

Surprise me!

On the impact of unexpected benefits on other-praising gratitude expressions

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Abstract

Gratitude reinforces social bonds. This relationship-regulating function depends on whether and how it is expressed. People can express gratitude in different ways: Beneficiaries may emphasize how they profited from a benefit (self-benefiting) or focus on the benefactor's actions and characteristics related to it (other-praising). What underlies these expressive styles remains unclear. Based on findings that other-praising gratitude expressions have unique positive effects on interpersonal relationships, four studies ($N = 1,188$) investigated a novel antecedent of these expressions: unexpectedness of the benefit. In Study 1, we content-coded participants' thank-you notes for an actual Christmas present. Path modeling revealed that unexpectedness of the benefit predicted other-praising, whereas happiness with the present predicted self-benefiting. These results were robust to relevant covariates and mirrored by participants' self-reported self-benefiting and other-praising intentions. Studies 2-4 (preregistered) investigated samples from two different populations and experimentally manipulated (un)expectedness of recalled or imagined benefits. Given mixed experimental results, we conducted an internal meta-analysis. Across experimental studies, unexpected benefits increased other-praising, albeit weakly so, but not self-benefiting. In addition, the effect of unexpectedness on other-praising was significantly different from that on self-benefiting. We discuss potential processes and moderators of the effect of unexpected benefits on gratitude expressions.

Keywords: Gratitude; Gratitude Expressions; Unexpectedness; Surprise; Praise

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Imagine you are working on an important grant proposal. As the deadline is arriving fast, two colleagues help you with your preparations, and, as a result, you keep the deadline. One of these colleagues has already been helpful a couple of times in the past, so their help does not come as a surprise. However, as the other colleague is not particularly known as helpful, their help was rather unexpected. When expressing your gratitude, whom of the two will you praise more, for example by emphasizing the colleague's invested effort? In other words, will you applaud unexpected help differently than expected help?

Even though the expression of gratitude is key to its social and relational functions (Algoe, 2012; see also Grant & Gino, 2010; Williams & Bartlett, 2015), only little is known about ways to express gratitude and antecedents of these expressive styles. Building on prior work on the social functions of gratitude and appraisal theories of emotions, the present research investigated a novel antecedent of expressing praise to one's benefactor: unexpectedness of the benefit.

The Social Functions of Gratitude

Gratitude is a positive emotion with manifold and unique positive effects. It motivates beneficiaries to return favors (Bartlett & DeSteno, 2006; see also McCullough, Kimeldorf, & Cohen, 2008), facilitates cooperative economic exchange and prosocial behavior (DeSteno, Bartlett, Baumann, Williams, & Dickens, 2010; Tsang, 2006; Tsang & Martin, 2019; Yost-Dubrow & Dunham, 2017), reduces cheating (DeSteno, Duong, Lim, & Kates, 2019), and elicits trust (Dunn & Schweitzer, 2005). In addition to simple *tit-for-tat* reciprocity, gratitude can even

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foster up-stream reciprocity, such that benefits are passed on to third parties (Bartlett & DeSteno, 2006), and is theorized to promote creative, that is, variable, prosocial behavior (Fredrickson, 2004).

Beyond resource exchange, gratitude is functional in regulating relationships (Algoe, Fredrickson, & Gable, 2013; Algoe et al., 2008; Kubacka, Finkenauer, Rusbult, & Keijsers, 2001). Theoretical accounts have construed gratitude as a benefit detector (e.g., McCullough et al., 2008). It arises when a positive outcome for the self was produced by another (Algoe et al., 2016). Consistently, beyond mere utility for the self, gratitude seems to track responsiveness, a crucial variable in social relationships (Algoe et al., 2016; Reis & Gable, 2015). Consistently, gratitude emerges when we interpret another's behavior as driven by selfless, other-focused motives (Visserman, Righetti, Impett, Keltner, & Van Lange, 2018). According to the find-remind-and-bind theory, gratitude helps identify, and bind to us, benefiting individuals as (potential) relationship partners (Algoe, 2012). For example, two studies found gratitude to prompt beneficiaries' affiliative behaviors towards a helper (Bartlett, Condon, Cruz, Baumann, & DeSteno, 2012). Its main function is thus "to capitalize on the opportunity to improve" and "solidify an interpersonal connection with a responsive benefactor" (Algoe, 2012, pp. 464, 466).

However, when and how gratitude contributes to the regulation of social relationships still demands empirical scrutiny. We argue that these questions may be best approached by focusing on the relation between different components of gratitude. Across theories, emotions are defined as multi-componential changes in feelings, cognitions, physiology, motivation, and expressive behavior in response to social challenges and opportunities (e.g., Keltner & Gross, 1999; Niedenthal & Ric, 2007; Scherer & Moors, 2019). For gratitude, evidence is in line with the notion that expressive behaviors towards benefactors centrally contribute to its functionality.

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Some research found that recipients of gratitude expressions show affiliative behaviors towards expressers (Williams & Bartlett, 2015). Moreover, studies with romantic couples showed a unique prospective effect of expressed gratitude (vs. self-reported feelings of gratitude) on relationship quality (Algoe et al., 2013). Given the importance of the expressive component of gratitude for its relational functions (see also Grant & Gino, 2010), it appears particularly important to examine its antecedents and manifestations more closely.

