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Triggering Kindness: Mechanisms and Outcomes

A Dissertation submitted in partial satisfaction
of the requirements for the degree of

Doctor of Philosophy

in

Psychology

by

Kristin Ann Layous

June 2014

Dissertation Committee:

Dr. Sonja Lyubomirsky, Chairperson

Dr. Daniel Ozer

Dr. Katherine Sweeny

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The Dissertation of Kristin Ann Layous is approved:

Committee Chairperson

University of California, Riverside

ACKNOWLEDGEMENTS

For someone who reads, thinks, and writes a great deal about gratitude research, I found this acknowledgements section really difficult to write. The happy reason for this difficulty is that I could not have asked for a better educational or personal experience at UC Riverside and I have an endless list of people to thank for that.

One of my biggest concerns about pursuing a doctorate was that I would be surrounded by stiff, arrogant people who took themselves far too seriously. Upon visiting UC Riverside for recruitment weekend, I realized this would not be the case. The faculty, staff, and students here are incredibly warm and, although our research is held to the highest standards, many of our conversations take place over laughs with open and honest learning happening at all levels of the academic hierarchy. Because of this environment, I felt supported and encouraged to grow as a researcher and continue learning.

The inviting tone of the department is set when you walk into the Psychology Business Office. Not only can Faye Harmer and Dianne Fewkes answer any logistical question that I have about my degree requirements or funding, they are also my personal counselors, dedicated to my emotional health. Their commitment to the welfare of the students of this department is unparalleled and I know that countless students walk into their doors feeling upset or defeated and leave feeling uplifted. I would like to give a special thanks to Faye for our countless hours of conversations about life. We understand each other and I know that we will be lifelong friends. That is all I will say about her because she is likely already embarrassed.

I also feel extremely lucky to have gone through the program with a huge cohort that had a variety of research interests, backgrounds, and personal styles. My experience was greatly enriched by these fellow students who inspired me to work harder and contributed to my projects with thoughts and suggestions. In addition, I appreciated all of our social time—I consider many of them to be my friends and confidants and I was so fortunate to go through school with good people, as well as motivated researchers.

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friendship. I also had the added pleasure of living with Katie for four years. Our research and, more importantly, life conversations have often taken place over dinner, drinks, and television, and sometimes (often) in our pajamas. I will always be grateful for how close we have become—she is like family to me and I could not have done this without her.

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My dissertation committee members were not chosen by mistake; they are by far the three faculty members who have contributed the most to my learning at UC

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I saved Sonja Lyubomirsky for the last of my professional acknowledgements because she has hands down contributed more to my growth and development as a researcher and a writer than anyone else. I decided to apply to graduate school after

reading Sonja's first book, *The How of Happiness*. I had noticed throughout my brief counseling career that certain students weathered the uncertainty of the job market with ease and resilience, while others found it extremely difficult to even send out one resume. Thus, I became interested in the burgeoning field of positive psychology and promptly spent \$80 on books to read more about it. As I read Sonja's book, I was inspired by her ideas and started dreaming up experiments to test different factors of interest. Her inviting prose hooked me and, despite being in a secure full-time job, I decided to apply to work with her. I did not apply to anywhere else because I was unsure of this path and I thought if I was not admitted, it was a sure sign that academia was not for me (a very stupid approach in hindsight). To this day, I have not asked her why she admitted me with minimal research experience and my foot firmly planted in a different career, but I am extremely grateful that she saw something in me and has tirelessly cultivated my ideas, research and writing skills, and my professional acumen.

Interestingly, it was Sonja's writing that lured me into graduate school and without a doubt the most valuable skill Sonja has taught me is how to write. Throughout my education, I had been praised for my writing skills. Much to my surprise, my first draft from Sonja came back with quite a few edits. Although the basic ideas that I had written about were still represented, they were presented more clearly, with better flow and word use and WAY fewer words. I realized I had a lot to learn. Luckily Sonja was up for the challenge. She went through every draft of every document—the important ones and the less important ones—with painstaking detail and explained every rule, often more than once because old habits die hard for me (sorry!). Not only did I learn how to be a

better writer, but I also learned that good writing takes time and persistence and drafts upon drafts. Because we are in the business of communicating ideas and data that hopefully supports those ideas, it is best we can do that clearly. I will be forever grateful to Sonja for spending innumerable hours to improve this very valuable skill that will follow me throughout my entire career. Don't worry, I will keep Strunk and White and Bem very close at hand when I need some reminders.

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ABSTRACT OF THE DISSERTATION

Triggering Kindness: Mechanisms and Outcomes

by

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Doctor of Philosophy, Graduate Program in Psychology

University of California, Riverside, June 2014

Dr. Sonja Lyubomirsky, Chairperson

Happy people seem to have it all—relatively stronger interpersonal relationships, higher incomes, better physical health, and even longer lives. But before dismissing happy people’s success as plain good luck, researchers should investigate the mechanisms by which happiness might engender positive outcomes across multiple life domains. The current dissertation proposes that inducing positive emotions—the hallmark of happiness—at the beginning of a self-improvement endeavor can act as a trigger for promoting greater self-reported effort and persistence. Across two studies, I found that engaging in a positive writing task (i.e., a trigger) before beginning a self-improvement (i.e., kindness) intervention increased effort during the intervention, which then predicted greater well-being. Specifically, Study 1 examined the effect of writing about gratitude, optimism, or an intensely positive experience (versus a neutral topic) at the beginning of a 3-week kindness intervention on effort. I found that the positive writing tasks predicted

greater effort toward performing kind acts, which in turn predicted greater well-being immediately following the intervention and at a 2-week follow-up. No significant differences emerged among the triggers. In Study 2, I explored the effects of the gratitude writing task in more detail, extended the intervention period to 6 weeks, and varied the deployment of the trigger to determine whether more frequent (i.e., weekly) engagement in the positive writing task predicted greater effort and persistence throughout. After writing a gratitude letter (versus writing about their week), individuals reported relatively greater elevation, which predicted greater effort throughout the intervention; in turn, replicating Study 1, greater effort predicted greater well-being immediately following the intervention. Importantly, writing a gratitude letter at baseline did not influence well-being as far as the 1-month follow-up time point. However, the group that wrote weekly gratitude letters (versus all other conditions) showed the highest levels of elevation and effort throughout the intervention, which predicted well-being following the intervention and 1 month later. Thus, engaging in a trigger before a self-improvement program can promote effort and persistence on the program, and performing weekly triggers might be especially motivating.

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Triggering Kindness: Mechanisms and Outcomes

Happy people seem to have it all—relatively stronger social relationships (Harker & Keltner, 2001; Waugh & Fredrickson, 2006), higher incomes (Diener, Nickerson, Lucas, & Sandvik, 2002; Lucas & Schimmack, 2009), better physical health (Doyle, Gentile, & Cohen, 2006; Pressman & Cohen, 2005; Richman et al., 2005), and even longer lives (Danner, Snowdon, & Friesen, 2001; Moskowitz, 2003). Intuition suggests that people’s happiness is a byproduct of these positive life outcomes, but a meta-analysis of nearly 300 cross-sectional, longitudinal, and experimental studies concluded that happiness often precedes successes in life rather than simply resulting from them (Lyubomirsky, King, & Diener, 2005). The current paper presents two studies that test a possible mechanism by which happiness leads to success across multiple life domains (e.g., relationships, health, and work)—namely, by promoting effort and persistence toward self-improvement endeavors.

A hallmark of happiness is the frequent experience of positive emotions (Diener, Suh, Lucas, & Smith, 1999). I argue here that these positive emotions are the blocks upon which happy people’s successful outcomes are built. Although the experience of any one positive emotion is momentary, theory suggests that this fleeting state can promote durable outcomes. The broaden-and-build theory proposes that being in a positive state broadens people’s thinking and attention, stimulating the urge to play, explore, and act (Fredrickson, 1998, 2013). While in this receptive, energized state, a person might have a creative new idea that takes her business in a new direction, reach out to a stranger to form a new friendship, or attend a new exercise class that becomes her favorite way to

stay fit. Thus, even transient positive emotions can help individuals take actions in their lives that stimulate durable personal resources in the domains of work, relationships, and health. I propose that people who experience frequent positive emotions are relatively better positioned to engage in intentional self-improvement efforts via the “broadening” function as Fredrickson (1998, 2013) proposed, as well as through greater capacity for effort toward self-improvement goals and greater persistence in the formation of healthy habits.

Consequently, if people engage in a successful positive emotion induction at the beginning of a self-improvement endeavor, I predict that they will put more effort toward the endeavor and therefore reap greater rewards from its practice (e.g., greater happiness from becoming a kinder person or more pounds lost from successful dieting). The current studies test my prediction that a well-placed positive emotion induction—namely, a “trigger”—can trigger (stimulate) greater effort in self-improvement endeavors.¹

Positive Emotions Can Lead to Successful Self-Improvement

Positive emotions broaden. Supporting the “broaden” hypothesis, people who watched an amusing video clip self-generated significantly more answers to the open-ended question, “What do you want to do right now?” than people who watched a neutral video clip. Those in the amused condition were also relatively more likely to list activities that involved the outdoors, exercising, socializing, and playing (Fredrickson &

¹The trigger can be considered a noun as it is the activity that induces positive emotions at the beginning of a self-improvement endeavor. One can also use “trigger” as a verb to describe what the trigger (i.e., the positive emotion induction) does. That is, the trigger at the beginning of a self-improvement endeavor triggers greater effort toward self-improvement activities (via increases in positive emotions). Thus, in an experimental context, the trigger can be considered a moderator because it moderates the efficacy of an intervention (i.e., if a trigger is present, the overall intervention should be more efficacious).

Branigan, 2005; see also Kahn & Isen, 1993). The ability to generate multiple ideas might help individuals work toward self-improvement. For example, if a person wants to become kinder, being in a positive state might help him devise innovative ways to make his best friend's day. Similarly, if one wants to lose weight, being in a positive state might foster creative ways to infuse physical activity into one's daily life (e.g., parking far from the office or holding meetings while walking rather than sitting). Thus, positive emotions can assist self-improvement efforts by helping people conceive countless ways to meet their goals.

Positive emotions increase effort. Although positive emotions may be effective in increasing people's receptivity to new experiences and empowering them to think of ways to meet their goals, these two mechanisms are only a piece of the self-improvement puzzle. Real self-improvement is attained through hard work and perseverance. In an extension of the broaden-and-build theory, I propose that positive emotions may also build durable resources (e.g., better health, improved social relationships) by inspiring people to put effort toward and persist in challenging tasks (e.g., self-improvement endeavors). As one example, people who received a positive mood manipulation (versus no manipulation) before engaging in an anagram-solving task successfully completed more anagrams, persisted at the task longer, tried more combinations for all anagrams (including unsolvable ones), and reported more motivation toward the task (Erez & Isen, 2002; see also Kavanagh, 1987). People in the positive mood condition were also more likely than those in the neutral condition to believe that their greater effort would improve their performance. Similarly, in a health context, individuals induced into a positive

mood reported higher self-efficacy in managing a hypothetical illness, as well as greater intention to put effort into fighting the illness, than those induced into a negative mood (Schuettler & Kiviniemi, 2006). Thus, positive emotions appear to signal to people that they are capable of mustering effort into challenging tasks, as well as predicting the likelihood that they will persist in those tasks.

Positive emotions promote habit formation. Finally, the ultimate goal of a self-improvement endeavor is to make the desired change a habit—an automatic part of daily life. For example, if a person wants to become kinder, he or she needs to consciously put effort into performing kind acts until, over time, it feels natural and instinctive to send a card to a friend for no particular reason or to do an extra chore around the house to help a roommate or partner. Importantly, forming a new habit takes time. A recent study followed people as they adopted a new habit (e.g., taking a 15-minute run before dinner or doing 50 sit-ups after morning coffee) and found that the median reported time until habit formation (i.e., automaticity of the desired behavior) was 66 days (Lally, Van Jaarsveld, Potts, & Wardle, 2010).

Strategically placed positive emotion inductions (i.e., “triggers”) might assist with habit formation by increasing the likelihood that a person initiates and maintains behavior change. Theory suggests that the decision to initiate a behavior change depends on people’s expectations regarding future outcomes (e.g., the degree to which they think a diet plan will help them successfully lose weight), whereas the maintenance of the change depends on people’s satisfaction with the actual outcomes (e.g., the degree to which they actually lost weight on the new plan; Rothman, 2000). Individuals in a positive state are

more likely to believe that their hard work will be associated with improved performance and rewards (Erez & Isen, 2002), thus promoting initiation of a behavior change.

Similarly, people in a positive state are relatively more likely to construe the events in their lives optimistically (Dickerhoof, 2007; Lyubomirsky, 2001), thus helping them interpret the outcomes of their behavior change in a positive light. For example, people in a positive state might evaluate a new diet plan as potentially efficacious and therefore decide to initiate. Furthermore, after a week of engaging in the diet, those in a positive state may be more likely to focus on the new levels of energy they are experiencing from their increased consumption of “super foods” and less likely to focus on the fact that they have not yet lost a pound. Consequently, they might evaluate the outcomes of the diet optimistically and maintain their efforts. Therefore, I argue that experiencing positive emotions throughout the process of changing their behavior could help people weather the initial difficulty of forming a new habit.

A Test of Concept

If positive emotions play an important role in self-improvement endeavors, people who receive a positive emotion induction before embarking on a self-improvement challenge (i.e., a trigger) will fare better than people whose emotions are left relatively neutral. Because the “broaden” hypothesis of positive emotions already has a great deal of empirical support, the current studies aimed to test whether people who undergo a positive emotion manipulation (versus a neutral task) would exert greater effort in a subsequent self-improvement endeavor (i.e., performing kind acts). In addition, in the second study, I explored the duration of the positive emotion effect, specifically testing

whether receiving positive emotion boosts throughout a self-improvement endeavor (again performing kind acts), rather than just at the beginning, helps people maintain their efforts for a longer time.

Positive Writing Tasks Increase Positive Emotions

Multiple randomized controlled studies have shown that simple, brief, and self-administered positive writing tasks (i.e., “positive activities”; Lyubomirsky & Layous, 2013) boost positive emotions. In one study, college students who were asked to write optimistically about their “best possible future self” increased in positive affect more than students who wrote about what they did during the past week (Layous, Nelson, & Lyubomirsky, 2013). In another study, people who wrote about their most “intensely positive experience” reported greater positive affect than people who wrote about neutral topics such as the layout of their bedroom (Burton & King, 2004). And finally, individuals who expressed gratitude showed greater boosts in positive affect than those who did not (Emmons & McCullough, 2003). Thus, empirical evidence suggests that positive writing tasks reliably increase positive affect.

