

Gratitude for Better or Worse: Differential Predictors and Affective Outcomes of State Gratitude in Positive and Negative Contexts

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Abstract

Whereas past studies primarily examined state-level gratitude measured across long periods of time and in the context of positive events, this study assessed situational predictors of state gratitude and its affective outcomes in the context of specific positive and negative naturalistic events. Across seven weeks, 147 undergraduates recorded best and worst weekly events, depressive symptoms, as well as gratitude and positive affect (PA) anchored to those events. Independent raters coded events as dependent or independent of participants' agency and interpersonal or noninterpersonal. Multilevel models showed there was a significant interaction between agency and interpersonal status for positive events, and simple effects tests indicated participants reported higher levels of gratitude for independent-interpersonal events compared to other potential event types. Unexpectedly, participants also reported higher gratitude for dependent events if they were interpersonal in nature. Negative event-anchored state gratitude was also higher for interpersonal events as indicated by a significant main effect. Lastly, within-person variability in event-anchored state gratitude was associated with higher state PA following both best and worst events, but only state gratitude anchored to best events was related to lower weekly depressive symptoms. Overall, results demonstrated that naturally occurring state gratitude for specific events was differentially impacted by situational factors, and that within-person variability in gratitude following both positive and negative events is related to positive affective outcomes.

Keywords: Gratitude, positive affect, depression, life events, event-specific state, situational factors

Introduction

Gratitude, a foundational positive psychology construct (Seligman & Csikszentmihalyi, 2000), correlates with many desirable affective outcomes including higher positive affect and lower depression symptoms (Wood, Froh, & Geraghty, 2010). Whereas early research on gratitude largely examined between-person correlates of context-free measurements of gratitude (e.g., trait or

averaged state measures) or group differences in gratitude interventions versus control conditions, recent research has emphasized examination of within-person effects of gratitude experienced during daily life (Krejtz, Nezlek, Michnicka, Holas, & Rusanowska, 2016; Nezlek, Krejtz, Rusanowska, & Holas, 2018; Nezlek, Newman, & Thrash, 2017). To compliment this research, further work is needed to better understand when state

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gratitude occurs in daily life and whether within-person variability in response to specific positive and negative events is related to affective outcomes. Traditional models of gratitude posit that grateful states occur for positive events that are interpersonal and independent of one's own agency (Emmons & McCullough, 2003; McCullough, Kilpatrick, Emmons, & Larson, 2001), but it remains possible that gratitude can occur outside of such contexts. Direct examination of these questions might contextualize or clarify the natural boundary conditions for experiencing gratitude and ultimately inform future intervention applications. Therefore, this seven-week diary study used a repeated measures design that asked participants to recall gratitude experienced after specific events in the past week to (a) determine whether naturally occurring state gratitude is more likely to occur in the context of specific situational factors (e.g., interpersonal events), and (b) assess whether within-person differences in event-specific state gratitude (best and worst weekly events) is related to affective outcomes. First, we review empirical and theoretical justifications for these aims.

State Gratitude Definition

Gratitude may be differentiated from other prosocial emotions by the cognitive appraisal that triggers it (antecedent) and its associated action tendency. The core theorized cognitive appraisal of the traditional definition of gratitude is viewing oneself as the recipient of a positive outcome (i.e., help or gift) due to an external cause, typically another person (Emmons & McCullough, 2003; McCullough et al., 2001). Following this appraisal, gratitude is posited to elicit a distinctive action tendency to reciprocate kindness to the benefactor or engage in prosocial behavior (Algoe & Haidt, 2009; McCullough et al., 2001).

Gratitude constitutes both a trait and an attribution-dependent state. Trait gratitude refers to between-person differences in the general disposition to be mindful of situations in which one benefits from others' actions (McCullough, Emmons, & Tsang, 2002). In contrast, state gratitude refers to discrete emotional experiences that vary as a function of situational appraisals (Bartlett & DeSteno, 2006; Wood, Maltby, Stewart, Linley, & Joseph, 2008). State-level positive emotions have been linked with desirable outcomes beyond trait-level emotions (e.g., Kluemper, Little, & DeGroot, 2009), suggesting unique contributions to well-being. As further indicated by recent research on within-person variability in state-level gratitude, state gratitude can fluctuate on a daily basis for each individual person, and deviations above one's typical level of gratitude predict fluctuations

in markers of well-being (Krejtz et al., 2016; Nezlek et al., 2018, 2017). These findings are important given that one aim of gratitude interventions is to elicit more state gratitude in the context of daily life (e.g., practicing gratitude with a gratitude journal), thereby triggering the desired affective outcomes.