Gratitude Expressions

Not only the degree to which, but also the way how people express gratitude can vary. Algoe, Kurtz, and Hilaire (2016) differentiated between self- and other-referential expressions of gratitude. For example, a beneficiary may express gratitude by referring to the advantages of the benefit for themselves (“This helps me a great deal!”, *self-benefiting*) or by praising their benefactor (“You invested a lot to make this happen!”, *other-praising*). The positive effects of gratitude expressions in romantic relationships were uniquely driven by beneficiaries’ other-praising behavior: It made the beneficiary appear responsive in the benefactor’s eyes. The more their relationship partner expressed gratitude by praising them, the more benefactors felt understood, validated, and cared for (Algoe et al., 2016).

Particularly other-praising thus seems to be a central mechanism whereby relationships develop in upward spirals of supportive, responsive behavior and that strengthens communal norms (Algoe, 2012; see also Crocker & Canevello, 2008; Mills & Clark, 2001). Consistently, other-praising has been described as the “active relational ingredient in expressed gratitude” (Algoe et al., 2016, p. 659). However, despite the evidence for the function of this expressive component, its antecedents remain unclear. Under a multi-componential approach, most components of an emotion (e.g., the expressive component) are coordinated by cognitive

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components, that is, by appraisals (Scherer & Moors, 2019). Linking such specific appraisals to the expressive component of gratitude should facilitate a deeper understanding of the relationship benefits of gratitude. Accordingly, we hypothesized that certain appraisals—such as unexpectedness of a benefit—predict when grateful individuals demonstrate a focus on benefits for the self, and when they focus on benefactors' praiseworthiness. Specifically, in the present work, we propose that *unexpected* benefits will yield more other-focused gratitude expressions compared to expected ones.

Unexpectedness and Other-Praising

People have good reasons to praise others who offer help regularly, or who provide benefits that exactly meet their expectations. Yet, adopting a social-functional argument and drawing on prior research on the appraisals involved in gratitude, we contend that people will be more inclined to express other-praising when a benefit comes unexpectedly from the specific source in the given circumstances. For example, a colleague's help may surprise us and warrant explanation—because we viewed them as incompetent to help, because they do not commonly help us or even anyone, or because no one else but them helped.

According to appraisal theories of emotions, novelty directs attention to potentially relevant stimuli. It is thus the first step in the evaluation of stimulus relevance (Ellsworth & Scherer, 2003). Relevance, in turn, predicts emotion experience (Frijda, 1988; Moors, 2017). Correspondingly, upon receiving an unexpected benefit, beneficiaries may turn to the benefactor—for instance, the helpful colleague—as a relevant stimulus in the respective context to find explanations. In line with this argument, it has previously been argued that expectancy violations promote information seeking in particular with respect to mental states (Epley, Waytz, & Cacioppo, 2007). When feeling deprived of control or uncertain, people attempt to detect

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intentional agency (e.g., Kay, Whitson, Gaucher, & Galinsky, 2009). In our search for explanations for an unexpected benefit, we may thus particularly focus on the benefactor as the focal agent, and their actions, mental states (e.g., relational motives), traits, and the mutual relationship (Kelley, 1967; Wells & Harvey, 1977). Scrutinizing the benefit may also highlight the benefactor's role in bringing it about (e.g., in terms of effort or creativity). If beneficiaries consider how a benefactor came to provide an unexpected benefit, thereby increasing the accessibility of costs, efforts, and intentions, they should consequently be more likely to praise the benefactor.

Two additional lines of research support our reasoning. First, it ties in with prior work that has differentiated and found evidence for the role of both benefactor-focused and self-focused appraisals as predictors of experienced gratitude (McCullough et al., 2008). For example, Wood and colleagues (Wood, Maltby, Stewart, Linkley, & Joseph, 2008) found appraisals of the benefactor's perceived costs and intentions, simultaneously with the value of the benefit to the self, to be associated with self-reported gratitude. Algoe and colleagues' (Algoe et al., 2008) gift-giving study in a sorority yielded similar results. In fact, surprisingness of an event predicted feelings of gratitude until perceived thoughtfulness and liking of the gift were taken into account. Neuropsychological research also points towards the role of brain regions involved in valuing the benefit for oneself and in the assessment of the benefactor's costs for gratitude (Fox, Kaplan, Damasio, & Damasio, 2015; Yu, Gao, Zhou, & Zhou, 2018; see also Yu, Cai, Shen, Gao, & Zhou, 2017). In particular, brain regions associated with theory of mind suggest that understanding the benefactor's mental state is central for this emotion (Fox et al., 2015). Hence, prior research on gratitude underlines the importance of other-related cognitive appraisal processes, and furthermore differentiates them from self-focused appraisals. Drawing

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on appraisals as an organizing principle of emotions (Scherer & Moors, 2019), these appraisals should be linked with the meaningfully related expressive styles identified in other research (Algoe et al., 2016). Therefore, circumstances such as unexpected benefits may specifically promote a certain (i.e., benefactor-focused) appraisal, with a dominant other-focus (vs. self-focus) consequently manifesting in a specific (i.e., other-praising) expressive style.