However, all increases in positive affect may not be created equally. Positive affect is often measured by creating a composite of multiple discrete positive emotions and, conceivably, different writing tasks could elicit slightly different patterns of positive emotions that are masked when they are all combined. Differences in positive emotions could also be differentially related to specific self-improvement endeavors. For example, maybe optimism is critical for embarking on a new exercise plan, but amusement is most helpful for being receptive to constructive feedback at work. Indeed, theory and research

now clearly support the differential functioning of discrete positive emotions (Campos, Keltner, Gonzaga, & Goetz, 2013; Sauter, 2010). To determine whether one positive writing task is better suited for increasing kindness than another, in my first study, I explored the effect of three different types of positive writing triggers (versus a neutral writing task) on self-reported effort expended in performing kind acts.

Expressing Gratitude Motivates Kindness Via Elevation

Although identifying the discrete positive emotional mechanisms for each positive writing task is outside of the scope of the current project, in my second study, I chose one positive writing task to examine more closely. Specifically, I propose that expressing gratitude promotes more effort toward kind acts because it elicits the “other-praising” emotion of elevation (Algoe & Haidt, 2009; Haidt, 2003). Haidt (2003) uses the term elevation to describe the feelings, thoughts, and physiological responses one has after witnessing an act of moral virtue—specifically, a feeling of being moved and uplifted, a warm feeling in the chest, a sense of optimism about humanity, and a desire to become a better person and give back to others. Although elevation is usually described as resulting from witnessing a non-self-relevant act of virtue, I propose that reflecting on past acts of virtue—even if self-relevant—can stimulate elevation. Indeed, gratitude has been proposed as a “moral barometer” by helping people recognize the good deeds happening around them and also as a “moral motivator” prompting people to pay-it-forward (McCullough, Kilpatrick, Emmons, & Larson, 2001).

Past research has shown that people who wrote about times in which they felt grateful were relatively more elevated than people who wrote about times in which they

felt relieved (i.e., a positive emotion control comparison; Layous, Sweeny, & Lyubomirsky, 2014). The authors reasoned that, because expressing gratitude primes a person to think about someone doing a virtuous deed for her, it might prompt her to feel more connected to others. Similarly, because often the deeds people feel most grateful for are ones that can never be repaid, they might be left with a feeling of indebtedness that cannot be relieved by giving back to the benefactor. Thus, the person might feel moved and uplifted that someone has invested in her, but simultaneously motivated to help others and become a better person to relieve some of this indebtedness (Layous et al., 2014).

An accumulating body of evidence supports my contention that elevation might be particularly powerful in motivating prosocial efforts. Across two experiments, people who watched an elevating video clip (versus a neutral nature documentary) were more likely to offer the researcher help in a subsequent task and devoted more time to helping (Schnall, Roper, & Fessler, 2010). Notably, in the second experiment, people who watched the elevating clip helped even longer than those who watched a humorous clip, indicating that elevation promoted helping behavior above and beyond simply being in a positive state (Schnall et al., 2010). Also supporting the link between elevation and kindness, one study found that a trait tendency toward experiencing elevation was related to prosocial behavior even after controlling for the Big 5 and spiritual transcendence (Landis et al., 2009). Finally, as preliminary evidence for the far-reaching influence of elevation, preschool teachers who reported feeling elevated by their school principals showed more positive organizational behaviors and more commitment to the school than

those who simply reported feeling happy or serene (Vianello, Galliani, & Haidt, 2010). Thus, I predict that the gratitude writing task (i.e., gratitude trigger) will promote elevation, which, in turn, will predict greater expended effort toward performing kind acts.

Successful Self-Improvement Leads to Positive Downstream Consequences

Although the main focus of my two studies is exploring the processes by which positive emotions prompt effortful and persistent self-improvement behaviors, I also anticipate that relatively greater effort toward prosocial behavior will predict positive downstream consequences for the prosocial individual. In past experiments, performing kind acts has been shown to improve relationships among peers (Layous, Nelson, Oberle, Schonert-Reichl, & Lyubomirsky, 2012) and increase personal happiness (Layous, Lee, Choi, & Lyubomirsky, 2013; Lyubomirsky, Sheldon, & Schkade, 2005; Nelson et al., 2014; Sheldon, Boehm, & Lyubomirsky, 2012) relative to control tasks.

Thus, I propose that an initial positive writing task can improve effort toward a self-improvement endeavor (i.e., becoming a kinder person), which then can feed back into personal happiness (both directly and also indirectly through improved relationships and positive views of self). In turn, this increase in happiness will promote more frequent positive emotions, which can continue to facilitate the ongoing self-improvement endeavor or efforts in other domains (e.g., work, health), creating a positive feedback loop or upward spiral. Indeed, recent theory suggests that a single, well-timed psychological intervention can trigger a cascade of positive and lasting outcomes by creating one positive event upon which others can be built through recursive processes

(Walton, 2014). Notably, this process should apply to multiple types of self-improvement projects, such as exercising more, eating healthier, performing more effectively at work, or improving one's character in a variety of ways (e.g., increasing humility or gratitude).

The Current Studies

In two studies, I explored whether and how brief positive writing activities (the triggers) motivate prosocial behavior and for how long. In Study 1, I tested the effect of engaging in one of four positive writing activities (versus a neutral one) prior to engaging in an acts of kindness intervention over the course of 3 weeks (see the top of Figure 1 for a study timeline and sample sizes per cell). Specifically, participants were randomly assigned to engage in one of two gratitude letter tasks (i.e., either to express general gratitude to anyone they wish [“general gratitude” condition] or specific gratitude toward a person for a particular kind act [“specific gratitude” condition]), a joy task (writing about an intensely positive experience [“joy” condition; Burton & King, 2004]), an optimism task (writing about their best possible self [“optimism” condition; King, 2001]), or a neutral task (listing what they did over the past 7 days [“control” condition]). Throughout the 3 weeks, all participants, regardless of condition, were prompted (by online instructions) to perform kind acts (for whomever they want) and then to report their kind acts anonymously the following week on the study website. My first hypothesis was that participants who engage in any of the positive writing tasks (i.e., triggers) would perform more effortful kind acts (self-reported) than participants who engage in the control writing task. My second hypothesis was that participants who engage in relatively

more effortful kind acts would show relatively larger increases in happiness (see Figure 2 for the theoretical model).

Additionally, I experimentally tested an exploratory question that concerned the specific trigger of gratitude. That is, does gratitude need to be general (e.g., others have contributed to my good fortune) or specific to the domain of the behavior one is about to embark on (e.g., others have been kind to me, so I am moved to be kind as well) to be most effective in motivating prosocial behavior?

In my second study, I aimed to replicate the general findings from Study 1, as well as test the specific mechanisms by which one trigger of interest to many researchers—expressing gratitude—elicits effort toward prosocial behavior. Specifically, I expected that, because expressing gratitude involves recounting a good deed done by another person, people who write gratitude letters will feel relatively more elevated than people who do not (Hypothesis 3). Furthermore, because feeling elevated inspires one to be a better person and do more for others, I expected that people who feel relatively more elevated will also put more effort toward performing kind acts (Hypothesis 4; see Figure 3 for the theoretical model). As in Study 1, I also predicted that greater levels of effort toward kind acts will be associated with relatively higher well-being at the post-test and follow-up time points (Hypothesis 2).

In addition, in this second study, I sought to test the duration of the trigger hypothesis by extending the intervention period from 3 weeks to 6 weeks. To be sure, expressing gratitude one time is decidedly unlikely to stimulate a lifetime of prosocial acts. To this end, Study 2 addressed the following specific questions. First, does writing a

single gratitude letter (versus engaging in a neutral writing task) at the very beginning of a 6-week intervention stimulate one to perform more effortful kind acts through the course of the study? Second, does writing letters of gratitude weekly during the 6 weeks promote even more prosocial action? Lastly, can writing a gratitude letter at the midpoint of a 6-week time period serve as a “booster,” inspiring participants to do more frequent or effortful kind acts than they were doing during the first half of the study?

I investigated these research questions in Study 2 by including four groups that engage in the (general) gratitude letter writing task (i.e., the trigger) at various points during the 6 weeks (just at baseline, at baseline and midpoint, just at midpoint, and weekly), and one condition that engages in the control trigger only at the beginning of the intervention (see the bottom of Figure 1 for a study timeline and sample sizes per cell). All participants were asked to perform acts of kindness throughout the study. If gratitude stimulates effortful prosocial behavior, I expected the gratitude conditions to report more effortful kind acts following their expression of gratitude than the control conditions at baseline and at midpoint (again testing Hypothesis 1). Finally, I predicted that participants who express gratitude weekly will engage in relatively more effortful kind acts over the course of the intervention than any other group (Hypothesis 5).

Study 1: The Effect of Four Positive Triggers on Effort in a Kindness Intervention

This study seeks to explore two main questions: 1) Does a positive writing activity prompt more effortful kind acts than a control (neutral) writing activity?; and 2) Do relatively more effortful kind acts predict relatively larger increases in happiness?

Method

Participants

Two-hundred thirty-one participants (69.6% female; $M_{AGE} = 20.02$, $SD = 2.92$) from the University of California, Riverside, a medium-sized university in the western U.S. were granted course credit in exchange for participation. The majority of participants identified as Asian (40.3%) or Hispanic/Latino(a) (29.4%), with the rest identifying as White (13.9%), “more than one” (6.5%), “other” (5.2%), Black/African American (3.9%), Hawaiian/Pacific Islander (0.9%), or American Indian/Alaskan Native (0.4%). At the post-intervention time point, the sample size dropped considerably ($N = 170$), but the attrition was evenly spread across conditions, $\chi^2(4) = 2.33$, $p = .68$, and ethnic background, $\chi^2(7) = 4.89$, $p = .67$. However, men attrited marginally significantly more than did women, $\chi^2(1) = 3.61$, $p = .06$. Similarly, at the follow-up time point (T_5), sample size again dropped ($N = 154$), but attrition was again evenly spread across conditions, $\chi^2(4) = 4.65$, $p = .33$, and ethnicities, $\chi^2(7) = 4.73$, $p = .69$. The pattern of missingness among males and females seen at post-test did not hold for the follow-up time point, revealing that men and women showed equal levels of attrition at follow-up, $\chi^2(1) = 0.00$, $p = .99$.

Design and Procedure

The present study took place entirely over the internet, using a website available only to registered participants. The study consisted of a 3-week intervention period and a follow-up assessment 2 weeks later, with a total duration of 5 weeks. Upon logging in to the study website for the first time, participants were randomly assigned to one of 5

possible conditions that varied only with respect to the 8-min writing activity performed at baseline: 1) writing a general gratitude letter, 2) writing a specific gratitude letter, 3) writing about one's best possible future self, 4) writing about an intensely positive experience, and 5) writing about what one did last week. To minimize potential demand effects, all participants were told that they would engage in positive practices designed to increase well-being.

After the writing activity at baseline, all participants were asked to perform several acts of kindness during one day each week over 3 weeks (Lyubomirsky, Sheldon et al., 2005). Each Monday, they logged in to the study website to complete measures and report on their kind acts from the previous week.

Time 1 assessment. The first assessment (T_1) contained a consent form, demographics, and measures of the outcome variables (i.e., life satisfaction, positive emotions, and negative emotions). Right after completing these questionnaires, students performed their initial assigned writing exercise. Next, all participants received instructions to perform acts of kindness during the week.

Time 2 through Time 5 assessments. At the second (T_2) and third (T_3) assessments, participants described the acts of kindness they performed upon logging-in to the website, as well as the effort they expended on performing kind acts during the past week and the positive and negative emotions they experienced throughout the week. Next, participants were again asked to complete acts of kindness during the week. At posttest (T_4), participants reported their acts of kindness for the last time and completed the effort

and outcome measures. Two weeks later (T₅), participants again completed the outcome measures to assess the durability of changes.

Experimental Manipulations

Participants were exposed to one of five experimental conditions at baseline.

Instructions for each condition are provided below.

General gratitude. In this condition, students were asked to spend approximately 8 minutes remembering and writing about a time in their lives when they were grateful to another person (e.g., teacher, parent, friend; see Lyubomirsky, Dickerhoof, Boehm, & Sheldon, 2011). Their instructions, originally adapted from Seligman et al. (2005), were as follows:

Please take a moment to think back over the past several years of your life and remember an individual to whom you are extremely grateful. For example, think of the people – parents, children, spouses/partners, relatives, friends, neighbors, teachers, employers, and so on – who have impacted your life. Now for the next 10 minutes, write a letter to one of these individuals. Use the instructions below to help guide you through this process:

1. Use whatever letter format you like, but remember to write as though you are directly addressing the individual you are grateful to. If it is helpful to head the letter “Dear so-and-so,” or end with “Sincerely, XXX,” feel free to do so.
2. Do not worry about perfect grammar and spelling.
3. Describe in specific terms why you are grateful to this individual and how the individual’s behavior affected your life.
4. Describe what you are doing now and how you often remember their efforts.
5. Remember: Anything you write will remain strictly confidential. Although you are welcome to show or give this letter to anyone you please, for the purposes of this study, the letter you write is a private document in which you can express your gratitude freely without intent to deliver it to anyone. Should an experimenter read this entry in the future, it will be identifiable only by a subject number and not by a name.

Specific gratitude. In this condition, students were asked to spend approximately 8 minutes remembering and writing about a time in their lives when they were grateful for a specific kind act bestowed upon them (e.g., grateful to a sibling for caring for them when they were sick). Their instructions were as follows:

Please take a moment to think back over the past several years of your life and remember an instance when someone did a kind act (or acts) for you for which you are extremely grateful. For example, think of the people – parents, children, spouses/partners, relatives, friends, neighbors, teachers, employers, and so on – who have been especially generous and thoughtful towards you. Now for the next 10 minutes, write a letter to one of these individuals. Use the instructions below to help guide you through this process:

1. Use whatever letter format you like, but remember to write as though you are directly addressing the individual you are grateful to. If it is helpful to head the letter “Dear so-and-so,” or end with “Sincerely, XXX,” feel free to do so.
2. Do not worry about perfect grammar and spelling.
3. Describe in specific terms the kind act this person bestowed upon you and how the kind act affected your life.
4. Describe what you are doing now and how you often remember their efforts.
5. Remember: Anything you write will remain strictly confidential. Although you are welcome to show or give this letter to anyone you please, for the purposes of this study, the letter you write is a private document in which you can express your gratitude freely without intent to deliver it to anyone. Should an experimenter read this entry in the future, it will be identifiable only by a subject number and not by a name.