To further understand within-person effects of state gratitude, it is also important to consider state-level gratitude in response to specific events, or event-anchored gratitude. Past work has examined within-person effects of state gratitude as averaged across an entire day (e.g., rating items such as, "Today, I felt grateful"; Nezlek et al., 2017), but that level of assessment is generally nonspecific and separate from measures of state gratitude for distinct events (e.g., "How grateful did you feel after [a specific positive event]?"). Repeated measurement of event-anchored state gratitude as experienced in daily life would allow for a thorough examination of the specific antecedents for state gratitude and a broader assessment of gratitude in different contexts, including feeling grateful for positive and negative life events. Understanding the situational contexts in which naturally occurring state gratitude are experienced and how it relates to affective outcomes would expand on past work, elucidate the experience of state gratitude in response to daily life events, and ultimately inform the use of gratitude interventions to increase well-being.

Situational Factors May Impact State Gratitude Positive and negative valence.

One basic situational factor of daily life events that likely impacts context-specific state gratitude is the emotional valence of an event (i.e., positive or negative). Nearly all studies on state gratitude have assessed the affective and well-being correlates of experiencing gratitude following positive events (e.g., Wood et al., 2010). One of the few deviations from examining positive events includes a study that found trait gratitude increased across the general population following the negative events of 9/11 (Peterson & Seligman, 2003). Additionally, trait gratitude has been linked to perceptions, memories, and emotional responses to both positive and negative life events (Watkins, Grimm, & Kolts, 2004; Wood, Maltby, et al., 2008). However, state gratitude experienced after specific negative events remains understudied. Although one would expect positive events to elicit more gratitude than negative events, the effect of positive versus negative situational valence on within-person variability in state gratitude remains unknown. Studies of posttraumatic growth (PTG) suggest that people sometimes report greater appreciation of life after a

traumatic event (Tedeschi, Park, & Calhoun, 1998), but few studies have assessed state-level experiences of gratitude in response to negative events in daily life, rather than significant traumatic stressors. Understanding the extent to which gratitude can be experienced in both positive and negative events (i.e., event-anchored state gratitude) would clarify the boundary conditions for state gratitude, with possible downstream implications for attempts to cultivate gratitude. Knowing whether gratitude occurs in the context of negative events would be of particular interest when targeting people who may report infrequent positive events (e.g., clinical populations).

Dependent versus independent events. Another situational factor expected to impact event-anchored state gratitude is whether an event is dependent or independent of one's agency, a common distinction in life events research (e.g., Hankin, Stone, & Wright, 2010; Turner, Goodin, & Lokey, 2012). A dependent event is primarily dependent upon or caused by the actions or agency of the person (e.g., calling a friend), whereas an independent event is caused by forces beyond oneself (e.g., receiving unsolicited support). Given that cognitive appraisals of benefitting from another person's actions are theorized to drive gratitude (Tsang, 2006; Wood, Maltby, et al., 2008, Study 1), independent positive events would most likely elicit more gratitude relative to dependent positive events. Support for this assumption is largely based on one-time lab experiments or hypothetical scenarios (e.g., Forster, Pedersen, Smith, McCullough, & Lieberman, 2017) and diary studies limited to events in which the participant had been helped (i.e., examining independent events exclusively; Wood, Maltby, et al., 2008, Study 2), leaving the unique effects of agency on naturally occurring positive events unknown. This question is worth considering given results from prototype analyses that suggest a person's conception of gratitude can extend to events that are not clearly caused by external forces, or for events that involve both agency on the part of the individual and independent factors (Lambert, Graham, & Fincham, 2009; Morgan, Gulliford, & Kristjánsson, 2014). If the goal of gratitude interventions is to increase well-being by encouraging people to feel more grateful for experiences in daily life, than it would be helpful to understand if that goal can only be achieved through awareness of life events with an external cause, or whether people also call upon gratitude following events that were primarily dependent on their own agency. Separately, the effect of dependent and independent negative events on state gratitude is

unknown. Because the theory of gratitude is based on the appraisal of a positive outcome, and the idea that gratitude may be low whether a negative event is caused by oneself (dependent) or outside forces (independent), we would not expect state gratitude for negative events to be higher or lower based on agency status. However, explicitly testing this possibility is warranted to identify whether agency serves as a determinant of whether people can identify something for which to be grateful for after a negative event.

Interpersonal versus noninterpersonal events.

Events can also be described as interpersonal (e.g., arguing with a friend) versus noninterpersonal (e.g., sleeping through an alarm). Because gratitude, an "other-praising emotion," is theorized to result from perceptions of a benefactor (Algoe & Haidt, 2009; Tsang, 2006), we would expect state gratitude to be higher following a positive interpersonal event compared to a positive noninterpersonal event. Furthermore, because past work has highlighted the importance of only interpersonal and independent features (e.g., Algoe, Haidt, & Gable, 2008), it follows that an event with both features would most likely elicit higher levels of state gratitude compared to other potential combination types. However, studies have not tested whether state gratitude experienced over time is exclusive to such contexts. For instance, it seems plausible that someone could experience state gratitude following an event that did not involve another person (e.g., feeling thankful for a sunny day). If one can in fact feel grateful for noninterpersonal events (or dependent events as previously described), it would widen the array of contexts in which we understand gratitude to occur and increase the potential for eliciting gratitude in more situations throughout daily life. Assuming negative events are less likely to elicit gratitude, we would not expect event-anchored state gratitude to differ between interpersonal (e.g., receiving criticism) versus noninterpersonal (e.g., headaches) negative events, but this possibility should be examined nonetheless.

