

## Who benefits the most from a gratitude intervention in children and adolescents? Examining positive affect as a moderator

Jeffrey J. Froh<sup>a\*</sup>, Todd B. Kashdan<sup>b</sup>, Kathleen M. Ozmikowski<sup>a</sup> and Norman Miller<sup>a</sup>

<sup>a</sup>Department of Psychology, Hofstra University, Hempstead,  
New York, USA; <sup>b</sup>George Mason University, Fairfax, VA, USA

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To date, nearly half of the work supporting the efficacy of gratitude interventions did so by making contrasts with techniques that induce negative affect (e.g., record your daily hassles). Gratitude interventions have shown limited benefits, if any, over control conditions. Thus, there is a need to better understand whether gratitude interventions are beyond a control condition and if there exists a subset of people who benefit. People high in positive affect (PA) may have reached an ‘emotional ceiling’ and, thus, are less susceptible to experiencing gains in well-being. People lower in PA, however, may need more positive events (like expressing gratitude to a benefactor) to ‘catch up’ to the positive experiences of their peers. We examined if PA moderated the effects of a gratitude intervention where youth were instructed to write a letter to someone whom they were grateful and deliver it to them in person. Eighty-nine children and adolescents were randomly assigned to the gratitude intervention or a control condition. Findings indicated that youth low in PA in the gratitude condition, compared with youth writing about daily events, reported greater gratitude and PA at post-treatment and greater PA at the 2-month follow-up.

**Keywords:** gratitude; intervention; positive affect; children; adolescents

### Introduction

I would like to take this time to thank you for all that you do on a daily basis and have been doing my whole life... I am so thankful that I get to drive in with you [to school] everyday and that you listen and care about the things going on in our lives. I also want to thank you for all the work you do for our church. Every week you work to provide a great lineup of worship that allows everyone to enter in and glorify God every Sunday... I thank you for being there whenever I need you. I thank you that when the world is against me that you stand up for me and you are my voice when I can't speak for myself. I thank you for caring about my life and wanting to be involved. I thank you for the words of encouragement and hugs of love that get me through every storm. I thank you for sitting through countless games in the cold and rain and still having the energy to make dinner and all the things you do. I thank you for raising me in a Christian home where I have learned who God was and how to serve him... I am so blessed to have you as my mommy and I have no idea what I would have done without you. I love you a million hugs and kisses (Excerpt from a 17 year-old female student's gratitude letter).

Gratitude seems critical to social functioning and mental and physical health. Small to large relations have been found between gratitude and well-being in early adolescents (Froh, Sefick, & Emmons, 2008;

Froh, Yurkewicz, & Kashdan, 2009a), late adolescents (Froh, Emmons, Card, Bono, & Wilson, 2009b), college students (Emmons & McCullough, 2003), middle age adults (Seligman, Steen, Park, & Peterson, 2005), and older adults (Kashdan, Uswatte, & Julian, 2006). Of the positive psychology interventions targeting well-being enhancement, gratitude interventions demonstrate the largest effects. Because neural plasticity is greatest during early stages of development and continues through puberty, though changes in the brain during adolescence are less dramatic than earlier in life (Nelson & Bloom, 1997), it seems critical to create and study gratitude interventions in younger populations. There is only one published study of a gratitude intervention (i.e., counting blessings) in early adolescents (Froh et al., 2008). To build on this initial work, in the current study we examined a different gratitude intervention, extended the follow-up assessment and, most importantly, sought to examine potential moderators of treatment response. Specifically, we wondered whether those low in positive affect (PA) (based on the frequency of positive emotions such as joy and interest; Diener, 1994) are particularly responsive to the intervention in terms of experiencing the greatest psychological benefits.

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\*Corresponding author. Email: jeffrey.froh@hofstra.edu

### ***The psychological potency of gratitude***

Gratitude is experienced when people receive something beneficial. It is the appreciation one feels when somebody does something kind or helpful. Gratitude has been defined as ‘a sense of thankfulness and joy in response to receiving a gift, whether the gift be a tangible benefit from a specific other or a moment of peaceful bliss evoked by natural beauty’ (Emmons, 2004, p. 554).

Research on trait gratitude suggests that grateful people tend to exhibit positive states and outcomes (McCullough, Emmons, & Tsang, 2002; Watkins, 2004). Compared with less grateful people, grateful people report experiencing more life satisfaction, optimism, vitality, and less depression and envy. Grateful individuals also endorse high levels of agreeableness, extraversion, openness, and low levels of neuroticism (McCullough et al., 2002). Other research on adults (Overwalle, Mervielde, & DeSnyder, 1995; Watkins, Woodward, Stone, & Kolts, 2003) has also shown that grateful people tend to experience greater positive emotions, such as more frequent contentment, happiness, and hope, as well as fewer negative emotions.

Until the past few years, research on gratitude and well-being has mostly been conducted on adult populations. However, research on gratitude in youth is now beginning to accumulate. In the first published study examining gratitude correlates in early adolescents, positive relations were found between gratitude and PA, pride, hope, inspiration, forgiveness, excitement, global and domain specific life satisfaction (e.g., satisfaction with family), optimism, social support, and prosocial behavior. Gratitude also demonstrated a negative relation with physical symptoms (Froh et al., 2009a). These findings suggest that gratitude has similar relations with physical, emotional, and social health in adolescents compared to adults. Knowing if gratitude interventions will be as effective for children and adolescents as they are for adults might require consideration of developmental issues.

### ***Gratitude is context dependent: developmental considerations***

Although gratitude has demonstrated relations with well-being in youth similar to adults (Froh et al., 2008, 2009a; Park & Peterson, 2006), developmental differences, especially cognitive developmental differences, should give us pause when tempted to extrapolate adult findings to youth. Gratitude is a cognitively complex emotion with specific social-cognitive determinants (intent of and cost to the benefactor and benefit for the beneficiary) necessary for its experience. It likely emerges between 7 and 10 years of age because it becomes more uniquely tied to its antecedent causal

thoughts as children age. To illustrate, after reading a vignette describing a new student in school picked to join the baseball team by the captain, 5 and 6 year olds were equally likely to give the captain a gift for their actions regardless of whether it was a kind gesture (intentional) or team rule (unintentional). But 10 and 11 year olds were more likely to give the captain a gift only if they were intentionally selected. For 5 and 6 year olds, gratitude did not mediate the relation between the captain’s behavioral motives and whether they gave a gift, but it did for 10 and 11 year olds. Thus, gratitude better explains the relation between perceiving another person’s behavior as intentional and direct reciprocity as children age (Graham, 1988). Furthermore, as children become less egocentric and enter early adolescence, the ability to empathize strengthens (Saarni, 1999). This ability may be the strongest developmental catalyst of gratitude, as it enables the social-cognitive determinants needed to appreciate and reciprocate the conditions of benefit-giving situations (McCullough, Kilpatrick, Emmons, & Larson, 2001). Therefore, it is only after a child sees others’ behaviors as intentional, becomes more other-centered, and develops empathy, will she likely benefit from gratitude interventions.