Optimism. In this condition, participants were asked to spend 8 minutes writing about an imagined ideal future self (see Boehm, Lyubomirsky, & Sheldon, 2011a).

Borrowing King’s (2001) “best possible selves” paradigm, the instructions were as follows:

Think about your life in the future. Imagine that everything has gone as well as it possibly could. You have worked hard and succeeded at accomplishing all of your

life goals. Think of this as the realization of all of your life dreams. Now, write about what you imagined.

1. Be as creative and imaginative as you desire.
2. Use whatever writing style you please, but remember to imagine your ideal life in the future.
3. Do not worry about perfect grammar and spelling.
4. Use as much detail as you want.
5. Remember: Anything you write will remain strictly confidential. Should an experimenter read this entry in the future, it will be identifiable only by a subject number and not by a name.

Positive mood. In this condition, participants spent 8 minutes writing about an “intensely positive experience” from their past (see Burton & King, 2004). Instructions were as follows:

Think of the most wonderful experience or experiences in your life, happiest moments, ecstatic moments, moments of rapture, perhaps from being in love, or from listening to music, or suddenly “being hit” by a book or painting or from some great creative moment. Choose one such experience or moment. Try to imagine yourself at that moment, including all the feelings and emotions associated with the experience. Now write about the experience in as much detail as possible trying to include the feelings, thoughts, and emotions that were present at the time. Please try your best to re-experience the emotions involved.

1. Use whatever writing style you please
2. Do not worry about perfect grammar and spelling.
3. Use as much detail as you want
4. Remember: Anything you write will remain strictly confidential. Should an experimenter read this entry in the future, it will be identifiable only by a subject number and not by a name.

Control. In the comparison condition, participants spent 8 minutes listing what they did over the past 7 days. To maintain the cover story that all activities (including the control) should increase happiness levels, this condition was described as an organization task:

Please take a moment to think about what you did over the past 7 days. That is, create a mental outline of what you did during that time. Now, for the next 10

minutes, please write these activities out in a list format. Use the instructions below to help guide you through this process:

1. Use whatever writing style you please, but be as detail oriented as possible.
2. Try to leave out emotions, feelings, or opinions pertaining to your plans.
3. Focus on exactly what you did.
4. Do not worry about perfect grammar and spelling.
5. Remember: Anything you write will remain strictly confidential. Should an experimenter read this entry in the future, it will be identifiable only by a subject number and not by a name.

Acts of Kindness

Regardless of condition, participants were instructed to perform acts of kindness for others each week. They were instructed to do as many acts of kindness as they wanted, but to make sure to do them all during one day of the week.

In our daily lives, we all perform acts of kindness for others. These acts may be large or small and the person for whom the act is performed may or may not be aware of the act. Examples include helping your parents cook dinner, doing a chore for your sister or brother, helping a friend with homework, visiting an elderly relative, or writing a thank you letter. During one day this week (any day you choose), you are to perform acts of kindness (as many as you want) – all in one day. The acts do not need to be for the same person, and the act may or may not be similar to the acts listed above. Next week you will report what acts of kindness you chose to perform. Please do not perform any acts that may place yourself or others in danger.

When participants logged on to the website to complete the effort measures each week (T₂-T₄), they were first asked to list all the acts of kindness they completed during the previous week.

Materials

Consent and demographic information. When participants logged in to the study website for the first time, they read a consent form that informed them of their rights

as a participant. After consenting to participate, they were asked to provide general demographic information such as their sex, age, and ethnicity.

Life satisfaction. The Satisfaction With Life Scale (SWLS; Diener, Emmons, Larsen, & Griffin, 1985) assesses respondents' current satisfaction with their life in general. The SWLS consists of five questions (e.g., "In most ways my life is close to my ideal," "I am satisfied with my life"), which are rated on 7-point Likert-type scales (1 = *strongly disagree*, 7 = *strongly agree*). Thus, higher scores on this measure indicate greater life satisfaction. Validation studies have shown that the SWLS comprises a single factor and possesses high internal consistency ($\alpha = .87$) and high test-retest reliability ($r = .82$; Diener et al., 1985). In the current study, satisfaction with life was assessed at T₁ (Cronbach's $\alpha = .86$), T₄ (Cronbach's $\alpha = .90$), and T₅ (Cronbach's $\alpha = .90$).

Affect. Positive and negative emotions were assessed using Diener and Emmons' (1985) Affect-Adjective Scale. This measure taps a range of positive (e.g., happy, pleased, joyful, enjoyment/fun) and negative (e.g., frustrated, depressed/blue, angry/hostile, worried/anxious) emotions. Participants rated the extent to which they have experienced each of these emotions in the past week on a 7-point Likert scale (0 = *not at all*, 1 = *slightly*, 2 = *somewhat*, 3 = *moderately*, 4 = *much*, 5 = *very much*, 6 = *extremely much*). Positive and negative emotions were assessed at T₁ through T₅ and averaged separately at each time point (Cronbach's α for positive emotions across time points $> .87$; Cronbach's α for negative emotions across time points $> .84$).

Well-being composite. Because well-being is typically conceived of as having both a cognitive component (e.g., life satisfaction) and an affective component (e.g.,

frequent positive emotions and infrequent negative emotions; Diener et al., 1999), I averaged participants' scores on life satisfaction and positive and negative emotions to form a well-being composite at T₁ (baseline), T₄ (post-test), and T₅ (follow-up). All three components were already on 7-point scales, but I adjusted the life satisfaction scale to 0 to 6 instead of 1 to 7 to match the affect component before averaging. This well-being composite was used as the main outcome variable in all analyses of indirect effects (Cronbach's α for composites across time points $> .74$).

Self-reported effort. At T₂, T₃, and T₄, participants indicated the amount of effort they put into performing kind acts during the previous week by responding to two questions, each on 9-point scales: "How much effort did you put into performing last week's acts of kindness?" (1 = *no effort at all*, 9 = *a great deal of effort*) and "How hard did you try when performing last week's acts of kindness" (1 = *not hard at all*, 9 = *extremely hard*). The two effort items were averaged at each time point (Cronbach's $\alpha > .77$ across time points).

Results

Baseline Analyses

Analyses of baseline well-being revealed no significant differences by condition, $F(4, 226) = 0.33, p = .86$, sex, $t(228) = 0.49, p = .62$ (females dummy-coded as "1"), or ethnicity, $F(7, 222) = 0.85, p = .55$. Participants who failed to complete the post-intervention time point (T₄) did not show significant differences in well-being at baseline from those who did complete it, $t(229) = -0.63, p = .53$. However, participants who failed

to complete the follow-up time point (T₅) reported marginally lower well-being at baseline, $t(229) = -1.90, p = .06$, than those who did.

Effort

Supporting my first hypothesis, a contrast analysis comparing all four trigger conditions (+1) to the control condition (-4) revealed that people in the trigger conditions reported more effort in performing kind acts at T₂, $t(197) = 2.28, p = .02, r = .16$, and at T₃, $t(186) = 2.10, p = .04, r = .15$, and marginally greater effort at T₄, $t(166) = 1.62, p = .11, r = .12$.² Because the results were consistent across time points, I averaged self-reported effort across the three intervention weeks (T₂ through T₄; Cronbach's $\alpha = .83$) to create a measure of the average effort a participant expended across the intervention. I included all participants who had provided self-reported effort on at least two out of the three possible weeks. Applying the same contrast (triggers: +1, control: -4), I found that those who engaged in the trigger writing activity reported expending more effort across the intervention than those who engaged in the control writing activity, $t(192) = 2.08, p = .04, r = .15$ (Hypothesis 1).

However, my exploratory analyses comparing the effect of writing a general versus a specific letter of gratitude on levels of effort expended on prosocial behavior revealed no significant differences between conditions at any of the time points, T₂: $t(79) = -0.26, p = .79$; T₃: $t(77) = -0.19, p = .85$; T₄ (post-test): $t(68) = 0.13, p = .90$.

²Because I found no significant differences between the positive trigger conditions on any of the mediator or outcome measures, I collapsed across positive triggers for all analyses.

Analyses of Indirect Effects

The next question I sought to answer was whether greater effort toward kind acts predicted larger increases in well-being over time (Hypothesis 2). Notably, I found no direct effect of the trigger conditions (versus control) on post-test or follow-up well-being.³ However, because my main hypotheses hinged on an indirect effect of the trigger on well-being via effort, I proceeded with analyses of the indirect effects (see Preacher & Hayes, 2004 and Shrout & Bolger, 2002 for support for this approach). Using Preacher and Hayes' (2008) recommended procedures, I estimated the path coefficients in a mediational model, as well as a bootstrap bias-corrected confidence interval (with 5,000 bootstrapped samples) for the specific indirect effect of condition (trigger versus control) on post-intervention and follow-up well-being through average level of effort (see Figure 2 for a conceptual diagram).⁴ For these analyses, I dummy-coded condition (any positive writing trigger =1, control = 0) and standardized all continuous variables so the parameter estimates between continuous variables could be interpreted as betas. I then predicted paths from condition (trigger versus control) to average level of effort, $b = 0.39$, $p = .04$,

³Importantly, because all participants (regardless of engaging in the trigger activity or not) performed kind acts, substantial group differences in post-test or follow-up well-being were not expected. Indeed, past studies have found that simply performing kind acts increases well-being, so our control group was a very conservative comparison.

⁴The OLS regression coefficients represent the sample-specific predictions of the true values of each pathway. These predictions are also based on the assumption that the sampling distribution for each pathway is normal. The bootstrapped analyses, however, simulate the resampling of the data over and over again (in my case, 5,000 times) and provide inferential estimates based on the empirical sampling distribution (Hayes, 2013). Typically, in bootstrapped analyses, the confidence intervals represent the finding that 95% of the bootstrapped samples showed effects at or between the provided lower and upper bounds. In my results, however, I used the bias-corrected bootstrap confidence intervals, which are very similar to the percentile confidence intervals, but are adjusted as a function of the proportion of k values of the bootstrapped ab values that are less than the OLS estimate of ab calculated in the original data (Hayes, 2013).

and from average level of effort to post-intervention well-being, $b = 0.20$, $p = .0008$, controlling for baseline well-being ($N = 167$; see Figure 4 and Table 1 for all OLS regression coefficients). The bootstrap analyses supported my prediction of a positive indirect effect of condition through effort $[0.005, 0.20]$, suggesting that individuals in the trigger conditions put relatively more effort into performing kind acts than individuals in the control condition, and that greater effort was associated with greater gains in well-being.

Using the same mediation techniques, I also tested whether the effect of effort extended to well-being at follow-up. I again found that condition (trigger versus control) predicted average effort, $b = 0.49$, $p = .02$, and average effort predicted well-being at follow-up, $b = 0.14$, $p = .03$, controlling for baseline well-being ($N = 150$). The bootstrap confidence interval again supported my prediction of a positive indirect effect of condition through effort $[0.006, 0.21]$ (see Figure 5 and Table 2 for all OLS regression coefficients). See Table 3 for zero-order correlations between all variables from Study 1.

Positive Affect as a Mechanism?

Implicit in our model is the assumption that the positive writing tasks make people feel more positive emotions, which, in turn, drives their greater effort. Indeed, a planned contrast (trigger conditions = +1, control condition = -4) on the difference score between positive affect at T_2 and T_1 revealed that students who engaged in the trigger writing activity increased in positive affect more than students who engaged in the control writing activity, $t(196) = 1.96$, $p = .05$, $r = .14$; however, this T_2 boost in positive affect did not relate to T_2 effort, $r(189) = .04$, $p = .58$, T_3 effort, $r(181) = .13$, $p = .08$, T_4

effort, $r(166) = .11, p = .15$, or the effort composite, $r(189) = .09, p = .21$. Positive affect at T_2 also failed to mediate the relationship between condition (trigger versus control) and average level of effort [-0.01, 0.12]. Thus, although participants who engaged in the positive writing activity showed larger gains in positive affect during the first week than participants who engaged in the control writing activity, these gains did not explain the additional levels of effort toward kind acts put forth by people in the trigger conditions (versus the control).

Study 2: Investigating the Mechanisms and Duration of a Gratitude Trigger's Effect

Supporting my prediction, Study 1 found that engaging in a positive writing task right before an acts of kindness intervention boosted effort mustered to perform those acts. Also, as hypothesized, greater effort throughout the intervention predicted relatively higher well-being immediately following it and at the 2-week follow-up. Somewhat counterintuitively, a composite of positive emotions did not predict greater effort across the four triggers—specific gratitude, general gratitude, optimism, and positive mood. However, different triggers might stimulate effort through different positive emotional mechanisms. For example, the positive mood writing task may stimulate joy, which prompts energy and effort toward prosocial behavior, whereas the optimism writing task may stimulate hope, which, in turn, prompts one to pay it forward. Multiple experiments are needed to test each trigger and its potential underlying mechanisms. In the current study, I chose to focus on gratitude. Specifically, I aimed to test the mechanism by which expressing general gratitude could stimulate effort toward prosocial behavior—namely, via elevation. I expected that, because expressing gratitude reminds people that someone

has done something good for them, gratitude letter writers will feel moved, uplifted, and ready to pay their favor forward (all elements of elevation; Hypothesis 3), which, in turn, will predict greater levels of effort toward prosocial behavior (Hypothesis 4; see Figure 3 for a conceptual diagram).

In addition to testing elevation as a mediator of the relationship between the general gratitude trigger and effort toward prosocial behavior, this experiment also explored the dosage and duration of gratitude's effect on effort and subsequent well-being. Specifically, I examined 1) the duration of gratitude's benefits, 2) gratitude's optimal deployment (at the beginning as a "trigger" or in the middle as a revitalizing "booster"), and 3) gratitude's optimal frequency (e.g., every week vs. only once). To this end, the study explored whether participants who express gratitude weekly will exhibit more effortful kind acts (and ultimately greater happiness; Hypothesis 5) relative to those who express gratitude either only at the beginning or midpoint of a 6-week acts of kindness intervention and relative to controls.

