

THE IMPACT OF MINDSET: THE EFFECT OF A GROWTH VS. FIXED VIEW OF
HAPPINESS ON RESPONSIVENESS TO GRATITUDE INTERVENTIONS

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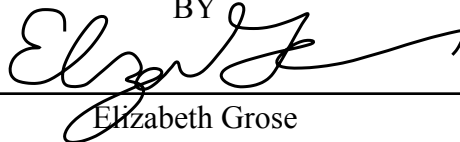
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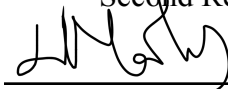
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Elizabeth Grose. The Impact of Mindset: The effect of a growth vs. fixed view of happiness on responsiveness to gratitude interventions

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Mindset theory examines how beliefs influence success; for example, believing that happiness can change has been associated with higher well-being overall (Lam & Zhou, 2020). The present thesis combines this research with the field of positive psychology, which examines how to foster well-being in individuals and societies (Seligman et al., 2005). The present study examines the immediate effects of mindset manipulation and a positive psychology intervention of gratitude on measures of well-being, optimism, and affect. Participants read one of two fabricated articles arguing that happiness is either *changeable* or *fixed*, completed the gratitude letter or a placebo exercise, and then completed several self-report measures of well-being. The MANOVA produced no significant main effects or interactions, although the main effect of the mindset manipulation was trending towards significance ($p = .114$), and the between-subject ANOVA showed mindset may have marginally impacted the Flourishing Scale ($p = .124$) and Optimism Scale ($p = .106$). One possibility for this lack of findings is that the gratitude intervention may be less effective than previously believed. Indeed, past studies have shown inconsistent results for its efficacy (Seligman et al., 2005; Mongrain & Anselmo-Matthews, 2012). Further, the lack of effect of mindset manipulation could have occurred for several reasons, which are discussed. Based on these findings, it is evident that more research on the relationship between mindset and well-being is needed.

Table of Contents

Introduction	1
Mindset Theory	1
Positive Psychology & Gratitude	3
Mindset as an Intervention	5
The Present Study	6
Method	7
Participants and Design	7
Materials and Measures	8
Mindset Articles	8
Gratitude Letter Intervention	8
Early Memories Placebo	8
Satisfaction with Life Scale	9
Flourishing Scale	9
Optimism Scale	9
Brief Mood Introspection Scale	10
Mindset Beliefs (Attention and Manipulation Check)	10
Procedure	11
Results	11
Scoring & Exclusionary Criteria	11
Manipulation Check	13
MANOVA	13
Exploratory Analyses	14
Discussion	15
Limitations	19
Future Directions	20
References	22
Appendix A	26
Appendix B	29
Appendix C	30

The Impact of Mindset: The effect of a growth vs. fixed view of happiness on responsiveness to gratitude interventions

Abilities alone do not dictate success; indeed, people's beliefs about their abilities and traits can play a significant role in how they approach, complete, and respond to tasks, and therefore impact outcomes above abilities, skills, and talent alone. (Schroder, 2020). One crucial belief is about the malleability of character traits, such as intelligence and personality, or behaviors like exercise; this form of belief is referred to as mindset (Dweck, 1999). Ultimately, mindset theory proposes that people can believe that a trait is unchangeable and stable (fixed) or that it can change and grow over time (malleable). Mindset theory emerged from studies of how people cope with failure and has been developed and expanded extensively over the past 20 years (Dweck, 2016). To date, most research has examined the impact of different mindsets (e.g., growth or fixed) on intelligence and related performance outcomes (Blackwell et al., 2007; Schroder, 2020). Nevertheless, mindset theory has been applied to many other domains, including the role of mindset on happiness (Van Tongeren & Burnette, 2018; Schroder, 2020).

Mindset Theory

In recent years, mindset research has been applied to academics, athletics, business, and many other domains (Dweck, 2016). Across all these studies, the research has identified key differences between those with growth mindsets and fixed mindsets. Namely, while people with fixed mindsets fear being exposed for not possessing a trait or quality (e.g., intelligence or athleticism), those with a growth mindset view setbacks as motivators (Blackwell et al., 2007; Hyatt & Gottlieb, 1993). Success, for those with growth mindsets, means learning and improving. In business and management studies, researchers found that groups of people with fixed mindsets were worse at constructive discussions and disagreements than groups of people

with growth mindsets, who openly collaborate and express their disagreements (Wood et al., 2002). Even in romantic relationships, people with a growth mindset try to learn from breakups and rejection, while many people with a fixed mindset, on the other hand, try to get revenge (Dweck, 2016). Additionally, people with fixed mindsets can believe that romantic relationships that require work and communication are not meant to be (Beck & Padesky, 1990). One key concept surrounding mindset is that mindsets themselves are changeable. For example, a child can believe that intelligence is fixed, until their teacher reframes the meaning of intelligence to include a growth mindset. Then, they may develop a growth mindset over time. These findings highlight how one's mindset can influence all aspects of life, with a growth mindset commonly indicating greater success or mentally healthier outcomes.