Because many social and cognitive factors likely play a role in gratitude development, it seems probable that parents, teachers, caregivers, and peers facilitate children’s emotional competency by providing exposure to social contexts and activities that embed psychological insight about social experiences. To illustrate, a laboratory investigation looking at politeness routines for ‘hi,’ ‘good-bye,’ and ‘thanks’ was conducted with 22 boys and girls 2 to 5 years old and their parents. At the end of a parent–child play session, an assistant entered the playroom with a gift for the child for participating in the study to elicit politeness routines from the children. Parental prompting led 86% of the children to express gratitude, but with no prompting expressing gratitude became the least frequent politeness routine: only 7% of children spontaneously expressed gratitude (Greif & Gleason, 1980). It seems that gratitude might be more naturally occurring in adults compared with children. Children, therefore, could likely benefit from structured activities aimed at enhancing gratitude.

Because the developmental trajectory of gratitude is unknown, extrapolating the findings about gratitude interventions in adult samples to children and adolescents should be done cautiously. Taken together, these studies suggest that adult encouragement can likely foster gratitude development in youth. Because gratitude can be taught to adults via exposure to social contexts and activities that are fertile ground for the experience and expression of gratitude, these same tools might help children learn the skills to experience and express gratitude.

### **A closer (re-) interpretation of the literature on gratitude interventions**

Gratitude interventions in adults consistently boost, and maintain, positive benefits. Gratitude interventions lead to greater gratitude, life satisfaction, optimism, prosocial behavior (Emmons & McCullough, 2003), PA (Emmons & McCullough, 2003; Watkins et al., 2003, Study 4), well-being (Lyubomirsky, Sheldon, & Schkade, 2005; Seligman et al., 2005), as well as decreased negative affect (NA) (Emmons & McCullough, 2003; Seligman et al., 2005; Watkins et al., 2003, Study 3) compared with controls. Similar findings have been found in youth. Daily for 2 weeks, 221 middle-school students were asked to either count up to five things for which they were grateful (i.e., gratitude condition), five things they found annoying (i.e., hassles condition), or complete the measures (i.e., control condition). Findings indicated that counting blessings, compared with focusing on hassles, was associated with enhanced self-reported gratitude, optimism, and life satisfaction. It was also associated with decreased NA at both the immediate post-test and 3-week follow-up. Although counting blessings was unrelated with a significant increase in PA, a medium relation was found between gratitude and school satisfaction at the post-test and 3-week follow-up compared with both the hassles condition and no-treatment controls (Froh et al., 2008). Thus, gratitude interventions are related with psychological benefits in adults and youth. But 44% of the studies (4 out of 9 with studies from multi-study papers considered independently) found support for gratitude interventions when making contrasts with techniques that induce negative affect (e.g., record your daily hassles). Gratitude interventions have shown limited benefits, if any, over control conditions.

Excited with a new intervention targeting well-being, some methodological details have been ignored or misinterpreted. Of the nine studies examining gratitude interventions, three studies (Emmons & McCullough, 2003, Study 1, Study 2; Froh et al., 2008) found that the majority of statistically significant differences existed between the gratitude intervention and hassles condition, not the control condition. The study using early adolescent participants (Froh et al., 2008), most relevant to the current study, found differences between the gratitude condition and no-treatment controls on only one outcome at post-test and follow-up. Furthermore, another study found no significant differences between a gratitude intervention and listing the details of one's day (Sheldon & Lyubomirsky, 2006). The remaining five studies, however, draw a brighter picture for the efficacy of gratitude interventions. Two found that a gratitude intervention was more strongly associated with well-being compared with no-treatment controls

(Emmons & McCullough, 2003, Study 3; Lyubomirsky et al., 2005). One found that grateful processing, compared with focusing on regrets, was related with less NA (Watkins et al., 2003, Study 3). Another found that grateful processing, compared with writing about the layout of a living room, was related with more PA (Watkins et al., 2003, Study 4). Only one found that two different gratitude interventions were related with more happiness and less depression compared with a 'placebo control' group (Seligman et al., 2005). See Table 1 for a summary of these nine studies.

Taken together, these studies provide mixed findings supporting the efficacy of gratitude interventions. The hassles and regrets conditions might be driving the between group differences by producing NA, rather than the gratitude condition producing well-being. The gratitude condition might be the control, and these studies might have only shown that listing hassles or regrets decreases well-being compared with control groups. One reason for the non-statistically significant differences between the gratitude interventions and controls may be due to a moderator. Perhaps the interventions only work for certain types of people. Specifically, those low in PA may be particularly responsive.

### **PA and well-being**

Only two studies (Froh et al., 2008; Sheldon & Lyubomirsky, 2006) have examined moderating variables for gratitude interventions. We believe that levels of PA will moderate the effects of the gratitude intervention. Specifically, youth low in PA are expected to derive more emotional benefits from the gratitude intervention. Gratitude might be a less frequent, more novel experience for those low in PA. The relation between gratitude and well-being might be a synergy of positive emotions: gratitude enhances well-being, in turn further enhancing gratitude, and subsequently further enhancing well-being (Watkins, 2004). This synergistic relation between gratitude and well-being might naturally occur in youth high in PA. Therefore, it seems more likely that youth low in PA might need a kick-start, like a gratitude intervention, to launch the process.

The gratitude intervention used in this study is a high intensity situation to help people recognize that a source of goodness in their life is external to them and from another person, as well as intentionally given, costly to that other person, and beneficial to themselves. Although main effects have been found for both this (Seligman et al., 2005b) and related interventions (e.g., Lyubomirsky et al., 2005b), we should still test the boundary conditions and ask a critical question: are certain people more inclined to

Table 1. Summary of the nine published studies investigating gratitude interventions.