Method

Participants

Participants were 172 undergraduate students (72.3% female; $M_{AGE} = 19.51$, $SD = 2.90$) from James Madison University, a medium-sized university in the eastern U.S. who were granted course credit in exchange for participation in the study. The majority of participants identified as White (83.1%), with the remaining participants identifying as "More than one" ethnicity (6.4%), Asian (5.2%), Hispanic/Latino (2.3%), Black/African-American (1.7%), or "Other" (1.2%). The total sample size dropped at the midpoint (T_4 ;

$N = 140$), post-test ($T_7; N = 135$), and follow-up ($T_8; N = 145$) time points, but the attrition was evenly spread across conditions at all time points, $T_4: \chi^2(4) = 3.01, p = .56$; $T_7: \chi^2(4) = 6.64, p = .16$, $T_8: \chi^2(4) = 6.04, p = .20$. In addition, attrition did not differ by sex, $T_4: \chi^2(1) = 0.66, p = .42$; $T_7: \chi^2(1) = 2.46, p = .12$, $T_8: \chi^2(1) = 1.95, p = .16$, or by ethnicity, $T_4: \chi^2(5) = 1.74, p = .88$; $T_7: \chi^2(5) = 6.06, p = .30$, $T_8: \chi^2(5) = 2.95, p = .71$, at any of the time points.

Design and Procedure

Participants logged in to the study website once a week for 7 weeks (including at baseline and during the 6-week intervention period) to complete the intervention activities, and then at a 1-month follow-up. To explore my hypotheses regarding the duration of the trigger effect, I varied when and how frequently the gratitude trigger was administered. Specifically, one condition included the gratitude trigger at baseline and only at baseline (“just at baseline”); one condition included the gratitude trigger at midpoint and only at midpoint (“just at midpoint”); one condition included the gratitude trigger at baseline and midpoint (“baseline and midpoint”); and one condition included the gratitude trigger weekly (“weekly”). Finally, one condition included a control writing activity, just at baseline (“control”). As in Study 1, all participants were instructed to perform kind acts. Participants completed the same measures as in Study 1 at T_1 (baseline), T_4 (midpoint), T_7 (post-test), and T_8 (follow-up; see the bottom timeline in Figure 1). At the remaining time points, participants only completed measures of the mediators (elevation and effort).

Materials

In Study 2, I used the general gratitude trigger and control prompts described in Study 1, as well as all of same outcome and effort measures. Life satisfaction, positive affect, and negative affect were assessed at baseline (T₁; Cronbach's α s > .82), midpoint (T₄; Cronbach's α s > .86), post-test (T₇; Cronbach's α s > .88), and follow-up (T₈; Cronbach's α s > .86). Cronbach's α s for the well-being composite > .74 for all time points. Self-reported effort was again measured after each week of the intervention (T₂-T₇; Cronbach's α s > .88) and then averaged across time points (Cronbach's α = .88). The following measure was added to Study 2.

Elevation. Unlike commonly labeled emotions like joy or anger, the term “elevation” is not likely to be familiar to laypeople. Thus, I measured elevation by asking about the emotions, thoughts, physiological responses, and volitional responses theoretically associated with this construct (Haidt, 2003). Specifically, directly after engaging in the writing task (if applicable to the participants' condition), participants were asked to rate the degree to which they felt “moved,” “uplifted,” “optimistic about humanity,” “happy,” “a warm feeling in your chest,” “a desire to become a better person,” and “a desire to help others” on a 7-point Likert rating scale (1 = *did not feel at all*, 4 = *felt moderately*, 7 = *felt very strongly*; Schnall, Roper, & Fessler, 2010). I averaged these items at each time point (Cronbach's α at all time points > .89).

Results

Baseline Analyses

Analyses of baseline well-being revealed no significant differences by condition, $F(4, 167) = 0.12, p = .97$, sex, $t(170) = -1.01, p = .32$ (females dummy-coded as “1”), or ethnicity, $F(5, 166) = 0.73, p = .60$. I created a dummy-coded variable to represent missingness at each time point (missing = “1”; score present = “0”), and conducted t -tests to compare the baseline well-being scores of missing participants to participants who provided a score. I found nonsignificant differences on baseline well-being scores at all of the time points: $T_4: t(170) = -0.31, p = .76$; $T_7: t(170) = -0.31, p = .76$; $T_8: t(170) = 1.44, p = .15$.

Gratitude Trigger at Baseline

Effort. Failing to support my first hypothesis, people who wrote a gratitude letter at the beginning of the intervention (versus those who wrote about the control topic or did nothing at all) did not show greater levels of effort through the midpoint (T_2 through T_4), $t(149) = 1.14, p = .26$; after the midpoint through post-test (T_5 through T_7), $t(141) = 0.75, p = .45$; or throughout the entire intervention (T_2 through T_7), $t(146) = 0.78, p = .44$.⁵ Similarly, people who completed the gratitude letter (versus completing no writing activity) at the midpoint (T_4) did not show greater levels of effort after the midpoint through post-test (T_5 through T_7), $t(141) = -0.19, p = .85$.⁶ In sum, neither writing a gratitude letter at the beginning of the intervention—nor at its midpoint—directly boosted

⁵This analysis compared the just at baseline, baseline and midpoint, and weekly conditions to the just at midpoint and control conditions.

⁶This analysis compared the baseline and midpoint, just at midpoint, and weekly conditions to the just at baseline and control conditions.

effort toward kind acts throughout the intervention. However, these results do not preclude the possibility that gratitude could influence effort indirectly—in other words, that another intermediary mechanism is at work (Preacher & Hayes, 2004; Shrout & Bolger, 2002).

Elevation. Specifically, I expected the gratitude letter to spur increased elevation (Hypothesis 3), which, in turn, would stimulate relatively greater effort toward kind acts (Hypothesis 4). In support of Hypothesis 3, people who wrote a gratitude letter (versus those who engaged in a control writing task or did nothing at all) at baseline showed greater levels of elevation at baseline (T_1), $t(166) = 5.78, p < .0001, r = .41$, as well as throughout the intervention (T_1 - T_6), $t(151) = 2.14, p = .03, r = .16$. On the other hand, a comparison of individuals who wrote gratitude letters at midpoint versus those who did not showed no group differences on elevation at midpoint (T_4), $t(135) = 0.97, p = .33$, nor through the remainder of the intervention (T_4 - T_6), $t(147) = 0.20, p = .85, r = .02$, suggesting that for gratitude to trigger elevation, it needs to be expressed at the beginning of an intervention.⁷

Analyses of indirect effects: Elevation and effort. Once again, I did not find a direct effect of the trigger on increases in well-being, but proceeded to explore the indirect means by which the trigger may lead to greater well-being (Preacher & Hayes, 2004; Shrout & Bolger, 2002). To test my hypotheses regarding indirect pathways (Hypotheses 2, 3, and 4), I again standardized the continuous variables and used Preacher

⁷Because writing a gratitude letter at midpoint did not boost elevation or effort during the second half of the intervention relative to other conditions, I only explored mediational hypotheses that included the entire span of the intervention, not just the latter half.

and Hayes' (2008) bootstrapping procedures (with 5,000 bootstrapped samples). To simplify the presentation of results, I only included the 95% bias-corrected bootstrap confidence intervals for the indirect effects in the text of this paper; however, all OLS regression coefficients from the models run in Study 2 are presented in Tables 4, 5, 7, and 8. I excluded the weekly gratitude condition from the baseline gratitude trigger analyses, as it was impossible to determine whether the average level of effort was due to the baseline gratitude trigger or the cumulative effect of the subsequent weekly gratitude letters. Then, I dummy-coded condition such that conditions that completed a gratitude writing exercise at baseline (the "just at baseline" and "baseline and midpoint" conditions) received a "1," and the other conditions ("just at midpoint" and control) received a "0." I used this dummy-coded condition variable as a dichotomous predictor in the mediation model.

Evidence from the bootstrap analyses supported my predicted indirect effect of condition on post-test well-being through baseline elevation and effort. Specifically, I found that writing a gratitude letter at the beginning of an intervention (versus writing nothing in the "just at midpoint" group or writing the details of the week in the control task) stimulated relatively greater elevation immediately following the writing task (T_1); relatively greater elevation was associated with relatively greater effort throughout the intervention (T_2 through T_7); and, finally, greater effort predicted higher well-being at post-test ($N = 108$; bootstrap analyses revealed an indirect effect of the gratitude trigger at baseline on post-test well-being through baseline elevation and average effort: [0.003, 0.11]). Interestingly, I also found a marginal indirect effect of baseline elevation alone

(not predicting effort [-0.002, 0.34]; the OLS regression coefficients indicate a significant effect). Thus, elevation may directly predict post-test well-being, in addition to predicting post-test well-being via increases in effort. Lastly, effort alone (not preceded by baseline elevation [-0.17, 0.008]) included zero, thus failing to support this pathway as a mediator between condition and post-test well-being (see Figure 6 and Table 4 for all OLS regression coefficients). Interestingly, the negative trend from the gratitude trigger to effort (i.e., not via elevation) indicates that people who did not respond positively to the gratitude trigger (i.e., did not feel elevated upon writing the letter) trended toward putting less effort into kind acts. Thus, for some people, the trigger may have been demotivating.

The proposed indirect effect did not, however, predict follow-up well-being as strongly as it did post-test well-being. Specifically, the bootstrap confidence interval for the indirect effect through baseline elevation and average effort [-0.002, 0.07], through baseline elevation alone [-0.21, 0.12], and for average effort alone [-0.15, 0.01] all included zero, suggesting that the trigger at baseline had an indirect effect on post-test, but not follow-up well-being ($N = 112$; see Figure 7 and Table 5 for all OLS regression coefficients). Nevertheless, the path via elevation and effort trended in the predicted way. See Table 6 for zero-order correlations between the baseline gratitude condition and all other variables included in these analyses (excluding the weekly gratitude condition).

Weekly Gratitude Trigger

After finding evidence of my proposed mediational pathways for the gratitude trigger at baseline (see Figure 4), I explored whether expressing gratitude weekly could

have effects above and beyond expressing gratitude at the beginning of the intervention.

Effort. First, supporting Hypothesis 5, people who wrote gratitude letters weekly (versus all other conditions) reported greater levels of effort through the midpoint (T₂ through T₄), $t(149) = 2.90, p = .004, r = .23$, after the midpoint through the post-test (T₅ through T₇), $t(141) = 2.78, p = .006, r = .23$, and throughout the entire intervention (T₂ through T₇), $t(146) = 2.76, p = .006, r = .23$. Similarly, in a more conservative comparison, people who wrote gratitude letters weekly also reported greater levels of effort than people in the “just at baseline” and “baseline and midpoint” groups (excluding the “just at midpoint” and control conditions) through the midpoint (T₂ through T₄), $t(88) = 2.57, p = .01, r = .26$, after the midpoint through the post-test (T₅ through T₇), $t(78) = 2.56, p = .01, r = .28$, and throughout the entire intervention (T₂ through T₇), $t(84) = 2.59, p = .01, r = .27$ (excluding the “just at midpoint” and control conditions).

Elevation. In my analyses of the baseline gratitude trigger, I found that boosts in elevation predicted increased effort toward kind acts throughout the intervention. Accordingly, one possibility is that people who wrote letters of gratitude throughout the intervention obtained continual boosts in elevation, which helped them to continue to put effort into performing kind acts. Indeed, those who were in the weekly gratitude condition reported greater elevation scores before the midpoint (average of T₁ through T₃), $t(149) = 2.90, p = .004, r = .23$, after the midpoint (average of T₄ through T₆), $t(147) = 2.08, p = .04, r = .17$, and throughout the entire intervention (average of T₁ through T₆), $t(151) = 3.16, p = .002, r = .28$, than all other conditions. The weekly gratitude condition also reported significantly greater elevation than the “just at baseline” and “baseline and

midpoint” conditions before the midpoint (average of T₁ through T₃), $t(88) = 2.85, p = .005, r = .29$, after the midpoint (average of T₄ through T₆), $t(85) = 2.04, p = .05, r = .22$, and throughout the entire intervention (average of T₁ through T₆), $t(87) = 2.43, p = .02, r = .25$.

Analyses of indirect effects: Elevation and effort. I then sought to explore whether people who expressed gratitude weekly showed stronger indirect effects on well-being (via elevation and effort) than people who expressed gratitude only at certain points in the intervention (i.e., “just at baseline” and “baseline and midpoint”). Because I wanted to explore the effect of expressing weekly gratitude above and beyond expressing gratitude at baseline, I excluded the “just at midpoint” and control conditions to directly compare the weekly condition to the “just at baseline” and “baseline and midpoint” conditions. I dummy-coded the weekly gratitude condition as “1” and the “just at baseline” and “baseline and midpoint” conditions as “0” to compare the effect of the weekly gratitude condition with the other two conditions. In addition, because the design of the weekly gratitude condition did not vary from the “just at baseline” and “baseline and midpoint” conditions at the baseline time point, exploring the effect of baseline elevation on effort did not make sense. Consequently, instead of including baseline elevation in the model, I included elevation until the midpoint (averaging T₁ through T₃) and effort after the midpoint through post-test (averaging reported effort from T₅ through T₇) to extend the timeline of my hypothesized indirect effects.

Again, I found no direct effect of the weekly trigger (versus other conditions) on post-test or follow-up well-being, so all subsequent analyses explore indirect effects of

the trigger on well-being. My hypothesized indirect effect of weekly gratitude on post-test well-being through elevation through midpoint and effort during the second half of the intervention was supported [0.007, 0.24], and so was the pathway through elevation alone (not predicting effort [0.02, 0.24]), indicating that increases in elevation predicted increases in well-being that were not explained by effort toward kind acts.. The bootstrap confidence interval for the indirect effect of weekly gratitude on post-test well-being via effort during the latter part of the intervention alone (not preceded by elevation through midpoint) did not support an indirect effect through this pathway [-0.05, 0.19] ($N = 70$; see Figure 8 and Table 7 for OLS regression coefficients). The bootstrap analyses did not, however, support my proposed indirect effect of weekly gratitude on follow-up well-being through elevation and effort [-0.04, 0.09], but I found marginal support for an indirect effect through elevation alone [-0.03, 0.34], indicating that increasing elevation might have effects on well-being unrelated to effort toward prosocial behavior. Mirroring the post-test results, I did not find an indirect effect of weekly gratitude on follow-up well-being through effort alone [-0.04, 0.15] ($N = 72$; see Figure 9 and Table 8 for OLS regression coefficients). See Table 9 for zero-order correlations between the weekly gratitude condition and all other modeled variables..

Discussion

Across two studies, I found that completing a positive writing task before initiating a self-improvement (i.e., kindness) intervention increased effort toward the intervention, which then predicted a relatively better positive downstream consequence (i.e., greater well-being). I sought to test my general argument that happy people

experience a higher frequency of positive emotions (Diener et al., 1999), and, consequently, are better equipped to take on challenges and continually improve themselves. That is, positive emotions might fuel people's success by giving them the energy and motivation to put effort into and persist during challenging tasks (i.e., promoting striving; Erez & Isen, 2002). My data provide preliminary support for this idea—that positive emotions predict greater effort in a self-improvement venture.