Second, our reasoning is also in line with a social-functional perspective: Relationship partners may harbor expectations along the norm of reciprocity, or with respect to desires and needs that are obvious or were explicitly communicated. Now, benefits which exceed beneficiaries' expectations relating to the current state of the relationship (e.g., in terms of effort or thoughtfulness) or satisfy their needs in creative, non-predictable ways should signal that the benefactor is—or has become—an apt and motivated relationship partner. It has indeed been argued that counterfactual thinking linked to unexpected events plays a role in gratitude because it implies realizing “that one has received a favor that could have been withheld” (Teigen & Jensen, 2010, p. 51; see also Emmons & McCullough, 2003). In other words, unexpected benefits may prompt beneficiaries to reassess benefactors' relational value and the mutual relationship. Importantly, even non-close relationships can develop with respect to the importance of communal, needs-focused norms, for example, through gratitude dynamics (Algoe, 2012; Rai & Fiske, 2001). In such cases, it is critical to reward benefactors' novel behavior in responsive—other-praising—ways, drawing them closer. In sum, both a social-functional perspective and research on gratitude-related appraisals suggest that particularly unexpected benefits may evoke other-praising gratitude expressions.

The Present Research

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We report four studies that investigated the relation between unexpectedness of a benefit and (intended) other-praising and self-benefiting expressions of gratitude. Study 1 followed a path-analytic approach, analyzing participants' thank-you notes for a Christmas present, and differentiating the effect of perceived unexpectedness on other-praising (vs. self-benefiting). Furthermore, Study 1 considered relevant covariates such as liking of the present. Studies 2-4 examined the effect of the unexpectedness of a (recalled or imagined) benefit on intended gratitude expressions in an experimental design, in order to provide evidence for the potential causal role of unexpectedness in other-praising. We report all studies we conducted in this line of research, all measures, all conditions, and all data exclusions. We additionally conducted an internal meta-analysis across Studies 2-4 to more precisely estimate the size of the experimental effect. Study materials and data sets can be accessed in the Supplementary Online Materials (SOM) and via the Open Science Framework (<https://osf.io/aytgw>).

Study 1

Study 1 examined whether unexpectedness of a benefit positively predicts other-praising in a correlational design. To increase realism, we investigated this hypothesis shortly after Christmas, asking participants to answer questions about a present they had just received. Subsequently, participants wrote a thank-you note to the gift-giver, which was content-coded for other-praising and self-benefiting expressions, respectively.

Method

Participants and design

On December 27, 2016, we recruited 249 U.S. American participants on Amazon Mechanical Turk (MTurk) who had received at least one Christmas present that year (for

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demographics, see Table 1). Participants in Studies 1-3 received modest monetary compensation (approx. 0.35US\$). We expected a correlation between unexpectedness and other-praising of $r \geq .20$, requiring approximately 240 participants to obtain a stable estimate (Schönbrodt & Perugini, 2013).

Procedure and materials

Participants named a Christmas present they had received that year for which they felt grateful, and indicated who had given it to them. We assessed unexpectedness with seven items. Based on the notion that surprise is strongly linked to gift-giving and has consistently been conceptualized as “the initial response to unexpected events” (Noordewier et al., 2016, p. 136; see also Reizenzein, Horstmann, & Schützwohl, 2017), one item asked about participants’ general feelings of surprise upon receiving this present (“How surprised did you feel in that moment?”; 1 = *not at all surprised*, 7 = *very surprised*). Out of six subsequent items, three referred to the present proper (e.g., “I did not expect to receive this present [that is, this object etc.] at all”), whereas three referred to the gift-giver (e.g., “I was really surprised about this person to give me this present”). These items were also answered on 7-point scales (1 = *completely disagree*, 7 = *completely agree*). Responses to the seven unexpectedness items were collapsed to form a single unexpectedness index (for descriptive statistics and zero-order correlations, see Table 1).

Subsequently, participants were instructed to write a thank-you note to the person who gave them this present to express their gratitude. A research assistant, who was blind to the hypotheses, was familiarized by the first and third authors with the notions of other-praising and self-benefiting gratitude expressions. Instructions were based on a coding-scheme developed by Algoe and colleagues (2016) and adapted to the gift-giving context. The scheme included five

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levels, each featuring a short explanation. After reading all thank-you notes, the research assistant coded each with respect to both aspects of expression.¹ We thus obtained separate indices for other-praising and self-benefiting expressions. These codings across the full sample served as our primary dependent measure. In order to establish reliability of the coding scheme, a second research assistant content-coded a random subsample ($n = 156$) of all thank-you notes, yielding satisfactory inter-rater reliability of Krippendorff's $\alpha_{OP} = .64$, $\alpha_{SB} = .65$.