Affective correlates of gratitude positive affect.

One known benefit of gratitude is positive affect (PA)—a state of general positive emotion which, when experienced repeatedly or at the trait-level, may constitute a protective factor for mental health (Watson & Naragon-Gainey, 2014). Studies have reliably demonstrated a positive relationship between trait measurements of gratitude and PA (e.g., Hill & Allemand, 2011; Lambert, Graham, Fincham, & Stillman, 2009), and state-level gratitude and PA as

experienced across an entire day (Kashdan, Uswatte, & Julian, 2006; Otto, Szczeny, Soriano, Laurenceau, & Siegel, 2016). Recent studies by Nezlek and colleagues (2018, 2017) have further identified within-person effects of state gratitude on state PA, both of which were measured across an entire day (e.g., “Today, how much were you able to appreciate people, events, and situations that have been part of your life story?”). However, few studies have examined associations between within-person variability in state gratitude and state PA in response to specific events (i.e., “How much did you experience gratitude/PA after the best event of the week?”). Some studies have utilized autobiographical recall methods of life events, but typically do so with one event (e.g., “Tell us about an occurrence in your life that led you to feel grateful?”; Siegel & Thomson, 2017), which does not allow for the same level of within-person analysis as repeated measures designs. An examination of within-person effects for event-anchored state gratitude on PA is also important because it allows for the assessment of state gratitude in different contexts, including unique responses to positive and negative events. Understanding whether within-person differences in state gratitude for positive and negative events impacts event-anchored PA would have implications for how utilizing gratitude in daily life could lead to desirable outcomes.

Depressive symptoms. Gratitude may also shape affective outcomes related to depressive symptoms. Trait gratitude appears to be negatively correlated with depression (Wood, Joseph, & Maltby, 2008) and gratitude interventions have led to pre-post decreases in depressive symptoms compared to control groups (Seligman, Steen, Park, & Peterson, 2005; Sin & Lyubomirsky, 2009). However, intervention studies have largely reported group mean differences in depressive symptoms following gratitude exercises (e.g., Davis et al., 2016), leaving the direct effects of state-level gratitude as experienced in the context of specific life events unclear. Moreover, the effects of gratitude interventions have demonstrated mixed results with meta-analyses indicating low efficacy across studies (Davis et al., 2016). If such interventions are to significantly improve depressive symptoms, then additional research is needed to understand the benefits of state gratitude experienced in daily life, such as the effects of state gratitude in response to specific positive and negative events. Examining how shifts in gratitude for positive and negative situations are related to depressive symptoms may enhance our understanding of

the boundary conditions for gratitude effects and identify ways to improve gratitude interventions.

Current Study

Given the increased attention to within-person effects of state gratitude and mixed results of gratitude interventions (Davis et al., 2016; Wood et al., 2010), further research is needed to understand within-person differences in naturally occurring state gratitude for specific life events, as well as the situational antecedents and affective correlates of state gratitude in various contexts. Therefore, our aim was to (a) determine if naturally occurring state gratitude is more likely to occur in the context of specific situational factors and (b) assess the affective outcomes of within-person differences in state gratitude in the context of best and worst weekly events over a two-month period.

First, we hypothesized that for positive events, event-anchored state gratitude would be higher for independent events compared to dependent events, and higher for interpersonal events compared to noninterpersonal events. Further, we hypothesized an interaction such that state gratitude would be higher for positive events that were coded as independent and interpersonal when compared to other potential event types, consistent with the theorized definition of gratitude. Analyses regarding the differences in negative event-anchored state gratitude based on the agency or interpersonal nature of the context in which it occurred were exploratory, given the paucity of research on gratitude in negative contexts and minimal research to indicate whether such features would facilitate or inhibit state gratitude in response to a negative event.

Regarding the relation between gratitude and affective outcomes, we hypothesized that higher positive event-anchored weekly state gratitude would be associated with higher PA anchored to the same positive events and lower noncontext specific weekly depressive symptoms (i.e., general symptoms across the entire week). For negative events, we first hypothesized that people would report lower levels of gratitude compared to positive events, but would still demonstrate between-person variability in average levels. No known research has examined the impact of experiencing state gratitude following a specific negative event, but based on research finding affective benefits of gratitude (e.g., Sin & Lyubomirsky, 2009), we hypothesized the same relationships for gratitude and affective outcomes would occur when people are able to feel grateful in the context of a negative event.