Mindset theory is most commonly applied to intelligence and academic achievement. Specifically, research suggests that people's mindset about intelligence can predict academic performance outcomes (Dweck, 1999). When students with similar grades enter middle school, those who believe intelligence is fixed experience a decrease in their grades, while participants with a growth mindset significantly improve their grades (Dweck, 2016). For example, one longitudinal study found that seventh graders who believed intelligence was changeable did significantly better in math over two years than students who thought intelligence was fixed (Blackwell et al., 2007). The subjects with a growth mindset not only prioritized learning over grades but also had a stronger belief in the power of effort. Similar outcomes can be found across many age groups. When controlling for SAT math subscores, pre-med college students with a growth mindset had significantly higher grades in organic chemistry than those with a fixed mindset (Grant & Dweck, 2003). These findings indicate that those with a growth mindset are better able to overcome difficulties and meet their performance goals. In fact, one study even

showed that people with a growth intelligence mindset report greater life satisfaction, hinting at a relationship between mindset and well-being outcomes (Lam & Zhou, 2020).

Although limited, research on happiness mindset mirrors findings regarding intelligence mindset (Van Tongeren & Burnette, 2018). Similar to other domains, a growth mindset for happiness is the belief that people can work to make themselves happier and more optimistic. By definition, people with a fixed happiness mindset believe they are born as a happy person or an unhappy person, and there's not much they can do to change that. One preliminary study found that a growth mindset about happiness was positively related to greater well-being and relationship satisfaction (Van Tongeren & Burnette, 2018). These researchers primed participants by having them read and summarize an essay with scientific evidence that happiness was either fixed or malleable, then measured their happiness, well-being, and relationship satisfaction. The results showed that priming the participants elicited even stronger beliefs in the growth mindset about happiness, which was associated with even greater well-being and satisfaction in one's relationships, health, and jobs. These findings suggest that mindset beliefs can be manipulated and demonstrate that a growth happiness mindset has many benefits, indicating that the way one views happiness is a crucial factor in one's happiness and well-being.

Positive Psychology & Gratitude

Related to the research on mindset, there is an increasing focus in psychology on how to increase well-being and happiness (Seligman et al., 2005; Fredrickson, 2001; Lyubomirsky & Layous, 2013). Well-being is defined as “a state of happiness and contentment, with low levels of distress, overall good physical and mental health and outlook, or good quality of life” (APA Dictionary of Psychology). Much of the research on well-being has explored specific behaviors, or positive psychology interventions (PPIs), that can increase happiness and decrease depressive

symptoms when added to one's routine (Seligman et al., 2005). The field of positive psychology has aimed to identify universal interventions that can improve well-being in individuals and societies. One such PPI is the gratitude letter, an activity in which a person writes a letter to someone they are grateful for, with the intention of sharing it with that person. Gratitude interventions like this letter have been shown to positively impact well-being (Seligman et al., 2005; Lyubomirsky, Dickerhoof, & Boehm, 2011). The gratitude letter specifically has been shown to significantly increase happiness for up to one month after the intervention (Seligman et al., 2005). This PPI is one of many that aims to introduce memorable, positive activities into a person's life as a way to increase well-being. One model of happiness suggests that positive activities and behaviors account for up to 40% of individual differences in well-being (Lyubomirsky, Sheldon, & Schkade, 2005). This model, combined with the research suggesting gratitude promotes prosocial behavior, indicates that interventions that target gratitude *should* increase well-being (McCullough, Kilpatrick, Emmons, & Larson, 2001). Not only is writing a gratitude letter a positive experience, but sharing it can also be a memorable activity that strengthens the relationship between two people. One review article suggests that gratitude PPIs may work because they promote upward spirals of positive emotion (Lyubomirsky & Layous, 2013). These "upward spirals" are part of the broaden-and-build theory of positive emotions, which posits that experiences of positive emotions and positive meaning compound on each other, increasing a person's resilience and well-being (Fredrickson, 2001). This upward spiral of positive emotions may be true for people who write gratitude letters because the activity encourages people to not only reflect on their life and gratitude but also share it with others, which promotes positive social interactions and builds social resources.

While many researchers have aimed to identify interventions with universal effects, some research has indicated that specific factors may make an intervention better “fit” for specific individuals, such as gender and age (Lyubomirsky & Layous, 2013; Thompson, Peura, & Gayton, 2014). Further, extraversion, perceived social support, and culture have all also been shown to impact the efficacy of PPIs (Lyubomirsky & Layous, 2013). Other research suggests that how individuals engage with the intervention, such as the amount of voluntary continued practice of PPIs, effort, preference, and early reactivity predicted changes in happiness over three and a half years (Proyer et al., 2015). This particular line of research suggests that the way people think about and engage with PPIs influences how well or poorly the interventions work to increase happiness and well-being. However, all of these researchers call for more insight into the mechanisms at play, which might likely include factors like people’s beliefs about their abilities and where their happiness stems from, including its ability to change.

Mindset as an Intervention

Intuitively, it may appear that most PPIs would be effective at increasing happiness and well-being. However, recent studies have indicated that PPIs like the gratitude letter may not be as universally applicable as researchers initially thought (Wood et al., 2010; Davis et al., 2016). While some factors like motivation and extraversion have been identified, it is still unclear for whom these PPIs are most effective and why. This is where the examination of mindset may hold some crucial insights. It seems plausible that participants who believe that happiness can change (e.g., growth mindset) will not only experience higher levels of happiness and well-being to begin with, but they will also be more responsive to PPIs (including the gratitude intervention) compared to those who do not believe happiness can change (e.g., fixed mindset). Those with a

growth mindset may be the most motivated to increase their happiness, a factor that has been shown to influence PPI efficacy (Lyubomirsky, Dirckerhoof, & Boehm, 2011).