To further explore gratitude expressions, participants were asked to indicate what they would like to express to the gift-giver on six additional items rated on 7-point scales (1 = *not at all*, 7 = *very much*). These items were based on theoretical considerations and the coding scheme. In a fixed order, three items each assessed other-praising (e.g., “I would like to praise him or her for making me this present”) and self-benefiting expression intentions (e.g., “I would like to express how perfectly the present suits me”). Ratings were collapsed to form separate indices of other-praising and self-benefiting expression intentions.²

The remainder of the survey assessed additional, potentially relevant variables and demographics. Specifically, participants rated their relationship to the gift-giver in terms of closeness, as closeness may be associated with greater target knowledge and thus different ways of gratitude expressions. They also indicated how many presents they had received from that person. Moreover, we assessed participants' happiness with the present itself, asking them to evaluate the present independently of the fact that it had been given to them as a present, and to indicate how happy they were about it on a seven-point scale (1 = *not at all happy*, 7 = *very happy*; see Algoe et al., 2008, for a similar approach). They also estimated its monetary value.

¹The coder was instructed that expressions of surprise about the present did not form part of self-benefiting. However, if at all, surprise should enhance self-benefiting codings through the self-focus involved, thus working against our hypothesis.

²Confirmatory factor analyses are reported in the SOM.

Results and Discussion

We tested our main hypothesis with path modeling. Analyses were performed using the *lavaan* package for *R* (version 0.6-2; Rosseel, 2012), using maximum likelihood estimation. Standard errors were computed using a bootstrapping procedure with 5,000 resamples; confidence intervals were based on bias-corrected adjusted bootstrap percentiles. Missing values were treated with full information maximum likelihood (FIML; Yuan & Bentler, 2000).

The model was identical for the thank-you notes and the rating scales. Unexpectedness of and happiness with the present simultaneously predicted other-praising and self-benefiting. Unexpectedness and happiness with the present as well as the error terms of other-praising and self-benefiting were free to covary. Thus, the model was saturated. We included happiness with the present in the model because it might be associated with both unexpectedness of benefits and gratitude expressions (Ellsworth & Scherer, 2003). Therefore, this model represents a more rigorous test of our hypothesis.

Thank-you notes

As predicted, unexpectedness of the present significantly positively predicted other-praising, $B = 0.108$, $SE = 0.035$, $p = .002$, 95% CI_B [0.039, 0.177], while it did not predict self-benefiting, $B = 0.017$, $SE = 0.033$, $p = .611$, 95% CI_B [-0.047, 0.081]. Happiness with the present, in turn, emerged as a significant positive predictor of self-benefiting, $B = 0.178$, $SE = 0.055$, $p = .001$, 95% CI_B [0.067, 0.286], while it did not predict other-praising, $B = 0.091$, $SE = 0.060$, $p = .128$, 95% CI_B [-0.026, 0.209] (Fig. 1).

Gratitude-expression intentions

Again, as predicted, unexpectedness of the present significantly predicted other-praising, $B = 0.237$, $SE = 0.040$, $p < .001$, 95% CI_B [0.158, 0.315]. In this model, unexpectedness also

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emerged as a significant—albeit weaker—predictor of self-benefiting, $B = 0.079$, $SE = 0.030$, $p = .008$, 95% CI_B [0.021, 0.137]. In fact, the confidence intervals of these regression weights did not overlap, indicating that they are significantly different from each other. Happiness with the present emerged as a significant predictor of self-benefiting, as well, $B = 0.495$, $SE = 0.050$, $p < .001$, 95% CI_B [0.397, 0.594]. Happiness with the present also predicted other-praising, $B = 0.291$, $SE = 0.068$, $p < .001$, 95% CI_B [0.157, 0.425].

In both models, the predicted regression weights remain significant when entering both perceived closeness to the benefactor ($M = 6.12$, $SD = 1.22$) and (estimated) monetary value of the present in US\$ ($M = 113.90$, $SD = 170.27$, excluding implausible values from two participants, -US\$99.00; US\$99,999.00) as exogenous variables. Neither covariate significantly predicted other-praising or self-benefiting gratitude expressions. Both closeness and monetary value emerged as significant predictors of other-praising intentions, but only closeness significantly predicted self-benefiting intentions. Furthermore, structural equation modeling with latent variables yielded highly similar results.

In sum, for both gratitude-expressing behaviors towards benefactors and self-reported expression intentions, unexpectedness of the present predicted the degree of other-praising. This effect emerged above and beyond happiness with the present itself, and additional relevant variables (closeness; monetary value). In an ecologically valid context, these results provide initial evidence that unexpected benefits predict other-praising gratitude expressions. However, Study 1 could not speak directly to the causal effect of unexpectedness on gratitude expressions.

[Table 1 near here]

[Figure 1 near here]

Study 2

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Building on the correlational findings from Study 1, Study 2 sought support for our hypothesis in an experimental design. Once again, participants were asked to recall an actual benefit they had received. We predicted that unexpected (vs. expected) benefits would elicit more other-praising. Given that Study 2 was designed as an initial experimental test of the effect of unexpectedness on gratitude expressions, we refrained from including additional variables (e.g., closeness; happiness with the present).

Method

Participants and design

Expecting a small to medium effect (<http://aspredicted.org/blind.php?x=sd6ah3>), we recruited 299 U.S. American participants on MTurk. For demographics, cell sizes, and exclusions in Studies 2-4, see Tables 2-4. Participants were randomly assigned to one of two between-subjects conditions.