	Participants and timeframe	Gratitude intervention(s), control group(s), and findings
<b>Emmons &amp; McCullough (2003)</b> Study 1	College students Weekly for 10 weeks	<p><b>Gratitude condition:</b> List up to five things they were grateful or thankful for (G)</p> <p><b>Control conditions:</b> List up to five hassles (C<sup>1</sup>) or list the five events that had an impact on them (C<sup>2</sup>)</p> <p><b>Findings:</b>                      G &gt; C<sup>1</sup>: gratitude (9-week mean composite)                      G &gt; C<sup>1</sup>: hours spent exercising                      G &gt; C<sup>1</sup> and C<sup>2</sup>: overall life satisfaction and expected life satisfaction in the upcoming week                      G &lt; C<sup>1</sup> and C<sup>2</sup>: physical complaints (e.g., headaches)                      G ≠ C<sup>1</sup> and C<sup>2</sup>: positive and negative affect (9-week mean composite)</p> <p><b>Gratitude condition:</b> List up to five things they were grateful or thankful for (G)</p> <p><b>Control conditions:</b> List up to five hassles (C<sup>1</sup>) or think about ways they are better off than others, things they have that others do not (downward social comparison) (C<sup>2</sup>)</p> <p><b>Findings:</b>                      G &gt; C<sup>1</sup>: gratitude and positive affect (13-day mean composite)                      G &gt; C<sup>1</sup> and C<sup>2</sup>: providing emotional support to others                      G ≠ C<sup>1</sup> and C<sup>2</sup>: negative affect (13-day mean composite), physical complaints, time spent exercising, time spent sleeping, sleep quality, aspirin, caffeine, and alcohol usage</p> <p><b>Gratitude condition:</b> List up to five things they were grateful or thankful for (G)</p> <p><b>Control condition:</b> No-treatment controls (C)</p> <p><b>Findings from self-report:</b>                      G &gt; C: gratitude and positive affect (21-day mean composite), overall life satisfaction, expected life satisfaction in the upcoming week, connection with others, time spent sleeping, and feeling refreshed upon waking                      G &lt; C: negative affect (21-day mean composite)                      G ≠ C: experiencing daily physical pain, pain interference with desired daily accomplishments, time spent exercising, and functional status (e.g., walking across the room, bathing and dressing)</p> <p><b>Findings from other-report:</b>                      G &gt; C: positive affect and overall life satisfaction                      G ≠ C: negative affect</p>
Study 2	College students Daily for 2-weeks	<p><b>Gratitude condition:</b> List things done over the previous summer that they felt grateful for (G)</p> <p><b>Control condition:</b> List things they wanted to do over the summer but were unable to do (C)</p> <p><b>Findings:</b>                      G &lt; C: negative affect                      G ≠ C: positive affect</p> <p><b>Gratitude conditions:</b> Write about someone they were grateful for (essay condition) (G<sup>1</sup>), think about someone living for whom they were grateful (G<sup>2</sup>), or write a letter to a living person to whom they were grateful and give it to the researchers to mail (G<sup>3</sup>)</p> <p><b>Control condition:</b> Write about the lay-out of their living (C)</p> <p><b>Findings:</b>                      G<sup>1</sup>, G<sup>2</sup>, and G<sup>3</sup> &gt; C: positive affect                      G<sup>1</sup>, G<sup>2</sup>, and G<sup>3</sup> ≠ C: negative affect</p>
Study 3	Adults with either congenital or adult-onset neuro-muscular diseases Daily for 3-weeks	<p><b>Gratitude condition:</b> List things done over the previous summer that they felt grateful for (G)</p> <p><b>Control condition:</b> List things they wanted to do over the summer but were unable to do (C)</p> <p><b>Findings:</b>                      G &lt; C: negative affect                      G ≠ C: positive affect</p>
<b>Watkins, Woodward, Stone, &amp; Kolts (2003)</b> Study 4	College students 5 minutes	<p><b>Gratitude condition:</b> List things done over the previous summer that they felt grateful for (G)</p> <p><b>Control condition:</b> List things they wanted to do over the summer but were unable to do (C)</p> <p><b>Findings:</b>                      G &lt; C: negative affect                      G ≠ C: positive affect</p>
Study 5	College students Time is only provided for the essay condition (5 minutes). But it seems like all of the interventions were completed in one sitting.	<p><b>Gratitude condition:</b> List things done over the previous summer that they felt grateful for (G)</p> <p><b>Control condition:</b> List things they wanted to do over the summer but were unable to do (C)</p> <p><b>Findings:</b>                      G &lt; C: negative affect                      G ≠ C: positive affect</p>

(continued)

Table 1. Continued.

	Participants and timeframe	Gratitude intervention(s), control group(s), and findings
<b>Lyubomirsky, Sheldon, &amp; Schkade (2005b)</b> Study 6	College students 6-weeks	<b>Gratitude conditions:</b> Contemplate the things for which they are grateful 1x/week ( $G^1$ ) or 3x/week ( $G^2$ ) <b>Control condition:</b> No-treatment controls ( <b>C</b> ) <b>Findings:</b> $G^1 > G^2$ and <b>C</b> : well-being (a composite of positive affect, reverse-coded negative affect, overall life satisfaction, and the Subjective Happiness Scale [Lyubomirsky & Lepper, 1999])
<b>Seligman, Steen, Park, &amp; Peterson (2005)</b> Study 7	Internet sample of middle-age adults interested in becoming happier Listing three good things was done daily for 1-week, and the gratitude letter was to be written and delivered within 1-week.	<b>Gratitude conditions:</b> List three good things that went well and their causes ( $G^1$ ) or write a letter to a living person to whom they were grateful and deliver it in person ( $G^2$ ) <b>Control condition:</b> Write about their early memories ( <b>C</b> ) <b>Findings:</b> $G^1 > C$ : happiness at the 1-month, 3-month, and 6-month follow-ups $G^1 < C$ : depression at the 1-month, 3-month, and 6-month follow-ups $G^2 > C$ : happiness at the immediate post-test, 1-week, and 1-month follow-up $G^2 < C$ : depression at the immediate post-test, 1-week, and 1-month follow-up
<b>Sheldon &amp; Lyubomirsky (2006)</b> Study 8	College students 4-weeks	<b>Gratitude condition:</b> Write about the many things that they have to be grateful about ( <b>G</b> ) <b>Control condition:</b> Write about their typical day and the kinds of things that happen during it ( <b>C</b> ) <b>Findings:</b> $G \neq C$ : positive affect, negative affect (though both groups declined from pre-test to post-test), and self-concordant motivation (SCM) (perceiving an exercise as engaging, interesting, challenging, and meaningful)
<b>Froh, Sefick, &amp; Emmons (2008)</b> Study 9	Early adolescents Daily for 2 school weeks (Monday–Friday; Monday–Friday)	<b>Gratitude condition:</b> List up to five things they were grateful or thankful for ( <b>G</b> ) <b>Control conditions:</b> List up to five hassles ( $C^1$ ) or no-treatment controls ( $C^2$ ) <b>Findings:</b> $G > C^1$ : gratitude at the immediate post-test and 3-week follow-up, satisfaction with the past few weeks at the immediate post-test, and expected life satisfaction in the upcoming week, residency satisfaction, and gratitude in response to aid at the 3-week follow-up $G < C^1$ : negative affect using the 8-day mean composite excluding the pre and post-test data, and at the immediate post-test and 3-week follow-up $G > C^1$ and $C^2$ : school satisfaction at the immediate post-test and 3-week follow-up $G \neq C^1$ and $C^2$ : gratitude, positive affect, and prosocial behavior using the 8-day mean composite excluding the pre and post-test data, positive affect and prosocial behavior at the immediate post-test and 3-week follow-up, overall life satisfaction, expected life satisfaction in the upcoming week, satisfaction with oneself, residency satisfaction, family satisfaction, and friend satisfaction at the immediate post-test, and overall life satisfaction, satisfaction with the past few weeks, satisfaction with oneself, family satisfaction, and friend satisfaction at the 3-week follow-up

Note: A study not being specified (e.g., Study 1) indicates that only one study investigating a gratitude intervention(s) is presented in the respective source. Follow-up data are only presented for two of the studies (i.e., Froh, Sefick, & Emmons, 2008, Seligman, Steen, Park, & Peterson, 2005) because all other studies are pre-post designs. Two of the sources (i.e., Seligman, Steen, Park, & Peterson, 2005; Sheldon & Lyubomirsky, 2006) used additional well-being interventions beyond the gratitude interventions reported here. In this table, however, we only report the statistically significant differences between the gratitude interventions and the controls, and not the differences between these gratitude interventions and the other well-being interventions. Furthermore, statistically significant differences between the controls are excluded (e.g., Froh, Sefick, & Emmons, 2008; i.e., the no-treatment controls reported less negative affect compared with those in the hassles condition during the 2-week intervention, and at the post-test and 3-week follow-up). Thus, we restrict the findings presented in this table to only those between the gratitude interventions and controls.