At a more general level, how people think about and approach everyday life can also impact their well-being. Cognitive-behavioral therapy (CBT) is an approach to treating psychological disorders, such as depression, that focuses on changing negative ways of thinking and practicing new ways of interacting with others (Bessette et al., 2020). Adolescents with depression who undergo rumination-focused CBT (RFCBT) have been shown to have fewer depressive relapses and fewer depressive symptoms up to two years after treatment has ended (Bessette et al., 2020). More recent reviews of mindset research have started to bridge clinical psychology with mindset theory, using mindset to inform clinical work and psychotherapy. For example, one study suggests that a growth happiness mindset can be useful for managing negative emotions such as anxiety, frustration, and disappointment in healthy ways that promote resilience (Schroder, 2020). However, when applied to mental illnesses such as depression, this shift is not as easy as it seems. Many depressed people show a fixed mindset about their condition because messages about the biogenetic causes of depression are a part of mainstream culture. While believing that a chemical imbalance causes one's mental illness can reduce self-blame, it also produces a fixed happiness mindset. Recently, clinical psychologists have called for this narrative to be reevaluated. Growth mindset interventions are being introduced to treat disordered thinking and promote well-being in many areas of life.

The Present Study

To test the possibility that mindset plays a role in the effectiveness of PPIs, the current study explores how manipulating mindset (as fixed or malleable) influences the efficacy of a gratitude intervention in improving well-being. Although many researchers have analyzed the

impact of PPIs on large samples, few have pinpointed the mechanisms of these interventions and the individual differences that influence the effectiveness of PPIs. Further, to date, no known study has directly examined the possible interaction of mindset (i.e., fixed or growth) on happiness and responsiveness to PPIs. The present thesis aims to determine if a manipulated belief in a growth mindset can increase an individual's susceptibility to the effects of the gratitude intervention.

In the present study, mindset beliefs (fixed or growth) about happiness are manipulated to examine how mindset influences a gratitude intervention aimed to improve well-being. Based on theories of mindset, the key hypothesis was that there will be an interaction of mindset and PPI, such that when primed with a growth mindset, individuals will report higher scores on measures of well-being after completing the gratitude intervention than those primed with a fixed mindset. In other words, the gratitude intervention will more positively impact people who believe happiness is malleable. Additionally, it is hypothesized there will be a main effect of mindset such that participants primed with a growth mindset will report higher well-being than those primed with a fixed mindset. Lastly, consistent with research from positive psychology, it is expected that there will be a main effect of gratitude intervention, such that participants who complete the gratitude intervention will report higher well-being than those who complete the placebo intervention.

Method

Participants and Design

Participants were 148 Tulane undergraduate students who completed the study for credit for a psychology course. All participants were over 18 years of age.

The present study was a 2x2 design, examining the role of mindset manipulation (fixed vs growth) and the gratitude intervention (vs placebo control) on well-being, optimism, and mood. Participants were randomly assigned one of four conditions, (1.) growth mindset and gratitude letter, (2.) fixed mindset and gratitude letter, (3.) growth mindset and placebo, and (4.) fixed mindset and placebo. The researchers investigated the role of the mindset manipulation, the intervention, and the mindset-intervention interaction on the dependent variables.

Materials and Measures

Mindset Articles

Participants were given one of two fabricated articles that described happiness and told that the article was an actual scientific paper. One article provided evidence that happiness is malleable, and the other claimed that happiness is fixed (Van Tongeren & Burnette, 2018; see Appendix A). Each article cited fake research papers to support the claim. Each article was a page long, and participants were given five minutes to read it.

Gratitude Letter Intervention

The gratitude letter instructions were provided on paper for each participant (Seligman et al., 2005; see Appendix B). Participants were given 15 minutes to write their letter by hand. A sheet of looseleaf paper, a pen, and a pencil were provided.

Early Memories Placebo

The early memories exercise instructions were provided on paper for each participant (Seligman et al., 2005; see Appendix B). Participants were given 15 minutes to write their memories by hand. A sheet of looseleaf paper, a pen, and a pencil were provided.

Satisfaction with Life Scale

The Satisfaction with Life Scale (SWLS) is a 5-item survey used to measure well-being (Diener et al., 1985; see Appendix C). Each item is a statement with which participants may agree or disagree, such as “If I could live my life over, I would change almost nothing” (Diener et al., 1985). Answers are on a 7-point, Likert-type scale from 1 (strongly disagree) to 7 (strongly agree) (Diener et al., 1985). Possible SWLS scores range from 5 to 35 (Diener et al., 1985). The scale has strong internal reliability ($\alpha = .87$), two-month test-retest reliability ($\alpha = .82$), and construct validity (Diener et al., 1985).

Flourishing Scale

The Flourishing Scale is another measure of well-being (Diener et al., 2009; see Appendix C). The survey contains eight statements, such as “I lead a purposeful and meaningful life” (Diener et al., 2009). Each item is rated on a 7-point, Likert-type scale, from 1 (strongly disagree) to 7 (strongly agree, Diener et al., 2009). Possible scores for the Flourishing Scale range from 8 to 56 (Diener et al., 2009). The Flourishing Scale has shown promising internal reliability ($\alpha = .87$, Diener et al., 2009).

Optimism Scale

Optimism is an attitude in which one expects positive outcomes (APA Dictionary of Psychology). Having a positive outlook is one component of well-being. The Optimism Scale measures optimism in a 9-item survey (Coelho et al., 2018; see Appendix C). Each item is a statement, such as “I see each challenge as an opportunity for success” (Coelho et al., 2018). Participants respond on a 5-point Likert scale. The Optimism Scale scores can range from 9 to 45 (Coelho et al., 2018). The English version of the Optimism Scale has great internal consistency ($\alpha = .93$) and composite reliability (Coelho et al., 2018).