Triggers and Self-Improvement Efforts

The current studies focused on one potential mechanism by which positive triggers can assist self-improvement endeavors—by increasing effort toward the new challenge. Indeed, in both of my studies, engaging in a positive writing task before being instructed to perform kind acts predicted relatively greater effort toward kind acts. The presumed mechanism is that triggers stimulate positive emotions—and elevation, in particular—which in turn predict relatively greater effort. The effect of triggers on effort via elevation was supported in Study 2, but positive emotions were not captured optimally in Study 1 (see Limitations and Future Directions section).

I suspect too that positive emotions could affect self-improvement via pathways other than increased effort. For example, as mentioned in the introduction, the broadening function of positive emotions could allow people to be more receptive to new ways of accomplishing their self-improvement goals (e.g., taking a new exercise class or trying tofu for the first time). In addition, evidence suggests that people in a positive mood are more open to accepting critical feedback (Ragunathan & Trope, 2002)—a potentially vital part of improvement in any new challenge.

In addition, a great deal of literature supports the importance of intrinsic motivation in sustaining persistence toward tasks in a variety of domains (Ryan & Deci, 2000). Engaging in a positive writing task before initiating a self-improvement endeavor could promote intrinsic motivation in two different ways. First, intrinsic motivation is defined as the inherent enjoyment and satisfaction gained from doing an activity just for the sake of doing it, with no external pressure or rewards (Ryan & Deci, 2000). If a positive writing activity can put people into a positive mood, and that positive mood is paired with the subsequent self-improvement behavior (e.g., being kind or exercising), the self-improvement task might be reinforced as intrinsically motivating. Thus, frequent pairings of positive emotions and self-improvement might trick people into thinking that their self-improvement endeavor is intrinsically motivated and help them persist over a longer period of time.

Second, past research has shown that positive writing activities predict increases in the fulfillment of psychological needs (i.e., autonomy, competence, and relatedness; Boehm, Lyubomirsky, & Sheldon, 2011b; Nelson et al., 2014), which also reinforce intrinsic motivation (Ryan & Deci, 2000). Thus, a person who engages in a positive writing task before going on a run might associate the run with the positive emotions and therefore believe that his run was intrinsically motivated (i.e., inherently enjoyable). Furthermore, the positive writing task might remind him that he can choose any running route he wishes (i.e., autonomy), improve his pace or increase his distance (i.e., competence), or include others on his run (i.e., connectedness). In these ways the positive writing task can increase intrinsic motivation toward the self-improvement activity

(running). Future research would do well to examine other potential ways that triggers can contribute to people's success in self-improvement efforts.

Alternatively, future research should explore the potential downsides of engaging in a trigger before embarking on a self-improvement endeavor. Specifically, in Study 2, my data suggest that, holding elevation constant, people who engaged in the gratitude trigger actually trended toward putting less effort into performing kind acts. Similarly, holding elevation and effort constant, people who engaged in the gratitude trigger also trended toward decreasing in well-being. Thus, the trigger promoted effort and increases in well-being for those who were receptive to the writing activity (i.e., those who increased in elevation), but might have been somewhat detrimental to those who were not (albeit not significantly so). Possibly, the initial test of elevation after the gratitude trigger acted as an indicator of receptivity to the intervention as a whole. Those who were receptive to the intervention reported greater elevation after engaging in the writing activity, whereas those who were left unmoved after engaging in the gratitude task were also not receptive to the intervention as a whole. Future investigators could examine the individual differences among people that might lead them to be more or less receptive to intervention (e.g., Lyubomirsky & Layous, 2013).

Elevation and Self-Improvement Efforts

In Study 2, I found that writing a letter of gratitude (versus engaging in a neutral task) at the beginning of a kindness intervention increased feelings of elevation—and this boost in elevation predicted greater effort toward performing kind acts. For example, a person writing a letter of gratitude to her parents for all of their love and support

throughout the years might feel moved by her parents' efforts and feel a warmth in her chest as she reflects upon their sacrifices. These feelings might motivate her to be generous to others (as her parents have been to her) or attempt to become a better person in other ways to prove herself deserving of her parents' efforts. Thus, when posed with a self-improvement endeavor, she can direct her newfound motivation and positive feelings toward performing the task to the best of her abilities, resulting in greater effort.

Furthermore, expressing gratitude weekly predicted relatively greater elevation and effort throughout the kindness intervention, which predicted relatively higher post-test and follow-up well-being. Specifically, those who wrote weekly gratitude letters (versus all other groups) were relatively more elevated throughout the 6 weeks. Follow-up mediational analyses revealed that changes in elevation through the first 3 weeks of the intervention predicted post-test well-being, both via increased effort during the last 6 weeks of the intervention, and on its own (i.e., elevation through midpoint predicted post-test well-being independent of effort). Thus, writing weekly about how their family and mentors contributed to their success seemed to prompt individuals to feel moved and inspired to give back, which stimulated continued effort throughout the intervention toward trying to become a better person, as well as increases in well-being that were not associated with expended effort.

Study 2 demonstrated that elevation predicts greater effort toward prosocial behavior (see also Landis et al., 2009; Schnall et al., 2010), but it does not illuminate how elevation might affect effort toward other types of self-improvement (e.g., diet and exercise). However, an elevated person typically endorses the statement, "I feel a desire

to become a better human being,” which could have broad implications. For example, if people witness or recall an act of virtue, they may feel a desire to do something great themselves to emulate the other good deed. An individual might direct that energy toward a kind act, but he could also place it toward a different self-improvement goal—staying on the treadmill longer or foregoing an opportunity to gossip about a coworker. Nevertheless, Study 2 can only speak to the relationship between elevation and effort toward kind acts. Future research could explore the relationship between feeling elevated and mustering effort to improve oneself in other domains (i.e., relationship maintenance, health, or work).

Why Elevation?

Readers may wonder why elevation—and not felt gratitude—is the mediator of interest following a gratitude expression task. Interestingly, although expressing gratitude at the beginning of the intervention elicited relatively greater feelings of gratitude, this felt gratitude was not related to the average level of effort expended on kind acts.⁸ This finding brings up an important distinction between expressing gratitude and feeling grateful. Although writing a gratitude letter often leads to feeling grateful, it can also lead to other beneficial and potentially motivating emotions (i.e., elevation) that cannot be fully explained by felt gratitude. For example, in a recent study, writing about gratitude

⁸An analysis comparing participants who engaged in the gratitude letter writing task at baseline to those who did not revealed that those who wrote gratitude letters felt more grateful directly after the task, $t(166) = 4.77, p < .001, r = .35$. However, felt gratitude was not significantly correlated with the average level of effort expended during the 6-week intervention, $r(143) = .11, p = .18$. On the other hand, as reflected in the mediation analyses, the correlation between elevation following the writing task and average level of effort throughout the intervention was significant, $r(143) = .27, p = .001$. A Steiger’s Z analysis revealed that the correlation between elevation following the writing task and average effort throughout the intervention is significantly different from the correlation between gratitude following the writing task and average effort throughout the interventions, $Z(143) = 2.73, p = .006$ (Lee & Preacher, 2013; Steiger, 1980).

was associated with relatively stronger feelings of elevation than a positive control condition (i.e., writing about relief; Layous et al., 2014). Furthermore, mediational analyses showed that people who wrote about gratitude (versus relief) felt relatively more connected to others, more indebted, and more grateful, and all of these mechanisms uniquely predicted greater elevation.

Gratitude has often been associated with the urge to pay back a benefactor (Algoe & Haidt, 2009); however, because certain debts of gratitude can never be repaid (e.g., an entire life of guidance and support from parents), people may try to ease their indebtedness by paying forward to third parties (Emmons & Crumpler, 2000). In addition, because people who expressed gratitude (versus relief) reported feeling more connected to others in general (i.e., not just the benefactor about whom they wrote), they may have felt inclined to engage in generosity that was unrelated to simply repaying their benefactor. Thus, indebtedness and connectedness, independent of felt gratitude, can prompt elevation, which calls one to be a better person and give back to others (Algoe & Haidt, 2009; Haidt, 2003).

Triggers and Habit Formation

The results of Study 2 hold interesting implications for the ideal deployment of triggers during self-improvement. For example, engaging in a positive writing task at the very beginning of a self-improvement challenge appeared to be more beneficial than starting it at the midpoint, as people who wrote positively at baseline had relatively higher well-being at the post-intervention and follow-up time points than people who only wrote positively at the midpoint. Thus, initiating a self-improvement endeavor while

feeling upbeat may have positive consequences that do not occur when people try to lift their spirits in the middle of the endeavor.

That said, although the effects of a baseline trigger were potent, they were not permanent. Indeed, people who engaged in the trigger at baseline in Study 1 showed relatively greater effort throughout the 3-week intervention, which predicted higher well-being immediately following the intervention and 2 weeks later. However, people who wrote gratitude letters at the beginning of Study 2 reported relatively higher well-being immediately following the 6-week intervention (via greater elevation and effort), but that benefit did not extend to the 1-month follow-up. This indicates that the effect of the baseline positive activity has limits and may not be enough to help people automatize their new behavior.

Because habits take about 2 months to form (Lally et al., 2010), it makes sense that the effects of an initial positive booster on self-improvement efforts would only last so long. Thus, as I predicted, the condition that required participants to express gratitude weekly was the most effective in promoting elevation and effort throughout the intervention and maintaining well-being at the follow-up. Although the gains in well-being were sustained 10 weeks following the initiation of the self-improvement activity (at the 1-month follow-up), the intervention itself only lasted 6 weeks, so a true habit of kindness is unlikely to have developed during this time. However, people in the weekly gratitude condition were more likely to report that they had continued performing kind

acts at the 1-month follow-up than people in any other condition.⁹ Therefore, my data suggest that writing weekly letters of gratitude promoted more effort toward self-improvement throughout the 6 weeks and also increased the likelihood of habit formation.

Limitations and Future Questions

I found preliminary support for my hypothesis that engaging in a trigger before embarking on a self-improvement challenge would boost effort toward that challenge and therefore promote greater well-being. However, my studies included several limitations that point to ripe areas for future investigation.

Triggers and positive emotions. A surprising finding from Study 1 was that a shift in positive emotions during the first week did not predict level of effort expended toward performing kind acts. Perhaps the emotion composite diluted the effect of any one discrete positive emotion that could be driving effort following an individual trigger (i.e., the best possible selves writing task may promote relatively greater optimism, which drove effort; the intensely positive experience writing task may promote relatively greater joy, which drove effort). To explore this possibility, in the second study, I tested a positive emotion that I thought might play a particularly important role in linking the expression of gratitude to prosocial behavior—namely, elevation. Thus, I found support for my contention that triggers generate at least one specific positive emotion that could

⁹An independent samples *t*-test revealed a significant difference between participants who expressed gratitude weekly and all other participants, $t(142) = 2.44, p = .03, r = .20$, on the question “To what degree did you continue to perform kind acts after the study was over?” at follow-up. However, I did not find significant differences between the participants who expressed gratitude at baseline and all other participants (excluding the participants who expressed gratitude weekly), $t(117) = -0.95, p = .34, r = -.09$.

drive effort. However, I did not explore the positive emotional mechanisms underlying the other two triggers (i.e., writing about an intensely positive experience or one's best possible self) and future studies could explore how other triggers (besides gratitude) stimulate greater effort toward becoming a kinder person.

Another possibility is that, in Study 1, I waited too long after the initial positive emotions writing task to measure change in positive emotions. Indeed, positive emotions were assessed before the initial writing task and then not again until 1 week later. At this point, the momentary change in emotions instigated by the writing trigger had likely dissipated and the positive emotions I assessed could have stemmed from performing kind acts or from a variety of other experiences participants encountered throughout the week. Also, because the positive emotion scale asks participants to recall how often they had experienced each emotion during the last 7 days, it likely captures a great deal of emotional noise not due to the writing task. Thus, in the second study, I assessed elevation, my proposed positive emotional mechanism, immediately following the gratitude letter writing task. Future investigators may wish to measure a variety of positive emotions immediately following triggers to explore their immediate effects.

Motivation to self-improve. Another factor to consider is the motivation of each participant to become a kinder person. Participants signed up for a “positive activity study” and did not know the exact nature of the positive activities. Thus, they did not necessarily have the inherent goal to become a kinder person. In the real world, people usually choose their self-improvement pursuits based on what they personally feel they need to improve. Because I essentially provided our participants with a self-improvement

goal, I may not be capturing the naturalistic process of self-improvement. On the other hand, across both studies, participants in all conditions indicated a high level of intrinsic motivation to perform kind acts.¹⁰ However, people who are extremely motivated to perform kind acts might have experienced the gratitude writing task as a distraction or not have needed the boost it had provided. Future researchers could explore how well positive triggers motivate people to put effort into self-improvement endeavors of their choosing.

Other downstream consequences. In addition, although increasing subjective well-being is a valuable goal in itself, because it will fuel future positive emotions and potentially stimulate an upward spiral of positive emotions and effort toward self-improvement, many other positive downstream consequences of being a kind person were not captured in the current studies. For example, past research has shown that performing kind acts versus engaging in a mildly pleasant but not prosocial task predicted increases in friends within an intact classroom (Layous et al., 2012). The enhanced friendships as a result of being a kind person could also lead to positive emotions that could, in turn, stimulate self-improvement efforts. Thus, boosting one's generosity could lead to improved well-being (as demonstrated in these studies), but it could also lead to other positive outcomes not explored here.

Generalizability. The present studies focused on just one type of self-improvement in the domain of character development—specifically, becoming a kinder

¹⁰In both studies, participants in all conditions indicated intrinsic motivation to perform kind acts well above the midpoint of the 9-point scale (i.e., above 5).

person. A potential limitation for the generalizability of these studies is that positive writing tasks may only be effective triggers of effort toward kind acts, but not effort toward self-improvement endeavors such as diet and exercise. Similarly, perhaps elevation only mediates the relationship between writing a letter of gratitude and effort toward kind acts, but not the relationship between writing a letter of gratitude and self-improvement in other domains. Thus, future research would do well to explore whether certain triggers are better suited to certain self-improvement domains and, specifically, whether specific positive emotions are uniquely related to effort in specific self-improvement domains. In addition, future studies should explore the specific positive emotional mechanisms of other types of triggers. For example, researchers could test whether writing about one's most intense positive experience promotes effort toward kind acts via joy and whether writing about one's best possible selves promotes effort via optimism (as opposed to elevation).