derive benefits from gratitude interventions? PA might be one such variable given its relation with social interaction, activity, and energy (Lyubomirsky, King, & Diener, 2005a). Although the study of subjective well-being, of which PA is a component, has a relatively long history in adults (Diener, Suh, Lucas, & Smith, 1999), its history in children and adolescents is short (Huebner & Diener, 2008). PA has been defined as the frequency of positive emotions, such as joy or interest. It reflects a person's experience of pleasurable engagement with the environment (Diener, 1994). PA in children and adolescents is related with a host of emotional and behavioral outcomes. Positive relations have been found between PA and extraversion (Wilson, Gullone, & Moss, 1998), life satisfaction (Gilman & Huebner, 2000), receipt of prosocial acts (Martin & Huebner, 2007), positive daily events (e.g., talking or sharing feelings with friends) (McCullough, Huebner, & Laughlin, 2000), and the experience of positive social interactions (Martin & Huebner, 2007). Furthermore, in a sample of 331 3rd and 7th graders, satisfaction of the need for autonomy and competence were associated with concurrent PA. Satisfaction of the need for relatedness was associated with concurrent and future levels of PA (Véronneau, Koestner, & Abela, 2005). Negative relations have been found between PA and NA (Laurent et al., 1999; Wilson et al., 1998), depression, anxiety (Laurent et al., 1999; Martin & Huebner, 2007), and negative daily events (McCullough et al., 2000).

People high in PA, therefore, might have reached an 'emotional ceiling' and are less susceptible to experiencing gains in well-being. They already have frequent exposure to positive events and seem highly responsive or sensitive to them (Zautra, Affleck, Tennen, Reich, & Davis, 2005). Comparatively, people low in PA might need more positive events to 'catch up' to the positive experiences of those high in PA. This might be especially true if the activity intended to boost their well-being is social. This is because people high in PA are constantly engaged in social activity (Fleeson, Malanos, & Achille, 2002). They are gregarious. That is the purpose of the gratitude intervention in this study: to initiate behaviors that promote positive social experiences. It therefore seems likely that those low in PA, compared with those high in PA, might derive more emotional benefit from gratitude interventions.

### Current investigation

To summarize, the empirical study of gratitude in children and adolescents is limited. It is unknown whether PA will moderate a gratitude intervention and emotional well-being. Because the gratitude intervention used in this study (asking youth to write a letter

to a benefactor whom they have never given the proper thanks and read it to them in person) is a hyperemotional situation that exposes people to gratitude and other positive emotions beyond the typical prosocial situation (e.g., conducting random acts of kindness), it makes sense that youth with little exposure to positive emotions might be the most inspired and changed by the experience. This might be due to an epiphany, a sudden feeling of insight (Keltner & Haidt, 2003). After completing the gratitude intervention, youth low in PA might realize a new relation between previously separated objects: being a beneficiary and held in high regard by a benefactor. Therefore, in the immediate aftermath, students low in PA might get a surge of positive emotions. We predicted that youth low in PA in the gratitude condition, compared with the control group, would report more gratitude and PA at the immediate post-test (T2). With benefits of counting blessings being found at the 3-week follow-up (Froh et al., 2008), we predicted that increases in PA and gratitude would be maintained at the 1-month (T3) and 2-month follow-up (T4) favoring those in the gratitude condition and low in PA. Furthermore, with counting blessings being associated with decreased NA at both the immediate post-test and 3-week follow-up, we predicted that students in the gratitude condition and low in PA, compared with the control group, would report less NA at T2, T3, and T4.

## Method

### Participants

Participants were 89 students (mean age = 12.74 years,  $SD = 3.48$ , range = 8–19 years) from a parochial school. Students were in grades 3 (32.6%), 8 (43.8%), and 12 (23.6%). The amount of girls (50.6%) and boys (49.4%) was relatively equal. The overall sample was 67.4% Caucasian, 12.4% Asian American, 9.0% African American, 9.0% Hispanic, and 2.2% identified as 'other.' The majority of the sample (74.2%) reported that God was 'extremely important' in their lives, while the remaining students either reported that God was 'important' (24.7%) or 'not very important' (1.1%).

### Measures

#### Gratitude

The Gratitude Adjective Checklist (GAC; McCullough et al., 2002) was used to assess gratitude. It is the sum of the ratings of three adjectives: grateful, thankful, and appreciative. A Likert scale from 1 (very slightly or not at all) to 5 (extremely) followed each item. Internal consistency is strong ( $\alpha = 0.87$ ), and convergent and discriminant validity has been established in adolescent samples (Froh, Miller, & Snyder, 2007; Froh et al., 2008). Students were asked to rate the

amount they experienced each feeling ‘during the past few weeks’ ( $\alpha$  ranged from 0.80–0.84).

### *Positive and negative affect*

The Positive and Negative Affect Scale for Children (PANAS-C; Laurent et al., 1999) was used to assess PA and NA. The PANAS-C consists of 12 positive (e.g., happy, cheerful) and 15 negative (e.g., sad, frightened) affect adjectives. Internal consistency is strong for both the PA scale (0.90 for the scale development sample and 0.89 for the replication sample) and NA scale (0.94 for the scale development sample and 0.92 for the replication sample). Both scales also have good convergent and discriminant validity with existing measures of childhood anxiety and depression (Laurent et al., 1999). The 30-item PANAS-C includes alert, fearless, and daring in the positive affect scale. We used the 30-item version for the present study. A Likert scale from 1 (very slightly or not at all) to 5 (extremely) followed each item. Students were asked to rate the amount they experienced each feeling ‘during the past few weeks’ ( $\alpha$  ranged from 0.84–0.91 for PA and .83–0.88 for NA).

### *Procedure*

One week prior to the start of the study, the third author introduced herself to the students and told them that, regardless of participation, each class will receive donuts. After getting active parental consent and student assent, students were matched by grade and randomly assigned to either the gratitude intervention ( $n=44$ ) or control group ( $n=45$ ).<sup>1</sup> There were almost identical numbers of students per grade in each condition (3rd grade gratitude intervention = 14, control group = 15; 8th grade gratitude intervention = 20, control group = 19; 12th grade gratitude intervention = 10, control group = 11). Measures were counterbalanced via all possible orders to control for order effects.

Students in the gratitude condition were given the following directions:

Most everyone enjoys thanks for a job well done or for a favor done for a friend, and most of us remember to say ‘thank you’ to others. But sometimes our ‘thank-you’ is said so casually or quickly that it is nearly meaningless. In this exercise, you will have the opportunity to express your gratitude in a very thoughtful manner. Think of the people—parents, friends, coaches, teammates, and so on—who have been especially kind to you but whom you have never properly thanked. Choose one person you could meet individually for a face-to-face meeting in the next week. Your task is to write a gratitude letter (a letter of thanks) to this individual and deliver it in person. The letter should be specific about what he or she did that affected your life. Make it sing! It is important that you meet him or her in person. Don’t tell this

person, however, about the purpose of this meeting. This exercise is much more fun when it is a surprise to the person you are thanking.

Students were encouraged to design a cover page to enhance the uniqueness of their letter.

Students in the control condition were given the following instructions:

Expressing your feelings is a good thing to do. Think about yesterday. Write about some of the things you did and what you felt like when you were doing these things.