Brief Mood Introspection Scale

A mood is an emotional state within an individual (APA Dictionary Psychology). For example, happiness, one component of well-being, is a positive mood. The Brief Mood Introspection Scale (BMIS) measures affect (Mayer & Gaschke, 1988; see Appendix C). It contains 16 items that are emotions like “lively” and “nervous” (Mayer & Gaschke, 1988). Participants respond on a 4-point, Likert-type scale ranging from 1 (definitely do not feel) and 4 (definitely feel, Mayer & Gaschke, 1988). The BMIS includes one additional item, reading “Overall, my mood is,” under which participants can respond on a 21-point, Likert-type scale from -10 (very unpleasant) to 10 (very pleasant, Mayer & Gaschke, 1988). Possible BMIS scores range from 16 to 64 (Mayer & Gaschke, 1988). The BMIS is internally consistent ($\alpha = .76-.83$, Mayer & Gaschke, 1988).

Mindset Beliefs (Attention and Manipulation Check)

To confirm that the participants both read and understood the article and held mindset beliefs consistent with their condition, mindset beliefs were evaluated with three questions written by the researchers. The first question acted as an attention check, asking participants to “Choose the response that best describes the main conclusion of the article you read” with the options “Happiness is fixed” or “Happiness is changeable.” The next two questions were on a 5-point Likert scale from very true to very false. The prompts were “After reading this article, how much do you feel happiness is changeable” and “After reading this article, how much do you feel happiness is fixed.” The last question was reverse coded, and the latter two questions were combined to create a mindset beliefs score. Scores ranged from 2 to 10, with lower scores indicating a stronger belief in a growth mindset and higher scores indicating a stronger belief in a fixed mindset.

Procedure

This study received IRB approval from the university, and all participants were recruited through the university's Sona System, which allows potential participants to choose from studies to sign up for. The study was completed in a small lab room in the psychology department. Upon arrival, participants read a consent form and then gave verbal consent to participate in the study.

Participants were randomly assigned to one of four conditions across the two between-subject variables. First, they were primed with either a growth or fixed happiness mindset by reading an article supporting either mindset (Van Tongeren & Burnette, 2018). Second, they were given the instructions for either the gratitude letter intervention or the early memories placebo intervention (Seligman et al., 2005). The participants then had 15 minutes to complete their assigned intervention on paper. They were given an envelope to put the paper in to take their paper with them at the end of the experiment. After the 15 minutes of writing, they completed the self-report measures of well-being as well as the mindset belief manipulation check on Qualtrics on a lab computer. During the reading, writing, and completing of the self-report measures, the researcher left the room to give the participants privacy. After the measures were complete, participants were fully debriefed and had the opportunity to ask questions or voice concerns and gave additional consent to use their data, then were thanked and excused.

Results

Scoring & Exclusionary Criteria

The final data set included 148 undergraduate students enrolled in at least one psychology course at Tulane University. After being debriefed, participants were asked if they consented to share their data with the research team. Subjects ($n = 2$) who answered no were automatically

removed from the data analysis. The self-report measures included an attention check question, which asked participants the main conclusion of the article they read at the beginning of the study. Participants who failed to respond correctly ($n = 10$) were removed from the data set. Additional exclusionary criteria were established, including behavioral non-compliance ($n = 2$) and participants who identified that the article they read was not real ($n = 4$). These participants were all excluded from the final data set, making the final $N = 130$.

All measures were scored based on the scoring criteria developed in past research (Diener et al., 1985; Diener et al., 2009; Coelho et al., 2018; Mayer & Gaschke, 1988). The mean SWLS score is consistent with means from previous samples of American college students (Pavot & Diener, 2009). The mean Flourishing Scale and BMIS scores in the present study are consistent with the mean scores from the original studies in which these scales were validated (Diener et al., 2009; Mayer & Gaschke, 1988). Table 1 presents the mean scores and standard deviation of each measurement tool by group.

Table 1
Mindset Beliefs, Well-being, and Happiness Mean Scores by Group

Variable	Growth Mindset Manipulation				Fixed Mindset Manipulation			
	Gratitude Letter		Placebo		Gratitude Letter		Placebo	
	<i>M</i>	<i>SD</i>	<i>M</i>	<i>SD</i>	<i>M</i>	<i>SD</i>	<i>M</i>	<i>SD</i>
Mindset Beliefs	3.23	1.37	3.33	1.09	6.73	2.34	6.09	2.38
SWLS	23.44	7.71	26.06	5.51	24.15	6.85	24.57	6.97
Flourishing Scale	44.72	6.52	47.03	6.02	43.85	8.46	44.09	8.14
Optimism Scale	32.00	5.41	32.50	4.79	30.70	4.97	31.26	4.95
BMIS	31.75	6.79	32.38	4.80	32.52	6.83	32.89	9.16

Manipulation Check

In order to make sure that the mindset article manipulation created the intended effect on mindset beliefs, an unpaired t-test was conducted on participant mindset belief scores. As expected, participants who read the growth mindset article had significantly stronger beliefs that happiness was changeable than those who read the fixed mindset article, $t(143) = -15.46, p < .01$.