Method

Participants

Participants included 147 undergraduates in introductory psychology courses at a private university in the Pacific Northwest (72% women; $M_{\text{age}} = 19.26$, $SD = 1.63$). Participants self-identified as Caucasian (68.2%), Asian (16.9%), Hispanic/Latino/a (6.1%), African American (4.7%), Middle Eastern (1.4%), Pacific Islander (1.4%), or Other (1.4%). Participants provided informed consent and received course credit.

Participants completed weekly assessments over seven weeks through an Internet survey program. Participants received an email with a link to the survey every week and had 36 hours to complete each questionnaire in order to maintain approximately one week between assessments. Demographics were assessed at week one. Weekly surveys invited participants to describe their best and worst event each week (i.e., most positive and negative experiences). Then, participants were asked to describe the event in detail using an open response text box that included prompts (i.e., “Who was involved? Where were you? What made this the best[worst] event?”). The description response was also intended to elicit thoughts and emotions associated with the event. After these descriptions (coded for situational factors; see below), participants completed an event-anchored measure that included 13 emotion-related items (10 Positive and Negative Affect Schedule [PANAS] items and 3 gratitude items, randomly sorted). The same event-anchored measure was completed twice, once for each best and worst event. Additionally, weekly assessments included a measure of depressive symptoms during the past week overall (not event-anchored).

Measures

State gratitude. A brief index comprised of three adjectives (*grateful*, *thankful*, and *appreciative*; Emmons & McCullough, 2003) assessed state gratitude anchored to both the best and worst event of the week. On a 1 (*very slightly or not at all*) to 5 (*extremely*) scale, participants rated the extent to which they experienced each item in response to the best and worst event, separately. Item scores were summed for each event. This measure demonstrated internal consistency and construct validity in past research (Emmons & McCullough, 2003).

Positive and negative affect. The International Positive and Negative Affective Schedule Short Form (I-PANAS-SF; Thompson, 2007), a short form of the original PANAS (Watson, Clark, & Tellegen, 1988), includes five summed items for PA (*alert*, *inspired*,

determined, *attentive*, *active*) and five items for negative affect (NA; *upset*, *hostile*, *ashamed*, *nervous*, *afraid*). Participants rated each item on 1 (*never*) to 5 (*always*) scale for the best and worst weekly events, using the same instructions as state gratitude. The I-PANAS-SF assessed state PA as a weekly outcome. State NA was not included in analyses as an outcome variable, but was used (along with PA) to verify that the affective response to best and worst events differed, and therefore, were more likely to represent the most positive and negative events of participants' week. The PANAS demonstrated validity in past studies (Kercher, 1992; Thompson, 2007).

Depressive symptoms—weekly. The CES-D Short Form (CES-D-SF; Martens et al., 2006) is a 9-item measure of depressive symptoms that demonstrated internal consistency and validity in past studies. Participants rated each item on a 0 (*rarely or none of the time*) to 3 (*most or all of the time*) scale for the past week and the total score was used as an outcome variable.

Situational factors. Two independent raters coded best and worst events for agency and interpersonal status (see Table 2). Agency status was contrast-coded as dependent (-1) versus independent (1) based on the explicit dependency of each event on participants' own agency (e.g., dependent: “I invited my friends over for dinner”) or not (e.g., independent: “My friends made me dinner”), consistent with studies of daily life events (e.g., Ahles, Harding, Mezulis, & Hudson, 2015; Hankin et al., 2010). Raters also contrast-coded events as noninterpersonal (-1) or interpersonal (1) based on explicitly referencing a social component (interpersonal: “I argued with my friend”) or implied isolation (noninterpersonal: “I slept through my alarm”); e.g., Cambron, Acitelli, & Pettit, 2009). Inter-rater reliability was checked periodically for rater drift, with discrepancies resolved by consensus. Pre-consensus coding demonstrated reliability for agency ($\kappa = .83$) and interpersonal status ($\kappa = .75$).

Analytic Approach

We used IBM SPSS Version 25 to test multilevel models with a two-level structure such that repeated weekly measures were nested within each individual. Multilevel modeling is an optimal method for repeated measures data given that it handles unbalanced and missing data, avoids the assumption of independence, models between and within-person variability, and permits random effects (allowing intercepts and slopes to vary across individuals). We modeled random intercepts and slopes in all models, except for slopes of dichotomous

predictors (i.e., situational factors) due to superior model fit (BIC) with fixed slopes. We calculated restricted maximum likelihood estimates (REML) given their accuracy in smaller samples and appropriateness when not comparing the fit of nested models. State gratitude was person-centered so predictor coefficients indicate deviations above individuals' mean level across all weeks. Dichotomous predictors of event-anchored gratitude were left uncentered. The interaction term for situational factors was created by multiplying the interpersonal and agency variables and entered into the model uncentered. A significant interaction was followed by an examination of simple effects tests within each potential category.