Students were given 10–15 minutes daily for 5 days to either write their gratitude letter or journal about daily events. Because the interventions lasted for 2 weeks and were done during class instruction time, students did them on Monday, Wednesday, Friday, Monday, and Wednesday. The third author roamed the classrooms during this time to ensure that all students remained on-task. They did. Students were instructed to read the gratitude letter to their benefactor before the upcoming (second) Friday. On this second Friday of the 2 weeks, while students in the control condition worked with the teacher on class-related activities, students in the gratitude condition were pulled aside to a corner of the classroom by the third author to reflect on and share their experiences with reading their gratitude letters to their benefactors and assess treatment integrity. All students discussed their experience and 100% of them said that they read their letter to their benefactor in person. A ‘completion of the gratitude intervention form’ was mailed home to all parents/guardians of the students in the gratitude condition to further assess treatment integrity.<sup>2</sup> The form asked parents/guardians to check ‘yes’ or ‘no’ if either their child read the gratitude letter in person to them or another benefactor. Our goal was to assess treatment integrity, not the child’s relationship with the recipient. We received forms back from all 3rd grade parents. The return rate for all 8th and 12th graders was 0%.

Data were collected in the student’s classrooms. Baseline data (T1) were collected on the first Monday immediately before the students began to complete the interventions. T2 data were collected after the students in the gratitude condition returned to their seats following the reflection and sharing of their experiences with the intervention. T3 data were collected 1 month after T2 data were collected. T4 data were collected 2 months after T2 data were collected.

## **Results**

### *Data screening*

All measures were reviewed for completeness upon submission. If data were missing, students were asked to complete the missing items. Therefore, the dataset

was 100% complete. Skewness and kurtosis was examined for key variables at all four time points. Skewness ranged from  $-0.08$  to  $0.99$ . Except for T4NA (kurtosis =  $7.78$ ), kurtosis ranged from  $-1.13$  to  $0.06$ . To maintain interpretability (Tabachnick & Fidell, 2007), T4 NA remained non-transformed. No univariate or multivariate outliers were detected. The correlation between T1 PA and T1 gratitude was  $r(89) = 0.59$ ,  $p < 0.001$ , and  $r(89) = -0.25$ ,  $p = 0.02$  between T1 PA and T1 NA. Therefore, because no multicollinearity was present (Tabachnick & Fidell, 2007), T1 PA and T1 gratitude together as covariates and T1 PA and T1 NA together as covariates were retained in the multiple linear regression analyses.

**Preliminary analyses**

Given the small sample size, we first tested for differences in the demographic variables between the two conditions. Gender, ethnicity, and condition were coded as the following: boys = 1, girls = 2; 1 = white, 2 = non-white; and gratitude intervention = 1, control group = 2. A phi correlation between condition and gender suggested that there were equal amounts of boys and girls in the two conditions,  $r(87) = 0.06$ ,  $p = 0.60$ . Furthermore, a phi correlation between condition and ethnicity suggested that there were equal amounts of whites and non-whites in the two conditions,  $r(87) = 0.16$ ,  $p = 0.13$ . An independent samples *t*-test suggested that the students in both conditions shared similar views in the importance of God in their lives,  $t(87) = -0.06$ ,  $p = 0.95$ . Because the conditions showed similar sample characteristics, demographic variables were excluded as covariates in the analyses.

The developmental trajectory of gratitude remains uncertain (Froh & Bono, 2008). Therefore, because grade could potentially moderate the effects of the gratitude intervention due to the vast differences in cognitive development between our age groups (Wood, DeLuca, Anderson, & Pantelis, 2004), we tested for grade differences in gratitude, PA, and NA at T1, T2, T3, and T4. No statistically significant differences

existed: gratitude T1( $p = 0.79, \eta^2 = 0.01$ ), T2( $p = 0.61, \eta^2 = 0.01$ ), T3( $p = 0.16, \eta^2 = 0.04$ ), T4( $p = 0.32, \eta^2 = 0.03$ ); PA T1( $p = 0.45, \eta^2 = 0.02$ ), T2( $p = 0.84, \eta^2 = 0.00$ ), T3( $p = 0.47, \eta^2 = 0.02$ ), T4( $p = 0.14, \eta^2 = 0.05$ ); NA T1( $p = 0.42, \eta^2 = 0.02$ ), T2( $p = 0.70, \eta^2 = 0.01$ ), T3( $p = 0.20, \eta^2 = 0.04$ ), T4( $p = 0.13, \eta^2 = 0.05$ ). This suggests that our sample of 3rd, 8th, and 12th graders reported similar levels of gratitude, PA, and NA at all time points and that grade is unlikely a moderator in this study, although we have insufficient power to adequately test these differences. We then generated means and standard deviations for both the gratitude condition and control group on all variables of interest at every time point (see Table 2).

A  $2 \times 3$  repeated measures analysis of covariance, with condition as the between-subjects factor (gratitude intervention and control group), time as the within-subjects factor (T2, T3, and T4), and baseline as the covariate (T1) was used to determine if there was a main effect for condition and time and an interaction between condition and time for gratitude, PA, and NA. Because Mauchly's Test of Sphericity was significant for NA ( $p = 0.02$ ), thus signifying heterogeneity of covariance, we used the Greenhouse-Geisser statistic to assess the significance of the corresponding *F*. No significant main effect existed for condition for gratitude,  $F(1, 86) = 0.55$ ,  $p = 0.46$ ,  $\eta^2 = 0.01$ , PA,  $F(1, 86) = 0.56$ ,  $p = 0.46$ ,  $\eta^2 = 0.01$ , and NA,  $F(1, 86) = 0.39$ ,  $p = 0.54$ ,  $\eta^2 = 0.00$ . Therefore, when taking the average reported gratitude, PA, or NA across time points, students in both conditions reported similar levels of affect.

No significant main effect existed for time for gratitude,  $F(2, 172) = 2.18$ ,  $p = 0.12$ ,  $\eta^2 = 0.03$ , PA,  $F(2, 172) = 0.93$ ,  $p = 0.40$ ,  $\eta^2 = 0.01$ , and NA,  $F(1.85, 158.73) = 0.94$ ,  $p = 0.39$ ,  $\eta^2 = 0.01$ . Therefore, when taking the average reported gratitude, PA, or NA across conditions, the amount of affect reported at the three time points was similar. No significant interaction between condition and time existed for gratitude,  $F(2, 172) = 0.37$ ,  $p = 0.69$ ,  $\eta^2 = 0.00$ , PA,  $F(2, 172) = 0.45$ ,  $p = 0.64$ ,  $\eta^2 = 0.01$ , and NA,  $F(1.85, 158.73) = 0.60$ ,  $p = 0.54$ ,  $\eta^2 = 0.01$ . Therefore, students in both

Table 2. Means and standard deviations for the gratitude intervention and control group for gratitude, positive affect, and negative affect at all time points.