MANOVA

To test the effect of two independent variables (mindset and gratitude intervention) on the measures of well-being, a between-subject MANOVA was conducted to assess the difference in mean scores for each scale between each group. The MANOVA for mindset and the intervention produced no significant results. There was no significant main effect found for mindset ($F[4, 123] = 1.902, p = .114$; Wilks' $\Lambda = .942$) or the intervention ($F[4, 123] = .325, p = .861$; Wilks' $\Lambda = .990$). There was not a significant interaction effect between mindset and intervention on the combined dependent variables, $F(4, 123) = .654, p = .625$; Wilks' $\Lambda = .979$. Table 2 presents the MANOVA results.

Table 2*MANOVA Multivariate Test*

Source	<i>df</i>	<i>df</i> Error	<i>F</i>	<i>p</i>
Intercept	4	123	1,388.88	0.00
Mindset	4	123	1.90	0.11
Gratitude	4	123	0.33	0.86
Mindset * Gratitude	4	123	0.65	0.63

Individual ANOVAs for the SWLS, Flourishing Scale, Optimism Scale, and BMIS scores were also not statistically significant. However, the Flourishing Scale ($F[1, 128] = 2.40, p = .12$) and the Optimism Scale ($F[1, 128] = 2.65, p = .11$) were close to the threshold of $p < .05$.

Exploratory Analyses

As an exploratory analysis, bivariate correlations between the five measurements were calculated. Table 4 shows the results of the correlational analyses. As expected, all measures of well-being and mood were positively correlated. Mindset beliefs were only significantly correlated with the Flourishing scale results, $r(128) = -.189, p = 0.03$. Furthermore, optimism was marginally correlated with mindset beliefs, $r(128) = -.155, p = 0.081$. A negative correlation indicates that the stronger one's beliefs in a growth mindset, the higher the score on the Flourishing scale. Table 3 presents the correlations between each dependent variable.

Table 3
Dependent Variable Correlations

Variable	<i>n</i>	<i>M</i>	<i>SD</i>	1	2	3	4	5
1. SWLS	130	24.57	6.90	-				
2. Flourishing Scale	130	44.72	7.51	.712**	-			
3. Optimism Scale	130	31.55	5.13	.52**	.73**	-		
4. BMIS	130	32.49	8.29	.576**	.66**	.57**	-	
5. Mindset Beliefs ^a	130	4.87	2.46	-0.12	-.19*	-0.16	-0.08	-

^a. A higher score for mindset beliefs indicates a fixed mindset.

** . Correlation is significant at the 0.01 level (2-tailed).

* . Correlation is significant at the 0.05 level (2-tailed).

Discussion

The aim of the present study was to determine if a gratitude intervention had a stronger effect on increasing well-being for participants whose mindset was manipulated to believe that happiness is changeable, as opposed to the mindset that happiness is fixed. It was hypothesized that participants primed with a growth mindset who completed the gratitude letter would report higher well-being scores than participants primed with a fixed mindset. It was also hypothesized that participants primed with a growth mindset would report higher well-being than those primed with a fixed mindset, and participants who completed the gratitude letter would report higher well-being than those in the control condition. Unfortunately, these hypotheses were not supported; there was no significant main effect of the mindset manipulation or the gratitude intervention, nor was there an interaction between the two.

Interestingly, although not reaching statistical significance, the effect of the mindset manipulation alone was larger than the effect of the gratitude intervention. Additionally, the individual ANOVA for mindset suggests that well-being on flourishing ($F[1, 128] = 2.40, p = .12$) and optimism ($F[1, 128] = 2.65, p = .11$) in particular were closest to the threshold for

statistical significance. The current findings on the impact of mindset, while not statistically significant, are not enough to reject past research in which growth mindset manipulations have been shown to increase well-being (Van Tongeren & Burnette, 2018).

Further, as expected, all measures of well-being, optimism, and mood were significantly correlated with each other. The Flourishing Scale had a strong, significant positive correlation with the SWLS, Optimism Scale, and the BMIS. The rest of the measures were significantly and moderately correlated with each other. Because flourishing and optimism were most strongly related, it follows that they are the two measures on which the manipulation may have had the greatest effect. Furthermore, the Flourishing Scale was weakly, but significantly, negatively correlated with fixed mindset beliefs (measured as the manipulation check). Mindset beliefs and optimism showed a similar weak correlation, although this was not significant. This is consistent with past research suggesting that people who believe in a growth happiness mindset are more likely to have higher well-being (Lam & Zhou, 2020; Van Tongeren & Burnette, 2018).

There are several possible explanations for the lack of significant findings in the present study. Since there was no main effect from the gratitude PPI, it may be the case that the gratitude letter did in fact fail to significantly increase participant well-being, optimism, and mood. Although positive psychology research aims to develop simple interventions that can help everyone, many PPIs have not been shown to be generalizable to multiple samples. One study aiming to replicate Seligman's findings indicated that PPIs may not have significantly greater effects on well-being than placebo interventions that focus on positive memories (Mongrain & Anselmo-Matthews, 2012). When controlling for publication bias, type of control condition, and effect size, one study concluded that much of the literature on gratitude interventions does not indicate a significant increase in positive affect or gratitude (Davis et al., 2016). For example,

some meta-analyses attribute the effect of the gratitude letter on well-being to the placebo effect and call for further investigation (Wood et al., 2010; Davis et al., 2016). The present study adds to the literature suggesting that the gratitude letter may not be a universally effective PPI.

