be seen whether positively reframing these types of experiences has any inherent value. On the one hand, doing so may cause individuals to re-experience the trauma and the pain surrounding such an event, which may not be helpful and could be extremely hurtful. Conversely, facing such painful experiences from the past could build resilience and help individuals to overcome the residual negative effects of certain life events. For instance, although there may not be any easily foreseeable positive aspects of something inexcusable and negative like abuse, perhaps victims

could focus on the personal growth, self-insight, or enhanced understanding or compassion that they may have received from such an experience. In fact, gaining these insights and perspective through the positive reframing process may facilitate forgiveness of perpetrator and could reduce the trauma associated with thoughts of the experience. However, this remains to be tested.

Limitations and future directions

The current work is limited by the fact that the studies that included mediation analyses included only two time points. Without three time points it is impossible to fully test mediation, thus the current results should be interpreted with caution. Also, the samples comprised college students. It could be that the impact of gratitude on depressive symptoms may vary slightly with an older or more diverse sample. Furthermore, the focus was on relatively well adjusted individuals who did not necessarily report higher than usual depressive symptoms. Future research should examine whether a gratitude intervention would effectively reduce depressive symptoms with a sample that was struggling with clinical levels of depressive symptoms. Future research should also examine whether positive reframing, done on a regular basis, spurs positive or negative mental health outcomes. Furthermore, a positive reframing condition could effectively be compared with a condition intended to elicit positive emotion to determine which is more effective at evoking gratitude and reducing depressive symptoms.

Some of the experimental studies may have been subject to demand characteristics. For instance, in Studies 3 and 4 participants were asked to rate how grateful they were for a life challenge immediately after writing about the positive characteristics of it. In addition, Study 5 participants were asked how grateful they felt (as a manipulation check) immediately after being asked to write about a grateful experience. Nonetheless, we suggest that Study 7 is not prone to demand characteristics because there were many additional measures included in the study and the

participants in this study were unlikely to answer simply based on demand characteristics.

It is also worth noting that many of the associations investigated are likely bidirectional. Indeed, in Study 8 we were able to show that an alternative sequencing of variables was also supported by the data. Clearly, additional research is needed to allow choice of model to be empirically as well as theoretically based. Until such time, we favour the model tested because it makes considerable theoretical sense and is supported consistently by the data. Its ultimate fate, however, will depend on its utility relative to other potential models.

Finally, some recent research has demonstrated the additive mental health benefit of sharing one's grateful experiences with a close friend or romantic partner (Lambert, Gwinn, & Fincham, 2010). We found that participants who kept a daily gratitude journal and regularly shared some of their grateful feelings with their partner, reported an increase in positive affect, happiness, and life satisfaction relative to those who simply kept a gratitude journal or to those who regularly shared neutral events with a partner. Future research should examine whether sharing one's grateful feelings or one's positive reframes would have a similar additive effect on depressive symptoms relative to gratitude without sharing.

Conclusion

The current studies provide evidence for our theoretical model and demonstrate a relationship between gratitude and depressive symptoms, with positive reframing and positive emotion functioning as important mechanisms in this relationship. Gratitude appears to be an underutilised resource in social science.

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