Outcome	Gratitude intervention (Mean ± SD)	Control group (Mean ± SD)	Outcome	Gratitude intervention (Mean ± SD)	Control group (Mean ± SD)	Outcome	Gratitude intervention (Mean ± SD)	Control group (Mean ± SD)
Gratitude			PA			NA		
T1	12.02 ± 2.65	11.11 ± 3.08	T1	52.20 ± 9.61	52.13 ± 10.61	T1	28.64 ± 8.13	28.51 ± 8.95
T2	12.27 ± 2.78	11.20 ± 2.95	T2	51.45 ± 8.96	51.33 ± 11.09	T2	26.07 ± 7.55	25.91 ± 8.32
T3	11.41 ± 2.76	10.56 ± 2.57	T3	50.48 ± 10.41	49.02 ± 11.57	T3	26.93 ± 9.09	26.34 ± 9.32
T4	11.34 ± 2.83	10.82 ± 2.96	T4	50.16 ± 10.80	48.44 ± 12.13	T4	27.39 ± 8.06	25.47 10.15

Note: PA = positive affect. NA = negative affect. T1 = baseline. T2 = immediate post-test. T3 = 1-month follow-up. T4 = 2-month follow-up.

conditions reported similar levels of gratitude, PA, and NA at T2, T3, and T4.

Certain people might be particularly responsive to the gratitude intervention compared with others. To determine if PA augments treatment effects, we tested T1 PA as a moderator and decomposed time analyzing it separately at T2, T3, and T4. We aimed to evaluate whether: (1) youth low in T1 PA, compared with those high in T1 PA, will derive more benefit from the gratitude intervention at T2 and T3, mirroring the findings reported with adults and (2) youth low in T1 PA, compared with those high in T1 PA, will derive more benefit from the gratitude intervention at T4, demonstrating benefits beyond the time-frame reported with adults.

**T1 PA as a moderator**

We constructed three separate hierarchical regression models to examine whether T1 PA moderated the effects of condition on gratitude, PA, and NA at T2, T3, and T4. When either gratitude or NA was the criterion, at Step 1, main effects for the dependent variable at T1 were entered. At Step 2, main effects for condition were entered. At Step 3, main effects for T1 PA were entered. Finally, at Step 4, the condition x T1 PA interaction was entered. When PA was the criterion, T1 PA could not be both a covariate at Step 1 and main effect at Step 3. Therefore, at Step 1, main effects for condition were entered. At Step 2, main effects for T1 PA were entered. Finally, at Step 3, the condition x T1 PA interaction term was entered. Moderator effects are indicated when the interaction term is significant while controlling for main effects for the predictor (i.e., condition) and moderator (T1 PA) (Baron & Kenny, 1986). T1 gratitude, T1 PA, and T1 NA were centered to reduce multicollinearity and significant interaction effects were explored with simple effect analyses (Aiken & West, 1991). Condition was dummy coded with the gratitude intervention coded as 0 and control group as 1.

As predicted, we found support for PA as a moderator of the effects of experimental condition on well-being. Significant condition x T1 PA interactions were found for T2 gratitude ( $p < 0.01$ ) (see Figure 1), T2 PA ( $p = 0.04$ ) (see Figure 2), and T4 PA ( $p = 0.03$ ) (see Figure 3); interaction effects approached significance for T4 gratitude ( $p = 0.07$ ), T3 PA ( $p = 0.06$ ), and T3 NA ( $p = 0.06$ ). No interaction effect was found for T3 gratitude ( $p = 0.31$ ), T2 NA ( $p = 0.11$ ), and T4 NA ( $p = 0.89$ ). Results of the statistically significant regression analyses are shown in Table 3.

Upon interpreting these interaction effects via visual inspection of the figures, students low in T1 PA receiving the gratitude intervention reported more T2 gratitude, T2 PA, and T4 PA compared with those

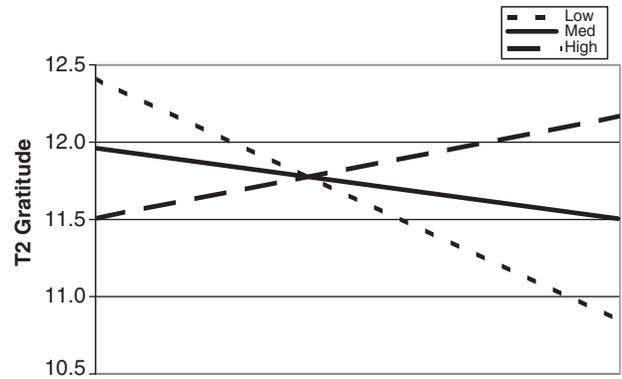


Figure 1. Gratitude at the immediate post-test (T2) as a function of experimental condition and baseline (T1) positive affect. Note: Low = 1 SD below the mean for T1 positive affect; Med = the mean for T1 positive affect; High = 1 SD above the mean for T1 positive affect.

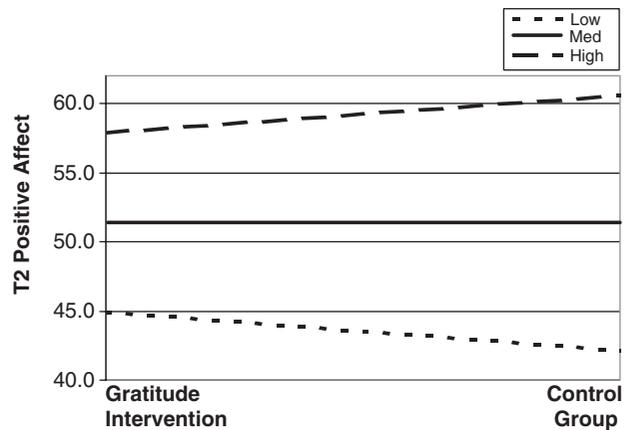


Figure 2. Positive affect at the immediate post-test (T2) as a function of experimental condition and baseline (T1) positive affect. Note: Low = 1 SD below the mean for T1 positive affect; Med = the mean for T1 positive affect; High = 1 SD above the mean for T1 positive affect.

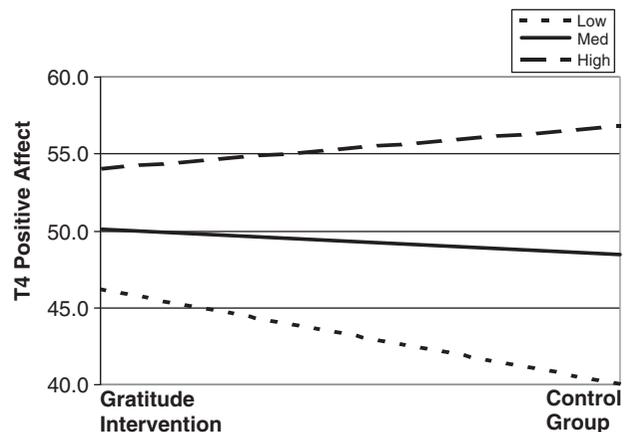


Figure 3. Positive affect at the 2-month follow-up (T4) as a function of experimental condition and baseline (T1) positive affect. Note: Low = 1 SD below the mean for T1 positive affect; Med = the mean for T1 positive affect; High = 1 SD above the mean for T1 positive affect.

Table 3. Hierarchical regression models of condition predicting gratitude, positive affect, and negative affect with baseline positive affect as a moderator.