Results

Preliminary Analyses

The original data set consisted of 161 participants, but three participants completed one out of seven weeks of repeated surveys and eleven participants only completed the baseline assessment (demographics), and were therefore excluded, leaving a total *N* of 147; 90% of participants completed all assessments (on average, participants completed six of seven repeated weekly assessments with no missing data).

Before examining hypotheses using multilevel models with the proposed two-level structure, we conducted several preliminary tests to assess the reliability of measures and verify the valence of reported positive and negative events. First, we tested unconditional models and assessed reliability of all

measures by using a three-level structure that included individual items for each measure (level 1) nested within that measure's total score for a given week (level 2), nested within each person (level 3). This method of reliability analysis is recommended for multilevel designs when the data violates the assumption of independence (Bonito, Ruppel, & Keyton, 2012; Nezlek, 2017). Reliability estimates are calculated with consideration of variance at the item-, week-, and person-levels, which provides the equivalent of a Cronbach's alpha that is corrected for differences in weeks and persons. Results from the reliability analyses are presented in Table 1.

Next, to ensure participants' reported best events were positively valenced and worst events were negatively valenced, we compared event-anchored variables for best and worst events by testing three-level structured models in which each event was interpreted as a separate case (level 1) nested within a week (level 2; i.e., two events [best and worst] per week), nested within each person (level 3). Event type was contrast coded as worst (-1) or best (1), and then entered as a predictor for three outcomes (state PA, NA, and gratitude) in three separate models. As expected, state PA ($B = 1.88$, $SE = 0.08$, $t = 22.81$, $p < .001$) and state gratitude ($B = 3.18$, $SE = 0.07$, $t = 48.82$, $p < .001$) were significantly higher following best events, whereas state NA was significantly lower following best events ($B = -2.40$, $SE = 0.08$, $t = -31.07$, $p < .001$). Last, the average weekly frequencies and means for each potential combination of situational codes are presented in Table 2.

Table 1. Descriptive statistics

Measure	Mean	Range	Variance		Percent Within	Reliability
			Between	Within		
<u>General Weekly Measure</u>						
CES-D-SF	6.30	0 – 24	13.85	10.45	43%	.89
<u>Anchored to Best Events</u>						
State Gratitude	11.06	3 – 15	5.19	6.34	55%	.82
State PA	13.28	5 – 25	11.18	13.99	56%	.66
State NA [†]	6.80	5 – 19	1.29	5.66	81%	.73
<u>Anchored to Worst Events</u>						
State Gratitude	4.72	3 – 15	4.41	3.67	45%	.89
State PA	9.52	5 – 25	8.72	10.40	54%	.87
State NA [†]	11.59	5 – 25	9.46	12.16	56%	.82

Note. CES-D-SF = Center for Epidemiological Studies Depression Scale-Short Form; State Gratitude = three item measure of weekly gratitude (grateful, thankful, and appreciative); PA = positive affect; NA = negative affect. [†] = Not included as a predictor or outcome variable, instead used to verify the affective response to recorded best and worst events.

Table 2. Frequency of coded events and related gratitude levels

Situational Codes	Best Events			Worst Events		
	Frequency	Percentage	Mean Grat (<i>SD</i>)	Frequency	Percentage	Mean Grat (<i>SD</i>)
Dependent, Noninterpersonal (-1,-1)	16.14	12.26	10.02 (3.69)	25.71	20.33	4.58 (2.88)
Dependent, Interpersonal (-1,1)	90.14	68.44	11.08 (3.26)	22.86	18.08	4.85 (2.82)
Independent, Noninterpersonal (1,-1)	2.57	1.95	9.33 (3.71)	46.00	36.38	4.54 (2.62)
Independent, Interpersonal (1,1)	22.86	17.35	12.40 (2.89)	31.86	25.20	4.87 (2.95)

Note. Mean Grat = mean event-anchored state gratitude; *SD* = standard deviation. Frequency for each category was averaged across weeks 1-7.

Situational Factors and State Gratitude after Best Event

The unconditional model showed significant variance in intercepts for gratitude following best events of the week ($\tau_{00} = 5.19, p < .001$), suggesting participant differences in average levels of gratitude for best events. The interclass correlation ($ICC = .45$) suggested that 55% of the variance in best event-anchored gratitude was due to within-person differences, justifying our plan to examine within-person predictors. The full model tested agency and interpersonal status as predictors for gratitude anchored to the weekly best event. Results for best event-anchored gratitude indicated a significant main effect for interpersonal status ($B = 0.89, SE = 0.18, t = 5.07, p < .001$), and a nonsignificant effect for agency status ($B = 0.11, SE = 0.17, t = 0.61, p = .543$). Consistent with hypotheses, the interaction was significant ($B = 0.42, SE = 0.17, t = 2.42, p = .016$). Following the significant interaction, we conducted simple effects test within each potential category.