Finally, future research on the link between triggers and self-improvement should use samples that are more representative than college students. For example, would triggers effectively help people trying to improve their performance in the workplace? Is there a lower bound of ages for which these writing activities are no longer effective? For example, the ability to express heartfelt gratitude may grow over time—after a child has developed an understanding of complex emotions and is able to take the perspective of others (see Layous & Lyubomirsky, 2014). A child may not benefit intrapersonally from the expression of gratitude unless these developmental milestones are in place, rendering our “trigger” hypothesis inapplicable to this age group.

Concluding Remarks

Happy individuals enjoy many successes in their personal and professional lives that may seem like plain good fortune. But before dismissing happy people's favorable outcomes as luck, scientists should explore the ways in which happy people might create their own success. Specifically, by examining the causal mechanisms between happiness and its positive downstream consequences, researchers might be able to identify key teachable psychological resources that can trigger positive outcomes for people who are not naturally high on life. The current studies sought to do just this: they test a potential pathway by which happy individuals generate their own success—namely, via greater effort toward self-improvement endeavors.

Across two studies, I found preliminary evidence that people who experience frequent positive emotions are better equipped to put effort toward becoming a kinder person and thereby to maintain their happiness. Thus, stimulating positive emotions can serve the important function of generating in individuals the energy to put effort into and persist in important challenges. My data only support the notion that engaging in a positive writing task can assist people undertaking a kindness intervention. If future research can expand the trigger methodology to other domains (e.g., health, relationships, work), this project could be an important first step in understanding how to help people reach personally and potentially societally valued goals.

References

- Algoe, S. B., & Haidt, J. (2009). Witnessing excellence in action: The ‘other-praising’ emotions of elevation, gratitude, and admiration. *The Journal of Positive Psychology, 4*, 105-127.
- Boehm, J. K., Lyubomirsky, S., & Sheldon, K. M. (2011a). A longitudinal experimental study comparing the effectiveness of happiness-enhancing strategies in Anglo Americans and Asian Americans. *Cognition & Emotion, 25*, 1263-1272.
- Boehm, J. K., Lyubomirsky, S., & Sheldon, K. M. (2011b). [The role of need satisfying emotions in a positive activity intervention]. Unpublished raw data.
- Burton, C. M., & King, L. A. (2004). The health benefits of writing about intensely positive experiences. *Journal of Research in Personality, 38*, 150-163.
- Campos, B., Shiota, M. N., Keltner, D., Gonzaga, G. C., & Goetz, J. L. (2013). What is shared, what is different? Core relational themes and expressive displays of eight positive emotions. *Cognition & Emotion, 27*, 37-52.
- Danner, D. D., Snowdon, D. A., & Friesen, W. V. (2001). Positive emotions in early life and longevity: Findings from the nun study. *Journal of Personality and Social Psychology, 80*, 804–813.
- Dickerhoof, R. M. (2007). Expressing optimism and gratitude: A longitudinal investigation of cognitive strategies to increase well-being. *Dissertation Abstracts International, 68*, 4174 (UMI No. 3270426).
- Diener, E., & Emmons, R. A. (1985). The independence of positive and negative affect. *Journal of Personality and Social Psychology, 47*, 1105-1117.

- Diener, E., Emmons, R. A., Larsen, R. J., & Griffin, S. (1985). The Satisfaction with Life Scale. *Journal of Personality Assessment*, *49*, 71-75.
- Diener, E., Nickerson, C., Lucas, R., & Sandvik, E. (2002). Dispositional affect and job outcomes. *Social Indicators Research*, *59*, 229–259.
- Diener, E., Suh, E. M., Lucas, R. E., & Smith, H. L. (1999). Subjective well-being: Three decades of progress. *Psychological Bulletin*, *125*, 276–302.
- Doyle, W. J., Gentile, D. A., & Cohen, S. (2006). Emotional style, nasal cytokines, and illness expression after experimental rhinovirus exposure. *Brain, Behavior, and Immunity*, *20*, 175–181.
- Emmons, R. A., & McCullough, M. E. (2003). Counting blessings versus burdens: an experimental investigation of gratitude and subjective well-being in daily life. *Journal of Personality and Social Psychology*, *84*, 377-389.
- Erez, A., & Isen, A. M. (2002). The influence of positive affect on the components of expectancy motivation. *Journal of Applied Psychology*, *87*, 1055–1067.
- Fredrickson, B. L. (1998). What good are positive emotions? *Review of General Psychology*, *2*, 300-319.
- Fredrickson, B. L. (2013). Positive emotions broaden and build. *Advances in Experimental Social Psychology*, *47*, 1-53.
- Fredrickson, B. L., & Branigan, C. (2005). Positive emotions broaden the scope of attention and thought-action repertoires. *Cognition and Emotion*, *19*, 313-332.
- Haidt, J. (2003). Elevation and the positive psychology of morality. In C. L. Keyes, & J. Haidt (Eds.), *Flourishing: Positive psychology and the life well-lived* (pp. 275–

- 289). Washington, DC: APA.
- Harker, L., & Keltner, D. (2001). Expressions of positive emotion in women's college yearbook pictures and their relationship to personality and life outcomes across adulthood. *Journal of Personality and Social Psychology, 80*, 112–124.
- Hayes, A. F. (2013). *Introduction to mediation, moderation, and conditional process analysis: A regression-based approach*. New York: Guilford Press.
- Kahn, B. E., & Isen, A. M. (1993). The influence of positive affect on variety seeking among safe, enjoyable products. *Journal of Consumer Research, 20*, 257-270.
- Kavanagh, D. J. (1987). Mood, persistence, and success. *Australian Journal of Psychology, 39*, 307–318.
- King, L. A. (2001). The health benefits of writing about life goals. *Personality and Social Psychology Bulletin, 27*, 798-807.
- Lally, P., Van Jaarsveld, C. H., Potts, H. W., & Wardle, J. (2010). How are habits formed: Modelling habit formation in the real world. *European Journal of Social Psychology, 40*, 998-1009.
- Landis, S. K., Sherman, M. F., Piedmont, R. L., Kirkhart, M. W., Rapp, E. M., & Bike, D. H. (2009). The relation between elevation and self-reported prosocial behavior: Incremental validity over the five-factor model of personality. *The Journal of Positive Psychology, 4*, 71-84.
- Layous, K., Lee, H., Choi, I., & Lyubomirsky, S. (2013). Culture matters when designing a successful happiness-increasing activity: A comparison of the United States and South Korea. *Journal of Cross-Cultural Psychology, 44*, 1294-1303.

- Layous, K., & Lyubomirsky, S. (in press). Benefits, mechanisms, and new directions for teaching gratitude to children. *School Psychology Review*.
- Layous, K., Nelson, S. K., & Lyubomirsky, S. (2013). What is the optimal way to deliver a positive activity intervention? The case of writing about one's best possible selves. *Journal of Happiness Studies, 14*, 635-654.
- Layous, K., Nelson, S. K., Oberle, E., Schonert-Reichl, K. A., & Lyubomirsky, S. (2012). Kindness counts: Prompting prosocial behavior in preadolescents boosts peer acceptance and well-being. *PLOS ONE, 7*, e51380.
- Layous, K., Sweeny, K., & Lyubomirsky, S. (2014). *An inter vs. intrapersonal distinction between otherwise similar emotions: The case of gratitude and relief*. Manuscript submitted for publication.
- Lee, I. A., & Preacher, K. J. (2013, September). Calculation for the test of the difference between two dependent correlations with one variable in common [Computer software]. Available from <http://quantpsy.org>.
- Lucas, R. E., & Schimmack, U. (2009). Income and well-being: How big is the gap between the rich and the poor? *Journal of Research in Personality, 43*, 75-78.
- Lyubomirsky, S. (2001). Why are some people happier than others? *American Psychologist, 56*, 239-249.
- Lyubomirsky, S., Dickerhoof, R., Boehm, J. K., & Sheldon, K. M. (2011). Becoming happier takes both a will and a proper way: An experimental longitudinal intervention to boost well-being. *Emotion, 11*, 391-402.
- Lyubomirsky, S., King, L., & Diener, E. (2005). The benefits of frequent positive affect:

- Does happiness lead to success? *Psychological Bulletin*, 131, 803-855.
- Lyubomirsky, S., & Layous, K. (2013). How do simple positive activities increase well-being? *Current Directions in Psychological Science*, 22, 57-62.
- Lyubomirsky, S., Sheldon, K. M., & Schkade, D. (2005). Pursuing happiness: The architecture of sustainable change. *Review of General Psychology*, 9, 111-131.
- McCullough, M. E., Kilpatrick, S. D., Emmons, R. A., & Larson, D. B. (2001). Is gratitude a moral affect? *Psychological Bulletin*, 127, 249-266.
- Moskowitz, J. T. (2003). Positive affect predicts lower risk of AIDS mortality. *Psychosomatic Medicine*, 65, 620-626.
- Nelson, S. K., Della Porta, M. D., Jacobs Bao, K., Lee, H. C., Choi, I., & Lyubomirsky, S. (2014). "It's up to you": Experimentally manipulated autonomy support for prosocial behavior improves well-being in two cultures over six weeks. Manuscript submitted for publication.
- Preacher, K. J., & Hayes, A. F. (2004). SPSS and SAS procedures for estimating indirect effects in simple mediation models. *Behavior Research Methods, Instruments, & Computers*, 36, 717-731.
- Preacher, K. J., & Hayes, A. (2008). Asymptotic and resampling strategies for assessing and comparing indirect effects in multiple mediator models. *Behavior Research Methods*, 40, 879-891.
- Pressman, S. D., & Cohen, S. (2005). Does positive affect influence health? *Psychological Bulletin*, 131, 925-971.

- Raghunathan, R., & Trope, Y. (2002). Walking the tightrope between feeling good and being accurate: Mood as a resource in processing persuasive messages. *Journal of Personality and Social Psychology, 83*, 510–525.
- Richman, L. S., Kubzansky, L., Maselko, J., Kawachi, I., Choo, P., & Bauer, M. (2005). Positive emotion and health: Going beyond the negative. *Health Psychology, 24*, 422–429.
- Rothman, A. J. (2000). Toward a theory-based analysis of behavioral maintenance. *Health Psychology, 19*, 64-69.
- Ryan, R. M., & Deci, E. L. (2000). Self-determination theory and the facilitation of intrinsic motivation, social development, and well-being. *American Psychologist, 55*, 68-78.
- Sauter, D. (2010). More than happy: The need for disentangling positive emotions. *Current Directions in Psychological Science, 19*, 36-40.
- Schnall, S., Roper, J., & Fessler, D. M. (2010). Elevation leads to altruistic behavior. *Psychological Science, 21*, 315-320.
- Schuettler, D., & Kiviniemi, M. T. (2006). Does how I feel about it matter?: The role of affect in cognitive and behavioral reactions to a chronic illness diagnosis. *Journal of Applied Social Psychology, 11*, 2599-2618.
- Sheldon, K. M., Boehm, J. K., & Lyubomirsky, S. (2012). Variety is the spice of happiness: The hedonic adaptation prevention (HAP) model. In Boniwell, I. & David, S. (Eds.), *Oxford handbook of happiness* (pp. 901-914). Oxford: Oxford University Press.

- Shrout, P. E., & Bolger, N. (2002). Mediation in experimental and nonexperimental studies: New procedures and recommendations. *Psychological Methods*, 7, 422-445.
- Steiger, J. H. (1980). Tests for comparing elements of a correlation matrix. *Psychological Bulletin*, 87, 245-251.
- Vianello, M., Galliani, E. M., & Haidt, J. (2010). Elevation at work: The effects of leaders' moral excellence. *The Journal of Positive Psychology*, 5, 390-411.
- Walton, G. M. (2014). The new science of wise psychological interventions. *Current Directions in Psychological Science*, 23, 73-82.
- Waugh, C. E., & Fredrickson, B. L. (2006). Nice to know you: Positive emotions, self-other overlap, and complex understanding in the formation of a new relationship. *The Journal of Positive Psychology*, 1, 93-106.

Table 1

OLS Parameter Estimates For the Effect of the Positive Trigger on Post-Intervention (T_4) Well-Being Via Average Effort, Controlling For Baseline Well-Being (Study 1)

	<i>b</i>	<i>SE</i>	<i>t</i>	<i>p</i>	LLCI	ULCI
Effort						
Constant	-0.28	0.17	-1.66	.10	-0.62	0.05
Positive Trigger (versus Control)	0.39	0.19	2.02	.04	0.01	0.76
Baseline Well-Being	0.10	0.08	1.23	.22	-0.06	0.25
Post-Test Well-Being						
Constant	-0.01	0.13	-0.05	.96	-0.26	0.25
Effort	0.20	0.06	3.42	.0008	0.08	0.32
Positive Trigger (versus Control)	-.01	0.14	-0.03	.97	-0.29	0.28
Baseline Well-Being	0.61	0.06	10.32	< .0001	0.50	0.73

Note: This table corresponds to Figure 4. All continuous variables (Baseline Well-Being, Post-Test Well-Being, and Effort) were standardized so the *bs* reflect standardized regression coefficients when estimating a pathway between two continuous variables. $N = 167$.

Table 2

OLS Parameter Estimates for the Effect of the Positive Trigger on Follow-Up (T_5) Well-Being via Average Effort, Controlling for Baseline Well-Being (Study 1).

	<i>b</i>	<i>SE</i>	<i>t</i>	<i>p</i>	LLCI	ULCI
Effort						
Constant	-0.34	0.18	-1.89	.06	-0.70	0.02
Positive Trigger (versus Control)	0.49	0.21	2.35	.02	0.08	0.89
Baseline Well-Being	0.06	0.09	0.70	.48	-0.11	0.23
Post-Test Well-Being						
Constant	0.02	0.14	0.16	0.87	-0.26	0.30
Effort	0.14	0.06	2.21	.03	0.01	0.26
Positive Trigger (versus Control)	-0.11	0.16	-0.70	.48	-0.43	0.20
Baseline Well-Being	0.61	0.07	9.09	<.0001	0.48	0.74

Note: This table corresponds to Figure 5. All continuous variables (Baseline Well-Being, Follow-Up Well-Being, and Effort) were standardized so the *bs* reflect standardized regression coefficients when estimating a pathway between two continuous variables. $N = 150$.

Table 3

Zero-Order Correlations Between All Modeled Variables (Study 1).

Measure	1.	2.	3.	4.	5.
1. Positive Trigger (Versus Control)	--				
2. Effort	.15*	--			
3. Baseline Well-Being	-.01	.10	--		
4. Post-Test Well-Being	.05	.25**	.62**	--	
5. Follow-Up Well-Being	.01	.17*	.60**	.71**	--

Note: $N > 139$. * $p < .05$. ** $p < .01$.