Furthermore, other research suggests that the efficacy of the gratitude intervention is impacted by participant motivation; people who self-select to participate in studies of happiness inherently want to work to increase their happiness (Lyubomirsky, Dirckerhoof, & Boehm, 2011; Proyer et al., 2015). Additionally, the amount of effort a participant puts into the PPI is related to how effective the PPI is (Lyubomirsky, Dirckerhoof, & Boehm, 2011). In the present study, participants received class credit regardless of how much effort they put into the study. Because there was an external motivator, it is possible that participants were not engaged or passionate enough about increasing their well-being for the gratitude letter to have an effect. Further research is needed to better understand the role of motivation, effort, and selection bias in influencing the efficacy of PPIs. Perhaps the lack of intrinsic motivation is the factor missing from the present study.

Another reason the gratitude letter may have been ineffective at increasing well-being is the unusual academic school year in which the present study took place. Not only was the study conducted during the COVID-19 pandemic, but students were forced to evacuate the campus and city in September due to a natural disaster. Simply put, this particular academic year has been stressful and confusing for many undergraduate students. It is possible that the depression and anxiety that many participants likely felt could not be overcome by a simple gratitude letter. Indeed, one study showed that gratitude interventions have little to no effect on symptoms of depression and anxiety (Cregg & Cheavens, 2021). In meta-analyses of gratitude interventions, researchers found that the gratitude letter had a smaller effect on well-being when compared to a

placebo intervention, as opposed to a no-intervention condition (Cregg & Cheavens, 2021; Davis et al., 2016). The extenuating circumstances under which the present study took place, combined with the fact that the gratitude letter was compared to a control condition, may have contributed to the null results.

However, it is also possible that the gratitude letter worked as intended and was an effective intervention to increase well-being, but in the present study, the control intervention also acted as a PPI to increase well-being. Indeed, writing about early memories has been shown to increase happiness and decrease depressive symptoms immediately after doing the exercise (Seligman et al., 2005). Other research posits that the gratitude letter may not have significantly greater effects on well-being than placebo conditions that focus on positive memories (Mongrain & Anselmo-Matthews, 2012). This raises the possibility that the mindset manipulation may have primed participants to write about positive childhood memories and in turn increase scores on well-being outcome measures. For privacy and consistency, both the gratitude letter and memory writing task conditions instructed participants to put their writings in an envelope and take it with them at the end of the study. Unfortunately, this means that there is no possibility of content analyzing either exercise.

Clearly, many factors had the potential to influence the results of the present study. Past research has considered motivation, effort, and extenuating circumstances leading to depression and anxiety as factors that may influence responsiveness to PPIs like the gratitude letter (Lyubomirsky, Dirckerhoof, & Boehm, 2011; Proyer et al., 2015; Cregg & Cheavens, 2021). Additional studies have also questioned the effectiveness of gratitude interventions, which may suggest that the present study highlights a very real issue with gratitude interventions overall

(Wood et al., 2010; Davis et al., 2016; Cregg & Cheavens, 2021; Mongrain & Anselmo-Matthews, 2012).

Limitations

One limitation of the present study is the fact that it was a cross-sectional, short-term design. Because there was no pre-test measurement of well-being, the researchers could only compare results between the PPI and control conditions, without knowing how the subjects would have reported their well-being before participating in the study. Additionally, the researchers were unable to examine the longitudinal impact of the gratitude intervention. Instead, the present study investigated only the immediate effects of the intervention and the placebo.

Further, it is unclear if these manipulations (which occurred over less than 30 minutes) are truly impactful enough to elicit the beliefs and emotions they are intended to. Indeed, the fact that many of the participants either did not know the conclusion of the article they read (attention check failures) or reported beliefs inconsistent with the manipulation suggest it was potentially weak. In applied research, it often takes many repeated messages about mindset to see effects on performance (Blackwell et al., 2007).

As previously mentioned, the year in which the present study took place limits the findings to this particular set of circumstances. Several university closures, delays, and evacuations occurred during the time of the study, exacerbating anxiety and depressive symptoms among the population. These circumstances also made it difficult to recruit more participants. Not only was the sample restricted to undergraduate students, it was also relatively small (with the final $N = 130$) due to time constraints.

Future Directions

Future research is needed to examine the connection between mindset and happiness to better understand the role of perceptions and beliefs about happiness on the effectiveness of PPIs. The present study did show that reading about mindset can indeed influence people's beliefs in a growth or fixed mindset (at least temporarily). Consistent with past studies, the current study found that the mindset manipulation articles worked to produce differing beliefs in growth or fixed mindsets, but did not see an effect of this mindset belief on well-being (Van Tongeren & Burnette, 2018). It is possible that the way researchers operationalize and manipulate mindset is not conducive to directly influencing well-being. The researchers suggest further investigation into the relationship between mindset and happiness, as well as the efficacy of the mindset manipulation tools, is necessary. The role of mindset in happiness is a relatively new line of study in positive psychology, so future studies should investigate it further.

Additionally, there is clearly a need for more research on PPIs such as the gratitude letter. The present study puts forth more data that questions the efficacy of gratitude interventions. Future research would benefit from the use of longitudinal study designs that include a pre-test and multiple post-test measures of well-being, allowing researchers to tease out which PPIs are truly effective and the limitations and generalizability of these interventions. At best, perhaps undergraduate students under a significant amount of stress are not the target demographic for these exercises. At worst, the gratitude letter may not be an effective intervention at all. Either way, the field of positive psychology must find replicable results to showcase the efficacy of its interventions as well as the nuances of when, how, and why they do or do not increase well-being.