Step		B	SE <sub>b</sub>	sr <sup>2</sup> <sub>1</sub>	t	ΔR <sup>2</sup>	ΔF
Dependent variable: T2 Gratitude							
1	T1 Gratitude	0.74	0.07	0.54	10.18***	0.54	103.70***
2	T1 Gratitude	0.73	0.07	0.51	9.90***	0.01	0.93
	Condition	-0.41	0.42	0.00	-0.97		
3	T1 Gratitude	0.70	0.09	0.01	7.62***	0.00	0.23
	Condition	-0.43	0.43	0.01	-1.01		
	T1 Positive affect	0.01	0.03	0.00	0.48		
4	T1 Gratitude	0.68	0.09	0.53	7.57***	0.04	7.33**
	Condition	-0.46	0.41	0.28	-1.10		
	T1 Positive affect	-0.05	0.03	0.01	-1.36		
	Condition × T1 Positive affect	0.11	0.04	0.04	2.71**		
Dependent variable: T2 Positive affect							
1	Condition	-0.12	2.14	0.00	-0.06	0.00	0.00
2	Condition	-0.07	1.30	0.00	-0.05	0.64	150.91***
	T1 Positive affect	0.80	0.07	0.64	12.28***		
3	Condition	-0.07	1.27	0.00	-0.05	0.02	4.54*
	T1 Positive affect	0.65	1.00	0.19	6.78***		
	Condition × T1 Positive affect	0.27	0.13	0.02	2.13*		
Dependent Variable: T4 Positive affect							
1	Condition	-1.72	2.44	0.01	-0.70	0.01	0.50
2	Condition	-1.67	2.03	0.01	-0.82	0.31	39.09***
	T1 Positive affect	0.63	0.10	0.31	6.25***		
3	Condition	-1.67	1.99	0.01	-0.84	0.04	4.87*
	T1 Positive affect	0.39	0.15	0.05	2.62*		
	Condition × T1 Positive affect	0.44	0.20	0.04	2.21*		

Note: *N* = 89. \**p* < 0.05. \*\**p* < 0.01. \*\*\**p* < 0.001. All *p*-values were two-tailed. Positive Affect = PA. Negative Affect = NA. T1 = baseline. T2 = immediate post-test. T4 = 2-month follow-up.

low in T1 PA receiving the control. We further probed these interaction effects with simple effect analyses (see Aiken & West, 1991). For the simple slope for 1 SD below the mean for T1 PA, the gratitude intervention, compared with the control group, significantly predicted more T2 gratitude, *t*(85) = -2.71, *p* = 0.01, and T4 PA, *t*(85) = -2.78, *p* < 0.01. For the simple slope for 1 SD above the mean for T1 PA, the gratitude intervention, compared with the control group, approached significance with predicting more T2 PA, *t*(85) = -1.69, *p* = 0.09. On visual inspection of the figures, one might assume that people higher in PA derived the most benefit from the control condition; however, there was no evidence to support this. This is because all simple effect analyses were not significant for 1 SD above the mean for T1 PA. Thus, only the simple slope for 1 SD below the mean for T1 PA moderated the intervention and outcomes. This suggests that those students low in T1 PA might be particularly responsive to the gratitude intervention, deriving the most benefit.

**Discussion**

Children and adolescents low in PA in the gratitude condition, compared with the control group, reported

more gratitude and PA at T2, and more PA at T4. Therefore, unlike counting blessings, which was unrelated with gains in PA in an early adolescent sample (Froh et al., 2008), the gratitude intervention used in this study might be effective for enhancing PA in youth. This, however, may only be true when considering PA as a moderator.

Unlike previous studies (Seligman et al., 2005), we found no main effects for condition in favor of a strong gratitude intervention with social support compared with journaling. Gratitude interventions, compared with a neutral control (not a negative control, such as listing hassles), might not be more effective in enhancing well-being. There is some evidence, however, that they may be useful for those low in baseline PA. We might not have found main effects for condition because of the motivational context of the study. In prior work, the intervention adopted for this study yielded the largest effects at post-treatment and follow-up assessments (up to 1 month later) in volunteers motivated to become ‘happier’ (Seligman et al., 2005). In contrast, the students in the current study were not volunteers; instead, their classrooms were chosen because of logistics as a more universal intervention. Therefore, finding no statistically significant differences between the groups may be because students did not seek out an intervention to reduce

a perceived deficit in well-being. This is unlike the participants in other studies. Furthermore, we used journaling, not a hassles condition, as one of the control groups. Although more happiness and less depression have been related with a similar gratitude intervention in middle-age adults compared with a control group, other gratitude interventions (namely counting blessings) demonstrate efficacy mainly when compared with a hassles condition. In the only other study examining the efficacy of a gratitude intervention with early adolescents (Froh et al., 2008), all but two of the statistically significant differences favoring the gratitude intervention occurred when compared with the hassles condition, not the no-treatment controls. The action, therefore, seems to be between the gratitude interventions (which may be a control) and the negative control groups (e.g., focusing on hassles or regrets), and not between the gratitude interventions and control groups. These effects are real and should be taken seriously. We must continue to carefully compare conditions when interpreting group differences. If gratitude interventions continue to be tested against control groups, it is essential to investigate moderators like PA to uncover their boundary conditions and determine when or for whom they work best.

With PA and NA operating independently (Watson & Tellegen, 1985), psychological treatments targeting one affective trait may have limited impact on the other. Youth high in positive emotions report high quality of school life (Karatzias, Power, Flemming, Lennan, & Swanson, 2002), intrinsic motivation, critical thinking, cognitive flexibility, active planning and monitoring of their learning, and increased academic achievement (Pekrun, Goetz, Titz, & Perry, 2002). Youth high in negative emotions, however, tend to be disengaged from school, withdrawing from and resisting activities and people associated with it (Roeser, van der Wolf, & Strobel, 2001). Furthermore, beyond negative emotions, positive emotions in early and late adolescents predict school satisfaction, adaptive coping, and student engagement (Lewis, Huebner, Reschly, & Valois, 2008). In addition to operating independently, positive and negative emotions demonstrate differential relationships among positive and negative indicators in youth. Thus, because the gratitude intervention in this study was related to an increase in PA, but not a decrease in NA, additional interventions targeting negative symptoms still seem essential to help youth flourish: helping them realize their academic, social, and emotional potentialities. This may be crucial for youths with disabilities, special needs, or social adjustment difficulties. A critical challenge faced by adolescents is effectively coordinating social and academic goals (Wentzel, 2005). Given the focus of social acceptance and the strength of peer relationships in determining adolescents' social behavior and development

(Youniss & Haynie, 1992), the outcomes related with the gratitude intervention (more gratitude and more PA) may be valuable for helping adolescents align their social and academic goals.

Before we embrace the gratitude intervention in this study as an effective intervention for well-being enhancement in youth, we must critically analyze our data patterns. We found no incremental benefits related with the gratitude intervention over time. Nor did we find that any benefits related with the gratitude intervention maintained themselves at future time points. Instead, using PA as an example, we found effects at T2 and T4, yet only a trend in favor of the gratitude intervention at T3. To our knowledge, no theory exists to explain this, or similar data patterns. Thus, based on our data, we can at best state that the gratitude intervention was related with some well-being enhancement for children and adolescents low in PA. Replications and extensions, however, are needed for us to better understand who receives the most benefit from the gratitude intervention used in this study and for what outcomes, as well as its efficacy for promoting short and long-term well-being in youth.