Procedure and materials

Participants learned that the study was about how people react to benefits from others. They were asked to recall a benefit they had received from another person for which they were grateful. In the *(un)expectedness* condition, they were instructed to think of “an incident where someone else did something nice [...] or gave something nice” to them which they did (not) expect and for which they felt grateful. They briefly described why there were not at all (very) surprised.

Based on Study 1, participants then saw six items in a fixed random order asking what they would like to express to the person responsible for the described benefit. Again, three items each assessed other-praising (e.g., “I would like to express what the sacrifice in terms of money or time s/he invested mean to me”) and self-benefiting expression intentions (e.g., “I would like

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to express how perfectly the benefit suits me or came in handy in this situation;” SOM), respectively. All items were answered on 7-point scales (1 = *not at all*, 7 = *very much*). An attention check embedded in this scale prompted participants to respond *very much* to another item. Subsequently, participants answered two manipulation-check items about the incident that formed an index of unexpectedness (e.g., “Did it come unexpected?”; 1 = *not at all*, 7 = *very much*).

Results and Discussion

Descriptive statistics and zero-order correlations of all measures are displayed in Table 2. A *t*-test for independent samples on the manipulation check confirmed that participants in the unexpectedness condition perceived the recalled benefit to be more unexpected compared to those in the expectedness condition, $t(297) = 26.23, p < .001$, Hedges’ $g = 3.034$, 95% $CI_g [2.700, 3.367]$. We used the *compute.es* package for *R* to calculate g for individual studies (version 0.2-2; Del Re, 2013).

To test our main hypothesis, we compared participants’ other-praising expression intentions between conditions. As expected, participants who had recalled an unexpected benefit reported greater other-praising intentions, compared to those who had recalled an expected benefit. However, in a *t*-test for independent samples, this difference did not reach conventional levels of significance, $t(297) = 1.83, p = .069, g = 0.212$, 95% $CI_g [-0.017, 0.440]$. The experimental conditions did not significantly differ with respect to self-benefiting intentions, $t(297) = 0.79, p = .331$.³

[Table 2 near here]

Even though the interpretation warrants caution, these results are suggestive of a potential

³Preregistered as secondary analyses, we report mixed-measures ANOVAs in the SOM (pp. 7, 12, 18). In none of the experimental studies did the condition by expression interaction term reach statistical significance, $ps \geq .185$.

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small causal effect of unexpectedness of a benefit on other-praising intentions. We hence aimed at a similar, but more powerful design in Study 3 to unveil the effect of unexpectedness on other-praising gratitude expressions.

Study 3

Building on Study 2, Study 3 again manipulated whether participants recalled an unexpected or expected benefit and assessed their gratitude expression intentions. We expected a greater inclination for other-praising in response to unexpected compared to expected benefits. Given the inconclusive results of Study 2, in addition to design adjustments (e.g., in terms of sample size), we again explored the role of closeness to the benefactor, which had been associated with gratitude expressions in Study 1.

Method

Participants and design

Expecting a small to medium effect, we recruited 395 U.S. American participants on MTurk. Participants were randomly assigned to one of two between-subjects conditions, with methodology closely following Study 2.⁴

Procedure and materials

Participants completed the recall task from Study 2, describing either an unexpected (*unexpectedness* condition) or expected (*expectedness* condition) benefit. In order to contextualize the rating items, participants subsequently learned that there are numerous ways to express gratitude and that one can emphasize how we profited from a benefit or praise the other

⁴Even though a preregistration was submitted for this study on Aspredicted.org, the first author accidentally failed to approve it following the other authors' approvals. A screenshot of the (intended) preregistration, as approved by the other authors, is available in the SOM.

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person for his/her efforts. In two consecutive blocks (fixed order) with four items each, other-praising and self-benefiting expression intentions were then assessed on 7-point scales (1 = *not at all*, 7 = *very much*). Specifically, participants were asked to what degree they would like to emphasize the different aspects reflected in the items if they could talk or write to the benefactor and say “thank you.” Example items read “...how the benefit reflects that s/he is a great person” and “...how much I profit(ed) from the benefit.” The latter block included the attention check from Study 2 as a last item. Subsequently, participants completed exploratory measures (SOM): Most importantly, as closeness predicted other-praising intentions in Study 1, they indicated how close they felt to the benefactor.

Results and Discussion

Descriptive statistics and zero-order correlations of all measures are displayed in Table 3. We again focused on participants’ other-praising expression intentions. As expected, participants in the unexpectedness condition expressed significantly greater other-praising compared to participants in the expectedness condition, $t(393) = 2.01, p = .046, g = 0.202, 95\% CI_g [0.004, 0.400]$. The experimental conditions did not significantly differ with respect to self-benefiting, $t(393) = 0.73, p = .467$.