Consistent with hypotheses, independent-interpersonal events demonstrated a higher level of gratitude compared to other potential event types (see Table 3). Further, the mean state gratitude level across the entire sample was highest for independent-interpersonal (see Table 2). Unexpectedly, there was also a compensatory effect for interpersonal status within dependent events such that participants reported significantly higher state gratitude following dependent

events if they were coded as interpersonal versus noninterpersonal. There was no evidence of a compensatory effect within noninterpersonal events, as dependent and independent events did not differ significantly.

Situational Factors and State Gratitude after Worst Event

The unconditional model with event-anchored gratitude following the worst event indicated significant participant differences in average levels (i.e., intercepts; $\tau_{00} = 4.72, p < .001$; $ICC = .55$). As noted in the preliminary analyses, state gratitude levels were lower in worst events, as would be expected; however, the significant variance in average levels of worst event-anchored gratitude suggested state gratitude levels were not uniformly low. In the full model that included situational factors for negative event-anchored gratitude, the main effect for agency status ($B = 0.01, SE = 0.07, t = 0.11, p = .916$) and the interaction term were nonsignificant ($B = -0.03, SE = 0.07, t = -0.44, p = .662$). Unexpectedly, negative event-anchored gratitude was higher for interpersonal events as indicated by a significant main effect ($B = 0.17, SE = 0.07, t = 2.41, p = .016$). Overall, the results suggest contextual factors' impact on state gratitude varies depending on positive versus negative events, warranting further tests of whether the affective effects of gratitude vary based on positive/negative events.

Table 3. Simple effects tests of situational predictors for best event-anchored state gratitude within interpersonal and agentic factors

Predictors	<i>B</i>	<i>SE</i>	<i>t</i>	<i>p</i>
<u>Dependent Events</u>				
Noninterpersonal (-1) vs. Interpersonal (1)	0.44	0.14	3.14	.002
<u>Independent Events</u>				
Noninterpersonal (-1) vs. Interpersonal (1)	0.84	0.36	2.34	.020
<u>Noninterpersonal Events</u>				
Dependent (-1) vs. Independent (1)	0.21	0.39	0.53	.596
<u>Interpersonal Events</u>				
Dependent (-1) vs. Independent (1)	0.48	0.12	4.05	<.001

Note. **Boldface** indicates statistical significance at $p < .05$.

Table 4. Person-centered state gratitude predicting affective outcomes

Outcome	Best Events				Worst Events			
	<i>B</i>	<i>SE</i>	<i>t</i>	<i>p</i>	<i>B</i>	<i>SE</i>	<i>t</i>	<i>p</i>
State PA	0.49	0.06	8.41	<.001	0.61	0.08	7.64	<.001
CES-D-SF	-0.12	0.05	-2.68	.007	0.00	0.07	0.00	.998

Note. PA = positive affect; CES-D-SF = Center for Epidemiological Studies Depression Scale. Person-centered state gratitude (predictor) was anchored to the best and worst event of each week along with state PA as an outcome variable, whereas CES-D-SF was generalized across the entire week. **Boldface** indicates statistical significance ($p < .05$).

State Gratitude and Affective Outcomes after Best Event

Two models tested the effects of person-centered state gratitude anchored to the weekly best event on affective outcomes, including PA anchored to the best event and depressive symptoms for the week. As hypothesized, deviations above participants' average gratitude level in best events was associated with higher event-anchored PA ($B = 0.49$, $SE = 0.06$, $t = 8.41$, $p < .001$). Similarly, within-person increases in state gratitude was associated with lower weekly depressive symptoms ($B = -0.12$, $SE = 0.05$, $t = -2.68$, $p = .007$).

State Gratitude and Affective Outcomes after Worst Event

Two models tested the effects of person-centered state gratitude anchored to worst events as a predictor of PA anchored to the worst event and weekly depressive symptoms. In line with hypotheses, deviations above participants' mean level of gratitude during worst events was associated with higher PA ($B = 0.61$, $SE = 0.08$, $t = 7.64$, $p < .001$). Contrary to hypotheses, weekly state gratitude anchored to the worst event of the week was not significantly related to general weekly depressive symptoms ($B = 0.00$, $SE = 0.07$, $t = 0.00$, $p = .998$).

Discussion

This study aimed to better understand the potential antecedents and contexts of state gratitude in daily life, and to expand the literature on within-person effects of state gratitude by examining the affective correlates of naturally occurring gratitude in response to specific positive and negative life events. Overall, results showed that event-anchored state gratitude was differentially impacted by situational factors and distinctly related to affective outcomes across positive and negative events.

Situational Factors of Event-Specific State Gratitude

State gratitude for positive events. Following a significant interaction, results indicated that participants reported higher state gratitude for independent-

interpersonal positive events compared to other potential event types (i.e., dependent-interpersonal or independent-noninterpersonal events). This finding was consistent with studies supporting the theorized cognitive triggers of gratitude (e.g., Tsang, 2006; Wood, Maltby, et al., 2008), but provided the unique contribution of comparing distinct combinations of coded situational factors from naturally occurring state gratitude in a repeated measures design.