### Strengths and limitations

This study adds to the gratitude literature in several major ways. It is the first known randomized controlled trial of a gratitude intervention study in children and adolescents and the first paper to reinterpret the gratitude intervention literature arguing to carefully consider controls groups when concluding the efficacy of gratitude interventions. Furthermore, when considering both youth and adult populations, it is also the first known attempt at investigating a moderator, namely PA, with this gratitude intervention.

We note several limitations. First, according to Cohen (1992), with alpha being .05, we needed between 64 students (with a medium effect size) and 393 (with a small effect size) for adequate power. This amount of students was unavailable in our participant pool. Additionally, because tests of moderation have much lower power than *t*-tests, we needed even larger samples. Because power is limited in this study, there was an increased risk for Type II Errors.

Second, we are unable to rule out regression to the mean because our baseline measures were identical to our outcome measures. We attempted to statistically control for this by using the baseline score for each respective outcome measure as covariates. Nonetheless, regression to the mean remains a threat to our internal validity.

Third, because students in the gratitude condition met as a group to discuss their experience with the intervention before completing the T2 measures, and we did not have a group that only received the

gratitude intervention excluding the discussion component, it is impossible to disentangle the effects of the gratitude intervention from this additional activity. Although we infused the intervention with this exercise to help the students capitalize on the positive experiences of the gratitude intervention, which should help boost their well-being (Bryant & Veroff, 2007; Langston, 1994), we are still unclear about the potential benefits of this gratitude intervention in isolation with youth.

Fourth, the control group in the current study differed from the gratitude intervention in more ways than expressing gratitude (e.g., social contact). A psychological placebo, however, would ideally be identical to the intervention under study in all ways except the exact strategy being manipulated and tested for efficacy. This, however, is often difficult. Because social behavior in youth is related with positive emotions (Martin & Huebner, 2007), future researchers should consider controlling for positive social contact. Specifically, control groups could be asked to visit their friends, parents, caregivers, or coach and express their emotions to them about school. The control group's task then becomes social and expressive, but the specific emotion is more self-centered (e.g., pride) rather than the other-centered nature of gratitude. A critic might argue that some of the differences between conditions went beyond the strategies and techniques. We leave this interpretation up to the reader as researchers continue to refine what works best and for whom in gratitude interventions.

Fifth, two out of the three statistically significant interactions occurred at T2 (when the students in the gratitude condition reflected on their experience with the intervention immediately before completing the measures) and some might argue that the statistically significant findings are due to the temporal proximity of the reflection and assessment periods. If this were true, we might expect a stronger effect for the gratitude condition. There were no condition main effects. Thus, if anything, the significant interactions at T2 strengthen our argument for the value of considering PA as a moderator.

Finally, regarding treatment integrity, it is possible that although every student in the gratitude condition wrote the letter, a few failed to read the letter to their benefactor in person. Although we aimed to control for this (as discussed in the Procedure), it remains possible that the intervention was partially completed, as 0% of 8th and 12th grade parents/guardians returned the form indicating that their child completed the gratitude intervention.

#### **Future directions**

Because the scientific understanding of gratitude in children and adolescents is limited, the avenues for

inquiry are endless. First, moderators, like PA, should continue to be investigated because other variables likely influence the magnitude of effects for gratitude interventions. Personality variables such as extraversion (Sheldon & Lyubomirsky, 2004), trait gratitude, religiosity, spirituality (McCullough et al., 2002), gender (Froh et al., 2009a; Kashdan, Mishra, Breen, & Froh, 2009), and age (e.g., children vs. adolescents; Froh & Bono, 2008) should be considered as potential moderating factors that influence treatment effects. Failing to measure these variables may lead applied researchers to interpret null findings as the result of an ineffective treatment, which may be false (Bono, Emmons, & McCullough, 2004). Furthermore, some exercises make people happier than others and the person-activity fit (i.e., the degree the person likes the activity) is another moderating factor that is essential when assigning positive psychology interventions (Sheldon & Lyubomirsky, 2004). Due to idiosyncratic values, interests, strengths, and inclinations, some gratitude exercises may do nothing for one person, but may make another person substantially happier because of a better 'fit.' Given the potency of gratitude interventions for well-being enhancement, future researchers should continue to uncover the moderating factors most promising for large and sustainable treatment effects.

Second, some gratitude interventions can be viewed as boring (Lyubomirsky, 2008). For instance, people sometimes succumb to 'gratitude fatigue,' counting identical blessings repetitively (Emmons, 2007). Adults counting blessings once a week, compared with those counting blessings three times a week, reported more life satisfaction (Lyubomirsky et al., 2005). This might be because counting blessings several times a week made the exercise lose its freshness. Therefore, when developing and testing gratitude interventions, especially for youth, we think it is essential that psychologists try and make them fun and exciting, because youth's attention is quickly engaged and disengaged. For example, when practicing as a school psychologist, the first author recalls an art teacher giving a gifted student with Asperger syndrome art supplies to use during counseling (drawing reduced his stress). Instead of saying 'thank you' or writing a 'thank you' letter and reading it in person to his teacher, he drew a cartoon character offering a colorful bouquet of flowers and gave it to her in person. Had traditional gratitude expression been pushed onto him, he might have ignored his teacher's benevolence, possibly extinguishing her altruism. Because of adult encouragement, support, and openness, he was able to say thanks in a way that was enjoyable, creative, and rewarding, possibly reinforcing his gratitude expression.

Third, because children seem to understand the notion of gratitude more as they enter late childhood

(Gleason & Weintraub, 1976; Graham, 1988), gratitude interventions should be conducted with large samples at various age levels to evaluate moderators of therapeutic efficacy. We suspect that age and, more importantly, developmental differences in social and emotional competence, moderates gratitude treatment effects. Though there were no grade differences in our sample, it is possible that this was due to insufficient power. Uncovering how gratitude operates at different ages (Baumgarten-Tramer, 1938; Becker & Smenner, 1986; Gleason & Weintraub, 1976; Gordon, Musher-Eizenman, Holub, & Dalrymple, 2004; Graham, 1988; Greif & Gleason, 1980; Harris, Olthof, Meerum Terwogt, & Hardman, 1987; Russell & Paris, 1994) will allow researchers to tailor interventions with adjunct modules to build additional emotional competence skills as needed. Infusing the advances of developmental science with clinical interventions remains unappreciated in the field of gratitude.

### Conclusions

The gratitude intervention used in this study seems to be an effective intervention for well-being enhancement in children and adolescents low in PA. Psychologists should therefore stay sensitive to PA as a moderator. Questions remain, however, if other variables moderate this gratitude intervention in youth. Children and adolescents low in PA who received the gratitude intervention, compared with a control group, reported more gratitude and PA. Given these findings, PA might be a key variable in gratitude research and practice in youth.

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### Notes

1. Although counting blessings has demonstrated some efficacy in increasing well-being in early adolescents (Froh et al., 2008), we tested a new gratitude intervention, and did not also assign counting blessings to a third group, for two reasons: (1) we hoped to provide evidence for another efficacious intervention for clinicians and intervention/prevention researchers who work with children and adolescents, and (2) given our limited participant pool, adding a third group to our study would have substantially lowered our already insufficient power.

2. We mailed the 'completion of the gratitude intervention form' home because the majority of the students said they were writing the letter to their parents. Furthermore, because we obtained active parental consent from every parent/guardian, we believed that the parents/guardians would know if their son or daughter read a gratitude letter to someone other than themselves.

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