[Table 3 near here]

Study 3 thus provides experimental evidence of an effect of unexpectedness on other-praising intentions. Based on the findings of Study 1, we also explored the role of participants’ closeness to their benefactor (see preregistration). Plausibly, their knowledge about a closer target may allow beneficiaries to draw inferences about the circumstances associated with the benefit and to relate it to the benefactor’s personality. Moreover, expressing such other-praising may be more normative for close relationships. Mediation analyses indeed suggested that

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closeness functions as a suppressor of the effect of unexpectedness on other-praising, with participants recalling unexpected benefits from relatively less close others, but expressing enhanced inclinations to praise close others (SOM, p. 12). Controlling for closeness in an ANCOVA thus resulted in a considerably larger and significant effect of unexpectedness on other-praising ($g = 0.34, p < .001$).

Study 4

Given these prior results, we extended Studies 1-3 in terms of both targeted relationships and methodology. Specifically, Study 4 examined gratitude expressed towards unfamiliar targets, employing a vignette design. Furthermore, it tested our hypothesis that unexpected benefits elicit greater other-praising expressions in a population different from the previously investigated (U.S. American) population.

Method

Participants and design

We recruited 245 German students for an online study via a university data base. As compensation, six participants won €20.00 each in a lottery. Note that due to exclusions, we failed to reach the targeted sample size of approximately $N = 260$ (<http://aspredicted.org/blind.php?x=xy6ga2>). Participants were randomly assigned to one of two between-subjects conditions.

Materials and procedure

After providing demographics, participants were asked to imagine the following situation: They had recently started to work as a student assistant at a research department. One day, while completing a task, they received very beneficial help from a (gender-matched)

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colleague. Crucially, this help came either rather unexpected (*unexpectedness* condition), because that colleague had never helped before and usually everyone worked alone at that department, or expected (*expectedness* condition), because that colleague had previously helped the participant. Subsequently, participants answered a manipulation check asking whether the target's help had come unexpected, expected, or neither of those. Participants were excluded in case they failed to give a correct response to this categorical item.

Participants were instructed to write the target an e-mail to thank him/her for helping out. These thank-you e-mails were content-coded by the second research assistant from Study 1 and according to the same coding-scheme to obtain separate indices of other-praising and self-benefiting expressions.

Subsequently, participants rated eight statements with respect to how much these reflected what they would like to express in their e-mail to the target (e.g., "You made a big contribution to this project;" "I am very happy that I was able to complete the project in time;" 1 = *does not apply at all*, 9 = *applies a hundred percent*). Responses to four items each were collapsed to form indices of other-praising and self-benefiting intentions. On the next screen, participants completed an attention check requesting them to select a certain number on a scale.

Results and Discussion

For descriptive statistics and zero-order correlations, see Table 4. We first subjected the other-praising expression index as coded from the thank-you e-mails to a *t*-test for independent samples. Contrary to expectations, participants did not praise their co-worker more for unexpected compared to expected help, $t(243) = 0.88, p = .381, g = 0.112, 95\% CI_g [-0.139, 0.364]$. Furthermore, there was no effect of the manipulation on other-praising intentions, $t(243) = 0.44, p = .658, g = 0.056, 95\% CI_g [-0.195, 0.308]$. Additional analyses also found no effect of

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(un)expectedness on coded self-benefiting expressions, $t(243) = 0.07, p = .942, g = 0.009, 95\% \text{ CI}_g [-0.242, 0.260]$, or self-benefiting intentions, $t(243) = -0.44, p = .661, g = -0.056, 95\% \text{ CI}_g [-0.308, 0.195]$.

[Table 4 near here]

Hence, Study 4 provided no evidence that an imagined stranger's unexpected help, presented in a hypothetical vignette, will elicit greater other-praising compared to expected help.

Meta-Analysis

Given the mixed evidence with respect to an experimental effect of benefit unexpectedness on gratitude expressions, we conducted internal meta-analyses using the *metafor* package for *R* (version 2.0-0; Viechtbauer, 2010) of the effect of (un)expectedness manipulations on gratitude expressions and expression intentions across Studies 2-4 ($N = 939$). Specifically, we conducted a random-effects multiple-endpoint meta-analysis on the standardized mean differences for both other-praising and self-benefiting (Gleser & Olkin, 2009). Across all experiments, the effect of (un)expectedness on other-praising was significant, $g = 0.151, SE = 0.057, z = 2.670, p = .008, 95\% \text{ CI}_g [0.040, 0.262]$, whereas the effect on self-benefiting was not, $g = 0.033, SE = 0.056, z = 0.577, p = .564, 95\% \text{ CI}_g [-0.078, 0.143]$.⁵ Heterogeneity tests found no indication that the variability in the effect sizes observed across studies were attributable to heterogeneity between true effect sizes, $Q_E(6) = 1.197, p = 0.977, I^2_{OP} = 3.0\%, I^2_{SB} = 1.4\%$.

In a separate random-effects analysis, we compared the standardized effect sizes for the effects of (un)expectedness on other-praising and on self-benefiting, respectively. The difference between these effects was significant, $g = -0.118, SE = 0.052, z = -2.285, p = .022, 95\% \text{ CI}_g [-$

⁵A fixed-effects analysis and separate univariate meta-analyses of the effects of (un)expectedness on other-praising and self-benefiting yielded highly similar results.