Further examination of simple effects tests indicated an unexpected compensatory effect suggesting that within positive dependent events, participants endorsed higher gratitude if the event was interpersonal rather than noninterpersonal. Although previous research highlights the relevance of independent and interpersonal features in the experience of gratitude (e.g., Algoe et al., 2008), past studies have primarily examined others' positive acts (i.e., independent events) as triggers for gratitude, by definition (Algoe & Haidt, 2009; Wood, Maltby, et al., 2008), excluding the possibility of gratitude occurring in other contexts. However, our findings suggest gratitude after positive events is not limited to specific outcomes caused by someone else, but rather one can feel grateful for an event attributable to their own agency if the positive event involved other people (e.g., one could arrange a social outing and feel grateful afterward). It is possible dependent events still elicit gratitude because they might involve peripheral independent components or others' actions that contributed to the event (e.g., my friends agreed to attend [independent] the social outing I arranged [dependent]). Nonetheless, this finding challenges theoretical assumptions that state gratitude is triggered by independent events exclusively. Consistent with the positive psychology tenet that "other people matter" in terms of overall happiness and subjective wellbeing (Peterson, 2006), it may be that interpersonal engagement during one's daily life, including the best parts of one's week, is fundamental to feeling grateful more frequently.

These results also have significant implications for expanding the utility of gratitude in those wanting to be

more grateful, in general. For example, interventions might encourage people to evaluate any positive interpersonal activity for potential reasons why they might be grateful for that experience, rather than limiting gratitude to events that are both interpersonal and independent. Moreover, independent-interpersonal events accounted for only 2% of the weekly best events across the entire sample, whereas dependent-interpersonal events accounted for 68% of best events, on average. Therefore, expanding the target for gratitude to include dependent-interpersonal events may afford more opportunities to experience gratitude and its benefits in daily life. By assessing unique combinations of situational factors on gratitude after a positive real-life event, this study provides additional nuance about the context-specificity of state gratitude.

State gratitude for negative events. Past research assumed, without directly testing, that gratitude is only relevant to positive events. Our findings confirm that state gratitude was relatively lower for participants' worst weekly events compared to best events, but also indicated gratitude in such events varied between persons, suggesting that gratitude was sometimes present even for negative events. Similar to PTG, perhaps gratitude for negative life events is possible when someone is able to identify beneficial consequences or indirect benefits of negative events (e.g., reappraisal of a negative outcome to identify valued features; Baker, Williams, Witvliet, & Hill, 2017), rather than being grateful for the negative event itself. Although no conclusions can be drawn from this study regarding the cognitive processes involved in feeling grateful for negative events, the fact that some participants were able to endorse gratitude anchored to their worst event of the week (as indicated by significant intercept variance in unconditional models) is novel in itself and warrants future research into the mechanisms under which gratitude emerges for negative events. Further, by suggesting one can experience variability or fluctuations in state gratitude after negative events, these findings could have intervention implications if it is possible to facilitate greater state gratitude for negative events through practice or specific exercises. Future research should explore this possibility.

We did not establish a priori hypotheses regarding potential effects of situational factors, but results indicated people reported higher event-anchored state gratitude for negative events that were interpersonal in nature. There were no significant differences between independent and dependent negative events. These findings suggest that some aspect of interpersonal

negative events may present an opportunity for cultivating gratitude, that noninterpersonal negative events may inhibit state gratitude, or both. Perhaps it is easier to identify an indirect benefit of an event when other people are involved, or it may be more difficult to think flexibly about potential positive consequences if a negative event occurred in isolation. Additional research is needed to clarify why this situational factor facilitates and/or inhibits negative event-anchored state gratitude, which may provide further guidance and how to successfully cultivate gratitude for negative events in daily life.

Affective Outcomes of Within-Person Differences in State Gratitude

Positive affect. Person-centered weekly gratitude (i.e., deviations above one's own average level) was related to higher PA in both positive and negative events, as hypothesized. Significant within-person effects are important because such variability implies dynamic processes or fluctuations in state-level experiences that may be amenable to intervention in daily life. Specifically, people can experience greater PA when they experience more gratitude than what is typical of their average levels. Thus, the link with PA is not exclusive to individuals with a higher mean propensity to feel grateful, suggesting that regardless of one's trait levels, cultivation of gratitude may facilitate additional mood enhancement. Findings from this study support past work that highlighted the relationship between person-centered weekly gratitude and PA when measured across an entire day (Kashdan et al., 2006; Nezlek et al., 2018, 2017) and extend the literature by demonstrating significant effects for gratitude and PA anchored to specific events in a repeated measures design. Furthermore, these results highlight that the relationship between state gratitude and PA is present in the context of both positive and negative events. In one of the first studies to examine state gratitude for negative life events, our findings suggest that when gratitude is experienced, it may contribute to positive mood regardless of the valence of the event. This finding could have significant implications for the use of gratitude in clinical populations—a subset of people who endorse fewer positive events weekly. For those who may not be able to recall many positive events and instead report frequent negative events, searching for gratitude following negative events might create a novel pathway to elicit slight increases in positive emotions, which are theorized to build cognitive and behavioral resources (Fredrickson, 2001).