Positive psychology interventions help to promote well-being and happiness and allow individuals to thrive in their lives. While the present data did not find that not mindset impacts responsiveness to PPIs, it contributes to the conversation and emerging controversy about surrounding gratitude interventions, along with other commonly used PPIs. This research highlights the need to identify moderators of the relationship between PPIs and well-being outcomes, including individual differences, external situational factors, and specific instructions for the interventions. Further, the application of mindset theory needs more investigation to better understand how cognitive beliefs interact with PPIs.

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Appendix A

Growth Mindset Article

American Psychology Association

SCIENCE OBSERVER

Happiness is changeable and is a choice

by Ruth Adler

WASHINGTON

Chris K. struggled with happiness beginning in elementary school. Her battle with depression continued until Chris began reaching out to others and practicing positive thinking. As an adult, Chris is happily married with two wonderful children and expresses finding joy in each day. Is Chris the norm or the exception? Research suggests that Chris's story is likely an example of the norm—that is happiness levels change considerably throughout the lifespan.

Does happiness change?

Researchers at Stanford University's Happiness Management Unit (HMU) were interested in characteristics of happiness and how they can develop over an individual's lifetime. To investigate this topic, over eight hundred individuals were identified at birth and extensive data on them was collected throughout the next thirty years, through individual and family medical histories, observations and interviews.

Dr. Lawrence Rescorla, director of HMU, reported the findings: "happiness seems to be malleable and can be developed. In fact, choices are responsible for nearly 90 percent of experienced joy."

NIH psychologist Dr. Paul Medin drew similar conclusions from six longitudinal studies with varied samples. Dr. Medin found that "no one's happiness is permanent. Only for some people, greater effort is needed to affect changes." These studies, together with other nationally recognized scientific reports, have made clear the fact that **with effort, people's happiness can be changed.**

How does happiness change?

According to Dr. Medin, a person's happiness may not change automatically but rather requires effort: "Usually, there are some events in a person's life that motivate them to change."

Other researchers, like Dr. Russell Kelly, a psychologist at UCLA, echoed similar conclusions. "With enough drive and some help, people can develop and improve their ability to experience happiness," Dr. Kelly said.

Possibly the most notable example demonstrating the changeability of happiness comes from the 1995 Harvard Childhood Happiness Study, an intervention run by Dr. Richard Clark Cabot. Designed to serve the needs of 250 youngsters who were identified by school officials and parents as unhappy or depressed, the five-year intervention included psychotherapy, counseling, and regular visits from caseworkers.

The program's results were convincing: choosing happiness is an issue of effort. Compared to other "at risk" youth who did not participate in the program, intervention participants showed dramatic improvements in their ability to overcome depression and remain happy. Less than ten percent of the youth who experienced the intervention had continued difficulty with depression. In fact, most of them continued to improve up to ten years later, indicating that an individual's happiness can be changed and managed effectively.

These results are consistent with twin studies conducted by Dr. Mary Fisher at the Medical College of Virginia (MCV) who studied over five hundred pairs of identical twins, and found that in adulthood, the twins had varying levels of happiness, indicating that happiness is changeable and not a matter of genetics.

Conclusions

To conclude, research findings from a range of studies, including large-scale longitudinal studies, rigorous experiments, intervention programs, twin studies, and case study analyses, converge to one major conclusion: **Happiness is malleable and is a choice.**

Fixed Mindset Article

American Psychology Association

SCIENCE OBSERVER

Happiness, like plaster, is pretty stable over time

by Ruth Adler

WASHINGTON

Chris K. struggled with happiness beginning in elementary school. Chris continued to struggle with happiness throughout her adulthood, and has unsuccessfully attempted virtually every self-help plan suggested to her by friends, family, and therapists. Research suggests that Chris's story is likely an example of the norm—that is, happiness levels are stable over time and hard to change.

Does happiness change?

Researchers at Stanford University's Happiness Management Unit (HMU) were interested in characteristics of happiness and how they develop over an individual's lifetime. To investigate this topic, over eight hundred individuals were identified at birth, and extensive data on them was collected throughout the next thirty years through individual and family medical histories, observations and interviews.

Dr. Lawrence Rescorla, director of HMU, reported the findings: "happiness seems to be a fixed entity, remaining fairly stable over a person's lifetime. In fact, nearly 90% of an individual's happiness is determined by genetic factors."

NIH psychologist Dr. Paul Medin drew similar conclusions from six longitudinal studies with varied samples. He stated "in most people, by the age of eleven, happiness has been set like plaster and will never soften again."

These studies, together with other nationally recognized scientific reports, have made clear the fact that people's **happiness is determined at an early age, remaining stable thereafter.**

How does happiness change?

According to Dr. Medin, external influences are not able to change happiness. "Although individuals may exert effort through meditation and self-help programs, they are generally unable to change their underlying happiness."

Other researchers, like Dr. Russell Kelly, a bio-geneticist at UCLA, echoed similar conclusions. "Regardless of one's motivation or the amount of external help they receive, people's ability to change their happiness does not seem to be able to develop or improve," Dr. Kelly said.

Possibly the most notable example demonstrating the stability of happiness comes from the 1995 Harvard Childhood Happiness Study, an intervention run by Dr. Richard Clark Cabot. Designed to serve the needs of 250 youngsters who were identified by school officials and parents as depressed or severely depressed, the five-year intervention included psychotherapy, counseling, and regular visits from caseworkers.

The program's results were convincing: happiness management is an issue of genetics, not effort. Compared to young boys at risk of depression who did not participate in the intervention, individuals in the program did not improve their happiness or reduce their risk of becoming depressed. Most of the children in the study continued to experience difficulty in managing their happiness, and nearly all were classified as depressed ten years later, indicating that an individual's happiness is unlikely to change.