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0.220, -0.017]. Thus, unexpected (vs. expected) benefits appeared to overall have a greater impact on other-praising compared to self-benefiting gratitude expressions. Analyzing the combined expression intentions data from all participants across our three experimental studies (Studies 2-4) yields highly similar results (see SOM, p. 19).

These results support a small, but relatively homogeneous causal effect of unexpectedness on gratitude expression (intentions), and further suggest that this effect may be selective to other-praising (as opposed to self-benefiting). Importantly, the results from the meta-analyses are corroborated by the correlational data from Study 1, where more surprising Christmas presents related positively to other-praising behavior even when controlling for other potentially relevant variables such as their monetary value. They are further in line with the results of Study 3, particularly when controlling for perceived closeness to the benefactor.

General Discussion

Four studies investigated the hypothesis that beneficiaries reward unexpected (vs. expected) benefits more by praising the benefactor. Study 1 exploited an ecologically valid design by content-coding participants' thank-you notes for a Christmas present they had just received the previous day. Employing path modeling, we found that the degree to which participants experienced the present as unexpected predicted both participants' other-praising expressions and intentions. This effect was independent of their happiness with the present, which instead predicted participants' self-benefiting expressions. Studies 2-4 featured experimental designs, asking participants to recall or imagine having received an (un)expected benefit, and testing effects on gratitude expression intentions. While Study 3 found that unexpected benefits provoked greater other-praising intentions, this effect did not reach

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significance in Studies 2 and 4. A meta-analysis across all experimental studies conducted, however, supported a small average effect, corroborating the robust correlational results from Study 1.

While earlier work largely investigated the subjective experience of gratitude or its interpersonal outcomes (e.g., DeSteno et al., 2010), the current work focused on a previously underresearched component of the emotion of gratitude: expressive behavior and behavioral intentions. It thus targeted how people convey their gratitude to others, which is critical to the relationship-regulating functions of gratitude. Whether or not gratitude will manifest in positive relationship dynamics ultimately depends on benefactors detecting and appreciating beneficiaries' responsiveness (e.g., Algoe et al., 2013). Indeed, recent research found that whether people actually *perceive* their romantic partners to be grateful for a sacrifice they made affects their relationship satisfaction (Visserman, Impett, Righetti, Muise, Keltner, & Van Lange, 2018). The present work is thus in line with social-functional accounts of emotions (Fischer & Manstead, 2008; Keltner & Haidt, 1999). In this vein, we employed externally valid methodology, such as actual benefits for which participants felt thankful, and assessed both behavioral intentions and behavior in the form of written thank-you notes (see also Algoe et al., 2016).

Limitations, Contributions, and Implications

Given the somewhat inconsistent pattern of results across studies, a number of potential limitations of the methodology employed in the present studies and potential directions for future research should be noted.

First, Studies 2-4 relied on between-subjects manipulations of benefit unexpectedness. On the one hand, based on randomization, it appears implausible that confounding variables

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impacted the results of Studies 2-4. Further, the results of Study 1 remained stable when controlling for various relevant variables (e.g., absolute monetary value). On the other hand, future studies employing repeated-measures designs could fruitfully complement the present research. For example, experience-sampling methodology could compare gratitude expressions for naturally diverse and psychologically meaningful benefits (e.g., Algoe, Gable, & Maisel, 2010).

Second, our measures of gratitude expressions were adapted from a coding scheme used in prior research on romantic couples, and we found converging results for actual, coded expressions and expression intentions. While reliability of the newly developed scales was not ideal, it was mostly acceptable according to conventional standards (e.g., DeVellis, 2016). With respect to different kinds of gratitude expressions, future research should nevertheless also consider further aspects (e.g., expression of relational motives) and potential intercultural differences. For instance, it has been argued that in some cultures, some (self-benefiting) expressions of thanks (e.g., beneficiaries emphasizing how well a benefit suits them) may be understood as compliments (i.e., praise) to benefactors (Wolfson & Manes, 1980).

Closeness and beliefs about gratitude expressions

Third, a potential explanation for our inconsistent results related to Study 4 may be that the vignette design did not allow experiential information to contribute to gratitude expressions. More generally, the target was hypothetical and entirely unfamiliar to the beneficiary. Particularly expressing praise, for example by referring to benefactors' personal traits, may be perceived as counter-normative especially within less close relationships. In addition, participants in Study 4 were not explicitly encouraged to openly express their gratitude to their benefactor. In line with this notion, Studies 1 and 3 point towards relationship closeness as a

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suppressor variable obscuring a bigger effect of unexpectedness on other-praising expressions. Perceived closeness predicted other-praising, even above and beyond other variables, but was higher for expected benefactors, which arguably weakened statistical power and contributed to the small effects found.