Table 4

OLS Parameter Estimates for the Effect of the Gratitude Trigger at Baseline on Post-Test (T₇) Well-Being via Elevation and Average Effort, Controlling for Baseline Well-Being (Study 2).

	<i>b</i>	<i>SE</i>	<i>t</i>	<i>p</i>	LLCI	ULCI
Baseline Elevation						
Constant	-0.44	0.11	-3.86	.0002	-0.66	-0.21
Gratitude Trigger at Baseline	0.71	0.17	4.25	<.0001	0.38	1.04
Baseline well-being	0.40	0.09	4.21	.0001	0.21	0.58
Effort						
Constant	0.02	0.14	0.13	.90	-0.26	0.29
Baseline Elevation	0.27	0.11	2.38	.02	0.04	0.49
Gratitude Trigger at Baseline	-0.26	0.21	-1.27	.21	-0.67	0.15
Baseline Well-Being	0.09	0.12	0.77	.44	-0.14	0.32
Post-Test Well-Being						
Constant	0.15	0.10	1.48	.14	-0.05	0.36
Effort	0.17	0.07	2.30	.02	0.02	0.31
Baseline Elevation	0.20	0.08	2.40	.02	0.03	0.37
Gratitude Trigger at Baseline	-0.24	0.15	-1.54	.13	-0.54	0.07
Baseline Well-Being	0.51	0.09	5.90	<.0001	0.34	0.68

Note: This table corresponds to Figure 6. Conditions that engaged in the gratitude trigger at baseline (“just at baseline” and “midpoint and baseline” groups) were dummy-coded with a “1” and compared to conditions that did not engage in the gratitude trigger at baseline (“just at midpoint” and “control” groups; the weekly gratitude condition was excluded from this analysis). All continuous variables (Baseline Well-Being, Post-Test Well-Being, and Effort) were standardized so the *bs* reflect standardized regression coefficients when estimating a pathway between two continuous variables. *N* = 108.

Table 5

OLS Parameter Estimates for the Effect of the Gratitude Trigger at Baseline on Follow-Up (T_8) Well-Being via Elevation and Average Effort, Controlling for Baseline Well-Being (Study 2).

	<i>b</i>	<i>SE</i>	<i>t</i>	<i>p</i>	LLCI	ULCI
Baseline Elevation						
Constant	-0.40	0.11	-3.69	.0004	-0.62	-0.19
Gratitude Trigger at Baseline	0.67	0.16	4.18	.0001	0.35	0.98
Baseline Well-Being	0.40	0.09	4.46	<.0001	0.22	0.58
Effort						
Constant	0.03	0.14	0.24	.81	-0.24	0.30
Baseline Elevation	0.23	0.11	1.99	.05	0.001	0.45
Gratitude Trigger at Baseline	-0.23	0.20	-1.16	.25	-0.64	0.17
Baseline Well-Being	0.08	0.11	0.73	.47	-0.14	0.31
Post-Test Well-Being						
Constant	0.05	0.12	0.46	.65	-0.18	0.28
Effort	0.12	0.08	1.53	.13	-0.04	0.29
Baseline Elevation	-0.03	0.10	-0.32	.75	-0.22	0.16
Gratitude Trigger at Baseline	-0.05	0.17	-0.29	.77	-0.39	0.29
Baseline Well-Being	0.55	0.10	5.65	<.0001	0.36	0.74

Note: This table corresponds with Figure 7. Conditions that engaged in the gratitude trigger at baseline (“just at baseline” and “midpoint and baseline” groups) were dummy-coded with a “1” and compared to conditions that did not engage in the gratitude trigger at baseline (“just at midpoint” and “control” groups; the weekly gratitude condition was excluded from this analysis). All continuous variables (Baseline Well-Being, Follow-Up Well-Being, and Effort) were standardized so the *bs* reflect standardized regression coefficients when estimating a pathway between two continuous variables. $N = 112$.

Table 6

Zero-Order Correlations Between Modeled Variables for the Baseline Gratitude Trigger Analyses (Study 2).

Measure	1.	2.	3.	4.	5.	6.
1. Baseline Gratitude Trigger (Versus Control)	--					
2. Baseline Elevation	.39**	--				
3. Effort	-.03	.21*	--			
4. Baseline Well-Being	.03	.37**	.18	--		
5. Post-Test Well-Being	-.02	.36**	.33**	.59**	--	
6. Follow-Up Well-Being	-.04	.21*	.20*	.54**	.76**	--

Note: These analyses exclude the Weekly Gratitude Trigger Condition. $N > 105$. * $p < .05$. ** $p < .01$.

Table 7

OLS Parameter Estimates for the Effect of Weekly Gratitude Triggers (Versus “Just at Baseline” and “Baseline and Midpoint” conditions) on Post-Test (T₇) Well-Being via Elevation and Average Effort, Controlling for Baseline Well-Being (Study 2).

	<i>b</i>	<i>SE</i>	<i>t</i>	<i>p</i>	LLCI	ULCI
Elevation (T ₁ -T ₃)						
Constant	-0.09	0.12	-0.73	.47	-0.33	0.15
Weekly Gratitude Trigger	0.73	0.22	3.33	.001	0.29	1.16
Baseline Well-Being	0.55	0.11	5.03	<.0001	0.33	0.76
Effort (T ₅ -T ₇)						
Constant	-0.10	0.13	-0.73	0.47	-0.36	0.17
Elevation (T ₁ -T ₃)	0.56	0.13	4.20	.0001	0.29	0.83
Weekly Gratitude Trigger	0.16	0.26	0.61	.55	-0.36	0.67
Baseline Well-Being	-0.12	0.14	-0.86	.39	-0.40	0.16
Post-Test Well-Being						
Constant	0.001	0.11	0.009	.99	-0.22	0.22
Effort (T ₅ -T ₇)	0.20	0.10	2.00	.05	0.001	0.41
Elevation (T ₁ -T ₃)	0.29	0.12	2.31	.02	0.04	0.53
Weekly Gratitude Trigger	-0.26	0.21	-1.21	.23	-0.68	0.17
Baseline Well-Being	0.42	0.12	3.67	.0005	0.19	0.65

Note: This table corresponds to Figure 8. The “weekly” trigger condition was dummy coded as “1” and compared to the “just at baseline” and “baseline and midpoint” conditions. All continuous variables (Baseline Well-Being, Post-Test Well-Being, and Effort) were standardized so the *bs* reflect standardized regression coefficients when estimating a pathway between two continuous variables. *N* = 130.

Table 8

OLS Parameter Estimates for the Effect of Weekly Gratitude Triggers (Versus “Just at Baseline” and “Baseline and Midpoint” conditions) on Follow-Up (T₈) Well-Being via Elevation and Average Effort, Controlling for Baseline Well-Being (Study 2).

	<i>b</i>	<i>SE</i>	<i>t</i>	<i>p</i>	LLCI	ULCI
Elevation (T ₁ -T ₃)						
Constant	-0.09	0.12	-0.72	.47	-0.32	0.15
Weekly Gratitude Trigger	0.71	0.22	3.30	.002	0.28	1.14
Baseline Well-Being	0.58	0.11	5.45	<.0001	0.37	0.79
Effort (T ₅ -T ₇)						
Constant	-0.13	0.14	-0.93	.36	-0.40	0.14
Elevation (T ₁ -T ₃)	0.50	0.14	3.67	.0005	0.23	0.77
Weekly Gratitude Trigger	0.39	0.26	1.50	.14	-0.13	0.92
Baseline Well-Being	-0.11	0.14	-0.78	.44	-0.40	0.18
Post-Test Well-Being						
Constant	0.02	0.09	0.22	.83	-0.16	0.20
Effort (T ₅ -T ₇)	0.04	0.08	0.55	.58	-0.12	0.20
Elevation (T ₁ -T ₃)	0.17	0.10	1.70	.09	-0.03	0.36
Weekly Gratitude Trigger	-0.03	0.18	-0.15	.88	-0.38	0.32
Baseline Well-Being	0.66	0.10	6.95	<.0001	0.47	0.85

Note: This table corresponds to Figure 9. The “weekly” trigger condition was dummy coded as “1” and compared to the “just at baseline” and “baseline and midpoint” conditions. All continuous variables (Baseline Well-Being, Follow-Up Well-Being, and Effort) were standardized so the *bs* reflect standardized regression coefficients when estimating a pathway between two continuous variables. *N* = 135.

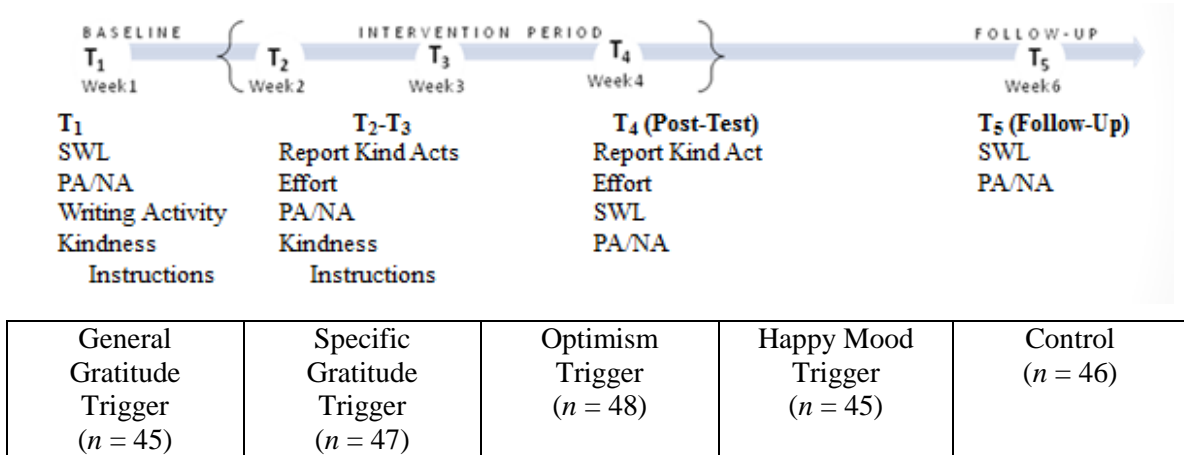
Table 9

Zero-Order Correlations Between Modeled Variables for the Weekly Gratitude Trigger Analyses, Excluding “Just at Midpoint” and Control Conditions (Study 2).

Measure	1.	2.	3.	4.	5.	6.
1. Weekly Gratitude Trigger	--					
2. Elevation (T ₁ -T ₃)	.29**	--				
3. Effort (T ₅ -T ₇)	.28*	.47**	--			
4. Baseline Well-Being	-.05	.51**	.18	--		
5. Post-Test Well-Being	-.05	.55**	.40**	.60**	--	
6. Follow-Up Well-Being	.06	.55**	.25*	.78**	.77***	--

*Note: N > 125. *p < .05. **p < .01.*

Study 1



Study 2

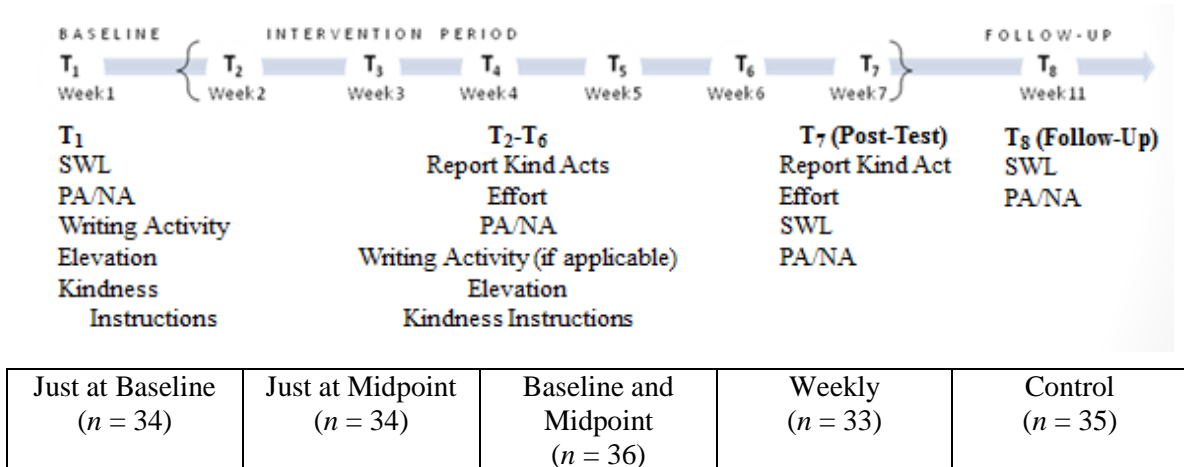


Figure 1. Timelines and tables representing the trajectory, measures, and participants per condition, respectively, for Study 1 and Study 2.



Figure 2. Theoretical model for Study 1.

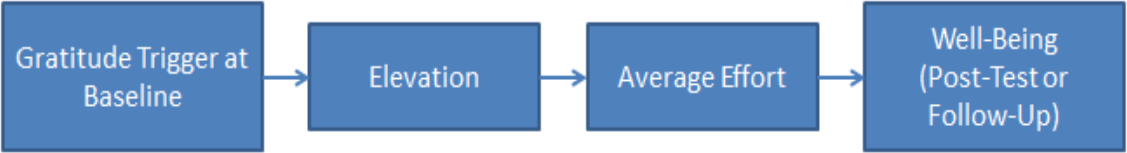


Figure 3. Theoretical model for Study 2.