These results are consistent with twin studies conducted by Dr. Mary Fisher at the Medical College of Virginia (MCV) who studied over five hundred pairs of identical twins, and found that in adulthood, the twins had similar happiness levels, indicating that happiness is a matter of genetics.

Conclusions

To conclude, research findings from a range of studies, including large-scale longitudinal studies, rigorous experiments, intervention programs, twin studies, and case study analyses, converge to one major conclusion: Happiness is fairly fixed and is beyond personal control.

Appendix B

Gratitude Letter

Gratitude letter task:

Gratitude is a feeling of being thankful for the people and things in your life. The expression of gratitude brings positive emotions to those receiving and giving thanks. Yet, we do not always express our gratitude to the people in our lives. Here is your opportunity. Choose someone in your life who has been helpful and kind to you, yet you have not had an opportunity to express your gratitude. This person can be a family member (parent, grandparent, child, spouse, etc.), a friend, teacher, or coach - anyone who has had a positive influence on your life but has never (or rarely) heard you express your gratitude. Take a moment to think about the things that this person has done that make you extremely grateful. In this exercise, you are to write a letter of gratitude to this person. Use the following points as a guide to help you:

- Address the letter specifically to the person (e.g., “Dear...”).
- Do not worry about grammar and spelling.
- Address the person directly throughout the letter.
- Describe specific things that this person has done that made you grateful and how this person’s behavior has affected your life.
- End the letter in a way that identifies you as the writer (e.g., Sincerely..., or Love..., etc.).

We will not be collecting this and you are encouraged to give the letter to the person.

Early Memories Placebo

Childhood memory task:

Episodic memory is memory for events and experiences in our lives. We often reflect on past experiences and that is what you are being asked to do and write about for this next task. Choose an early childhood memory or experience that you would like to reflect on and think about all aspects of the event that you can remember and write a reflection on it. We will not be collecting these and you can take it with you or shred it. Use the following points as a guide to help you:

- Do not worry about grammar and spelling.
- You can write in any format you want: train of thought, essay, bullet point.
- Describe specific things that you remember, feel free to incorporate all senses and memories.

We will not be collecting this and you can take it with you or shred it.

Appendix C

Satisfaction with Life Scale

DIRECTIONS: Below are five statements with which you may agree or disagree. Using the 1-7 scale below, indicate your agreement with each item by placing the appropriate number in the line preceding that item. Please be open and honest in your responding.

- 1 = Strongly Disagree
- 2 = Disagree
- 3 = Slightly Disagree
- 4 = Neither Agree or Disagree
- 5 = Slightly Agree
- 6 = Agree
- 7 = Strongly Agree

- _____ 1. In most ways my life is close to my ideal.
- _____ 2. The conditions of my life are excellent.
- _____ 3. I am satisfied with life.
- _____ 4. So far I have gotten the important things I want in life.
- _____ 5. If I could live my life over, I would change almost nothing

Flourishing Scale

Below are 8 statements with which you may agree or disagree. Using the 1–7 scale below, indicate your agreement with each item by indicating that response for each statement.

- 7 - Strongly agree
- 6 - Agree
- 5 - Slightly agree
- 4 - Neither agree nor disagree
- 3 - Slightly disagree
- 2 - Disagree
- 1 - Strongly disagree

- _____ I lead a purposeful and meaningful life
- _____ My social relationships are supportive and rewarding

___ I am engaged and interested in my daily activities

___ I actively contribute to the happiness and well-being of others

___ I am competent and capable in the activities that are important to me

___ I am a good person and live a good life

___ I am optimistic about my future

___ People respect me

Optimism Scale

INSTRUCTIONS: Circle the response that indicates how well each statement applies to you, from 1 (Strongly Disagree) to 5 (Strongly Agree).

- | | | |
|----|---|-----------|
| 1. | I believe that I will accomplish the main goals of my life. | 1 2 3 4 5 |
| 2. | When I think about the future, I am positive. | 1 2 3 4 5 |
| 3. | More good than bad things happen to me. | 1 2 3 4 5 |
| 4. | I think everything will go wrong. (Reversed) | 1 2 3 4 5 |
| 5. | I see each challenge as an opportunity for success. | 1 2 3 4 5 |
| 6. | I find positive aspects even when things go wrong. | 1 2 3 4 5 |
| 7. | I see the positive side of things. | 1 2 3 4 5 |
| 8. | I am confident to overcome problems. | 1 2 3 4 5 |
| 9. | I am confident about the future. | 1 2 3 4 5 |

Brief Mood Introspection Scale

INSTRUCTIONS: Circle the response on the scale below that indicates how well each adjective or phrase describes your present mood.

(definitely do not feel) (do not feel) (slightly feel) (definitely feel)
 XX X V VV

Lively	XX X V VV	Drowsy	XX X V VV
Happy	XX X V VV	Grouchy	XX X V VV
Sad	XX X V VV	Peppy	XX X V VV
Tired	XX X V VV	Nervous	XX X V VV
Caring	XX X V VV	Calm	XX X V VV
Content	XX X V VV	Loving	XX X V VV
Gloomy	XX X V VV	Fed up	XX X V VV
Jittery	XX X V VV	Active	XX X V VV

Overall, my mood is:

Very Unpleasant

Very Pleasant

-10 -9 -8 -7 -6 -5 -4 -3 -2 -1 0 1 2 3 4 5 6 7 8 9 10