Depressive symptoms. Person-centered weekly

gratitude in the context of a positive event was associated with lower weekly depressive symptoms as expected, but not for negative events. The significant results fit with previous diary studies linking within-person state gratitude to depression-related thoughts (Nezlek et al., 2018), and with experimental effects of practicing gratitude for positive events (relative to control conditions) on depressive symptoms (Harbaugh & Vasey, 2014; Sin & Lyubomirsky, 2009; Wood et al., 2010). Our findings offer additional support by demonstrating the effects of within-person variability in state gratitude on weekly depressive symptoms. As with PA, this finding implies a dose-response relationship in that higher grateful feelings about a specific positive event, above one's average gratitude level, was associated with lower depressive symptoms for the week. However, the depression-buffering effects may be specific to gratitude for positive (versus negative) events. This distinction could suggest that efforts to use gratitude to specifically influence depressive symptoms might have greater success when facilitating state gratitude after positive events. Given that state gratitude levels were significantly lower following negative events, perhaps a higher level of intensity or potency of gratitude is required to impact depressive symptoms compared to PA.

These findings may also bear relevance for application of gratitude in clinical populations with cognitive biases toward dampening positive emotions experienced (e.g., Li, Starr, & Hershenberg, 2017) or anticipating low positive emotions for an upcoming positive event (e.g., Thompson et al., 2017). For people at risk of not attending to the positive affective features of situations, practicing gratitude for positive events might trigger beneficial cognitions or social actions that buffer against depressive symptoms for the week. For example, the theorized action tendency associated with gratitude is to reciprocate kindness or engage in prosocial behavior (Algoe & Haidt, 2009), which is antithetical to depressive isolation, lack of engagement in pleasurable activities, and a sense of worthlessness. Additionally, engaging in gratitude's action tendencies may aid in building social resources (e.g., social bonds, social support; Fredrickson, 2001). However, future studies should examine the specific mechanisms that mediate the relation between context-specific state gratitude and depressive symptoms.

Limitations and Future Research

Participants retrospectively rated gratitude and PA linked to events from the past week, which may be biased by such factors as poor memory recall, current mood state (Scollon, Kim-Prieto, & Diener, 2003), or positive

memory bias associated with high trait gratitude (e.g., Watkins et al., 2004). However, recall bias can be minimized when people recall peak emotional experiences (Hedges, Jandorf, & Stone, 1985), such as the best and worst events of the week when they may have paid greater attention to that specific experience (Kihlstrom, Eich, Sandbrand, & Tobias, 2000). We also aimed to reduce memory bias by requiring participants to describe the events in detail, thus eliciting emotional states and thoughts affiliated with the event. Future research would benefit from reducing the time between emotional experience of gratitude and assessment by using other measurement strategies such as ecological momentary assessments. Second, although our objective coding of events reflects a strength of the study, it remains possible that coded categories based on participants' text description did not always match participants' internal attributions. For example, if a participant described a negative dependent event (i.e., "I fought with my friend"), they may have attributed that event exclusively to their interaction partner (i.e., believed it was an independent event). Future studies could assess participant attributions as well (i.e., "Who was most responsible for this event: you or someone/something else?"). Nonetheless, the coding procedure used is consistent with previous studies (Cambron et al., 2009; Hankin et al., 2010). Lastly, this study sampled undergraduates and future studies should replicate the findings with a clinical population.

Conclusion

Despite limitations, the present study included several strengths, such as assessing naturally occurring state gratitude in response to specific positive and negative life events. Using a weekly diary design, this study is one of the first to our knowledge to systematically examine multiple situational antecedents of naturally occurring state gratitude. Results offer the novel contribution that gratitude in daily life is not exclusive to the theorized trigger of interpersonal-independent events; thus, expanding our understanding of when gratitude can occur. Specifically, these findings indicate that a person can endorse state gratitude for an interpersonal positive event that was caused by their own agency, and one can even experience state gratitude for a negative event. This study also extends past work by identifying the effects of within-person variability in event-specific state gratitude for PA and weekly depression. Notably, state gratitude for positive events was linked with higher PA and lower depressive symptoms, whereas state gratitude for negative events was only associated with PA following those same

events. Although gratitude has sometimes been conceptualized as a singular construct with beneficial affective outcomes, our study suggests that such relationships must be contextualized by the situation in which gratitude occurs.

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