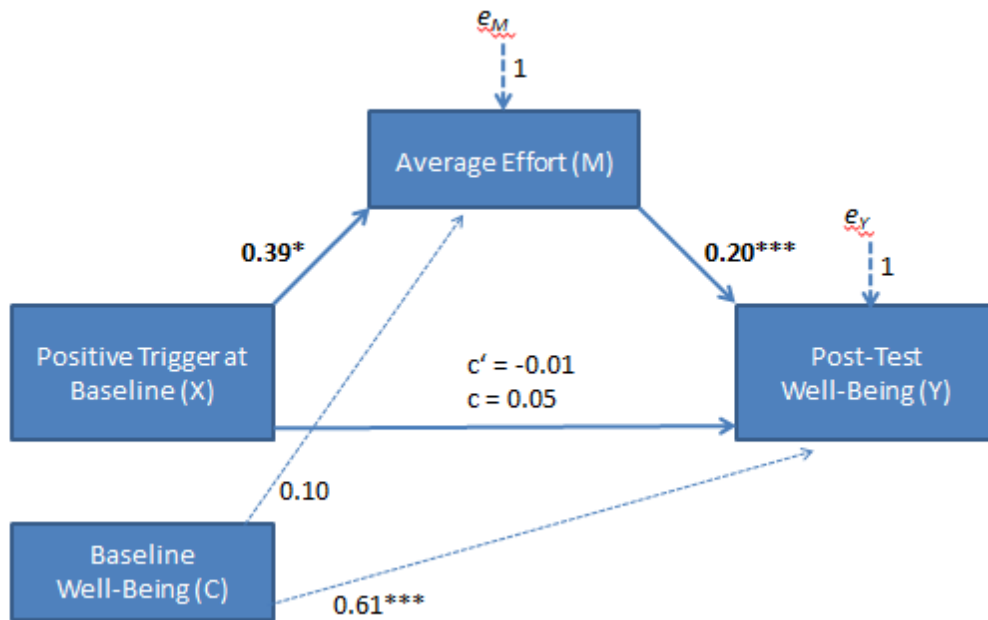


Figure 4. Effect of trigger at baseline (versus control group) on post-test well-being via average effort, controlling for baseline well-being (Study 1). All continuous variables (Baseline Well-Being, Post-Test Well-Being, and Effort) were standardized so the *bs* reflect standardized regression coefficients when estimating a pathway between two continuous variables. This figure corresponds to Table 1. $N = 167$. * $p < .05$. *** $p < .001$.

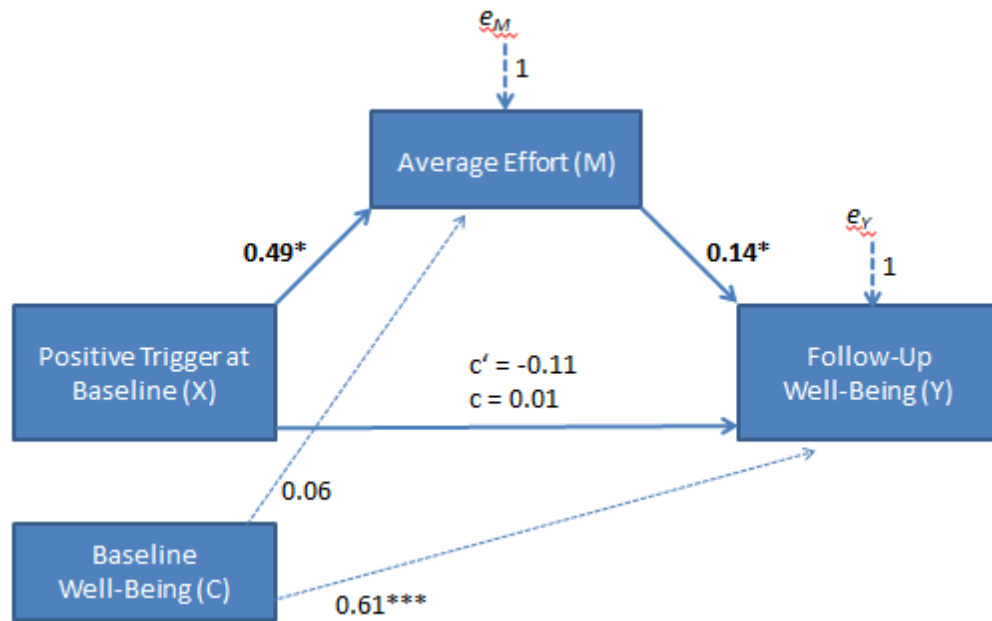


Figure 5. Effect of trigger at baseline (versus control group) on follow-up well-being via average effort, controlling for baseline well-being (Study 1). All continuous variables (Baseline Well-Being, Follow-Up Well-Being, and Effort) were standardized so the *bs* reflect standardized regression coefficients when estimating a pathway between two continuous variables. This figure corresponds to Table 2. $N = 150$. * $p < .05$. *** $p < .001$.

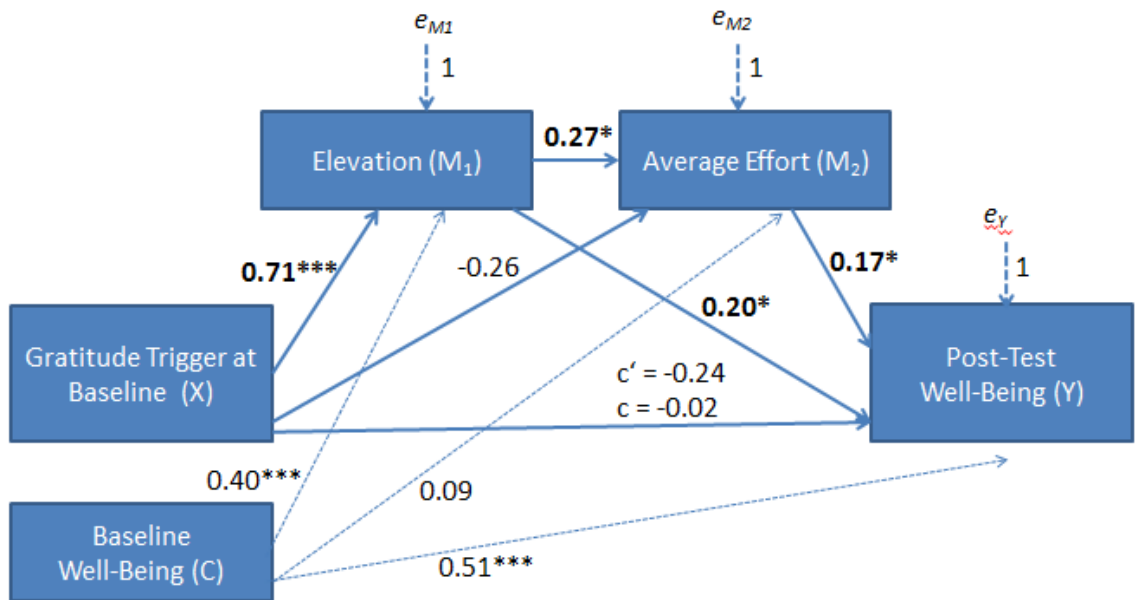


Figure 6. Effect of trigger at baseline (versus just at midpoint or control) on post-test well-being via baseline elevation and average effort (excluding weekly gratitude condition), controlling for baseline well-being (Study 2). All continuous variables (Baseline Well-Being, Post-Test Well-Being, and Effort) were standardized so the *bs* reflect standardized regression coefficients when estimating a pathway between two continuous variables. This figure corresponds to Table 4. $N = 108$. * $p < .05$. *** $p < .001$.

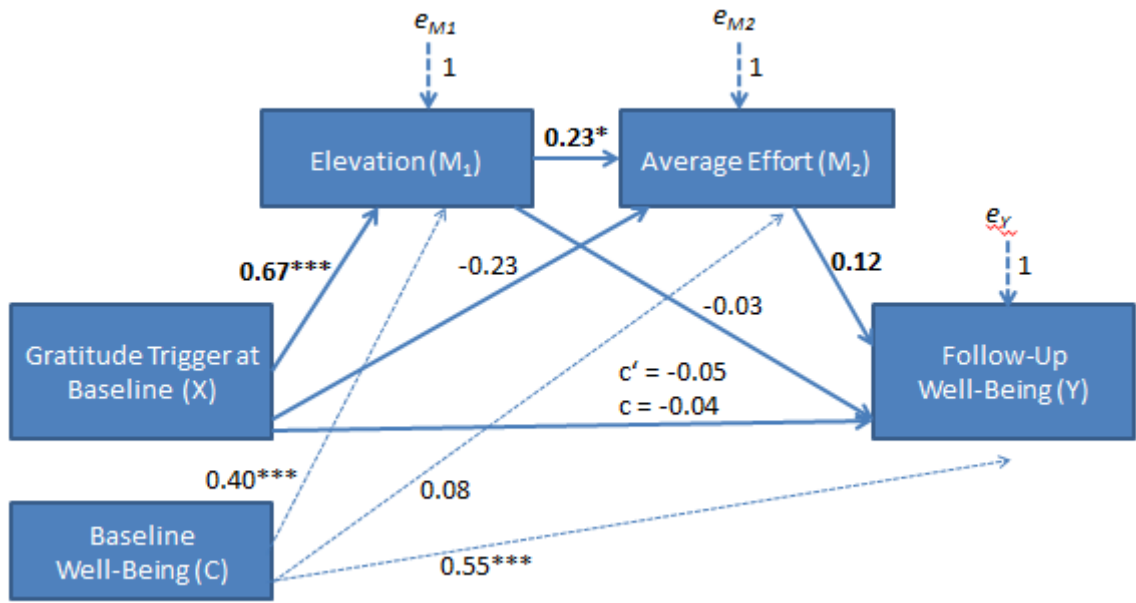


Figure 7. Effect of trigger at baseline (versus just at midpoint or control) on follow-up well-being via baseline elevation and average effort (excluding weekly gratitude condition), controlling for baseline well-being (Study 2). All continuous variables (Baseline Well-Being, Follow-Up Well-Being, and Effort) were standardized so the *bs* reflect standardized regression coefficients when estimating a pathway between two continuous variables. This figure corresponds to Table 5. $N = 112$. * $p < .05$. *** $p < .001$.

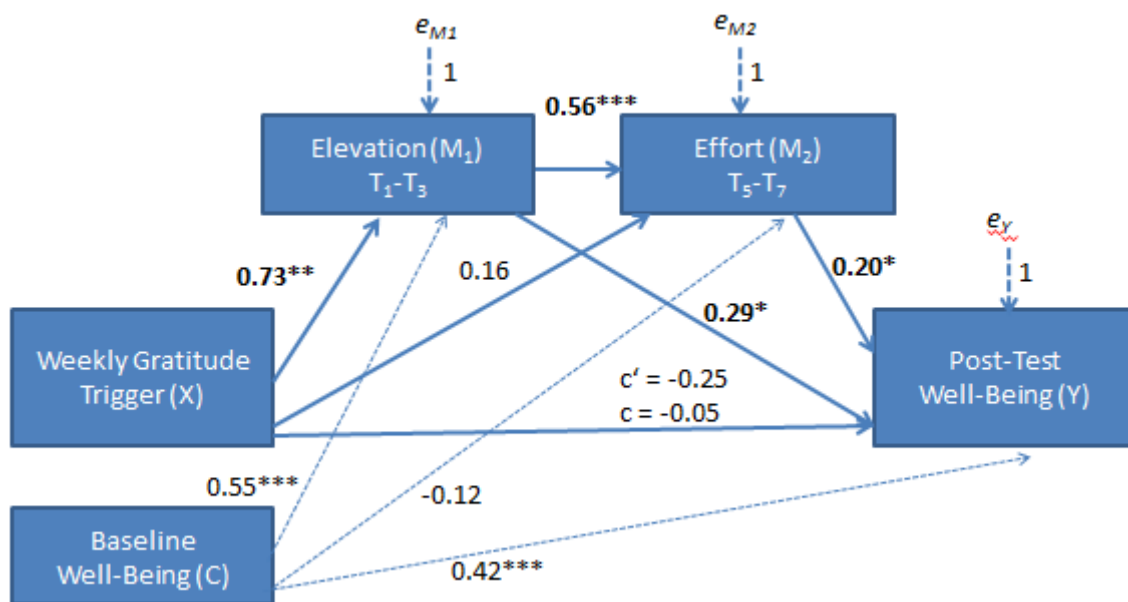


Figure 8. Effect of weekly gratitude trigger (versus “just at baseline” and “baseline and midpoint” conditions) on post-test well-being via elevation through midpoint (T₁-T₃) and effort during the latter half of the intervention (T₅-T₇), controlling for baseline well-being (Study 2). All continuous variables (Baseline Well-Being, Post-Test Well-Being, and Effort) were standardized so the *bs* reflect standardized regression coefficients when estimating a pathway between two continuous variables. This figure corresponds to Table 8. $N = 70$. [†] $p < .10$; $*p < .05$. $***p < .001$.

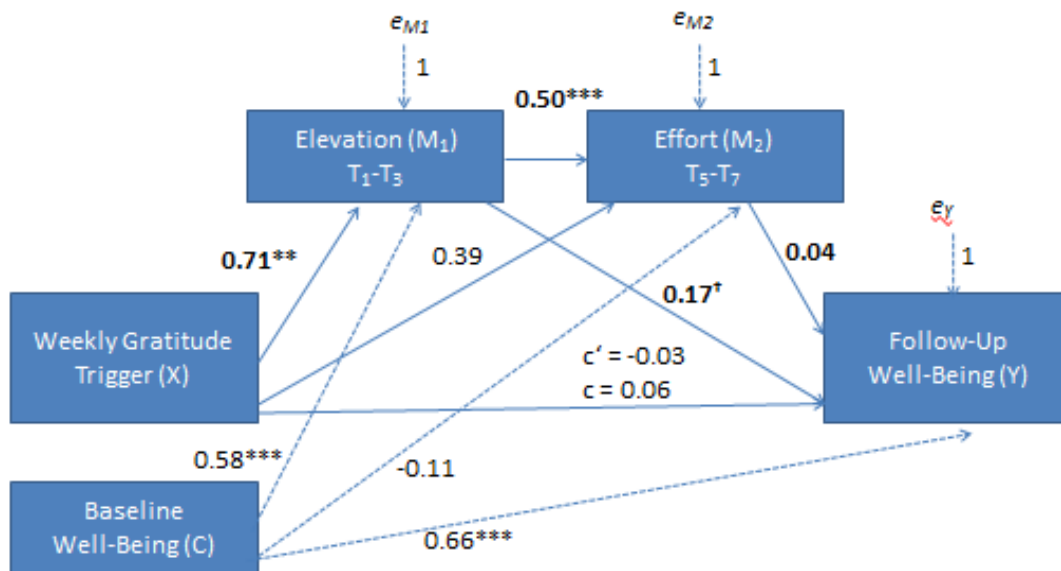


Figure 9. Effect of weekly gratitude trigger (versus “just at baseline” and “baseline and midpoint” conditions) on follow-up well-being via elevation through midpoint (T₁-T₃) and effort during the latter half of the intervention (T₅-T₇), controlling for baseline well-being (Study 2). All continuous variables (Baseline Well-Being, Post-Test Well-Being, and Effort) were standardized so the *bs* reflect standardized regression coefficients when estimating a pathway between two continuous variables. This figure corresponds to Table 8. *N* = 72. [†]*p* < .10; **p* < .05.