Fourth, earlier findings suggest that people's beliefs may pose constraints on other-praising. People mispredict the positive effects when they express their gratitude to benefactors (Kumar & Epley, 2018). They underestimate how competent and warm they will come across but instead suspect it will make benefactors feel awkward. Thus, beneficiaries motivated to praise their benefactor, for example upon receiving an unexpected favor, may nevertheless be reluctant to do so. In a similar vein, recent research found a unique impact of the perceived utility (vs. actual experience) of appreciation on the reduction of depressive symptoms (Chow & Berenbaum, 2016), underlining the modulating impact of people's beliefs about gratitude on its positive effects. Future studies targeting the antecedents of gratitude expressions should thus minimize unwarranted social concerns and thereby increase beneficiaries' willingness to actually express praise, particularly towards less close benefactors. Notably, recent research revealed that the positive effects of expressed gratitude extend to third-party observers, for example with respect to prosocial behavior and affiliative reactions towards both beneficiaries and benefactors (Algoe, Dwyer, Younge, & Oveis, 2019).

Effects of unexpected versus expected benefits

The present research extends prior research on gratitude-related appraisals and raises novel questions for future studies. Some earlier empirical and theoretical work has related gratitude to surprise (Algoe et al., 2008; Teigen & Jensen, 2010). The present work is, to our knowledge, the first to experimentally manipulate (un)expectedness of benefits and to assess

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components of gratitude beyond self-reported feelings. Much as perceived effort and valuing a benefit are appraisals associated with the subjective experience of gratitude (e.g., Algoe et al., 2008; Wood et al., 2008), we conceptualize both other-praising and self-benefiting as part of its expressive component. Importantly, we reason that as unexpected beneficiaries try to make sense of the situation, particularly benefactor-focused cognitions may be triggered, highlighting relational motives and responsiveness. Indeed, the perceived monetary value of the gift and joy about the item itself, independent of its status as a gift, did not account for the association between unexpectedness and other-praising in Study 1. Thus, simply receiving a *larger* gift does not seem to be a likely candidate to explain the effect of unexpectedness. In line with this result, benefits that convey a greater need or expectation for reciprocation have been found to reduce self-reported prosocial action and approach tendencies (e.g., praising in front of third parties; Watkins, Scheer, Ovnicek, & Kolts, 2006). While beyond the scope of the present work, the relationship between specific gratitude-related appraisals (e.g., self- vs. benefactor-focused) and expression styles thus merits further investigation.

Notably, depending on relationship or situational variables, surprising benefits might sometimes backfire, as in the stereotypical image of a wife who becomes suspicious when her husband brings her flowers out of the blue. In addition, in line with prior work finding that how the value of a benefit compares to that of others affects subjective gratefulness, entitlement may render people resistant to the present effect (Wood, Brown, & Maltby, 2011). Future research may hence also investigate such boundary conditions.

Conclusion

Based on correlational and meta-analytical experimental findings, we tentatively conclude that unexpected benefits promote other-praising gratitude expressions. They may

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thereby contribute to positive relationship dynamics (Algoe et al., 2008). A reassessment of the benefactor's relational value (Peng, Nelissen, & Zeelenberg, 2018) may prompt beneficiaries to praise them in calibrated, subtle ways, which benefactors perceive as responsive, particularly when they are themselves motivated to intensify the relationship. Indeed, real-life benefits as investigated in the present studies are not a one-shot interaction, but occur repeatedly and may unfold their power over time. To conclude, the present research suggests that offering unexpected benefits may positively impact the kind of appreciation we will receive for them. When we want someone else to like not merely what we give to them, but also us, we may be well advised not only to get out of our way to give them what they like, but to do so in unique and unexpected ways.

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Declaration of Interest Statement

The authors declare no conflict of interest regarding this article.

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Table 1
Descriptive Statistics and Zero-Order Correlations of Main Variables in Study 1

Variables	<i>M (SE)</i>	1	2	3	4	5	6
1. Unexpectedness	4.44 (1.86)	.96					
2. Happiness with present	6.14 (1.09)	.047					
3. Other-praising expressions	2.42 (1.06)	.194**	.103				
4. Self-benefiting expressions	2.67 (0.98)	.041	.200**	.205**			
5. Other-praising intentions	5.12 (1.30)	.349**	.260**	.219**	.011	.60	
6 Self-benefiting intentions	6.00 (1.02)	.166**	.529**	.285**	.344**	.547**	.82

Notes. ** $p < .01$. The diagonal represents Cronbach's α . Sample demographics: 135 female, 114 male, $M_{\text{age}} = 34.06$, $SD_{\text{age}} = 11.07$.

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Table 2
Descriptive Statistics and Zero-Order Correlations of all Variables in Study 2

Variables	<i>M (SE)</i>	Unexpectedness	Expectedness	1	2	3
		condition <i>M (SE)</i>	condition <i>M (SE)</i>			
1. Manipulation check	4.56 (2.45)	6.47 (0.86)	2.37 (1.75)	.96		
2. Other-praising expression intentions	5.60 (1.16)	5.71 (1.03)	5.47 (1.29)	.123*	.69	
3. Self-benefiting expression intentions	5.53 (1.22)	5.58 (1.16)	5.47 (1.30)	.081	.739**	.77
<i>n</i>	299	160	139			

Notes. ** $p < .01$. * $p < .05$. The diagonal represents Cronbach's α . Sample demographics: 151 female, 146 male, 2 other, $M_{\text{age}} = 35.91$, $SD_{\text{age}} = 11.39$. Sixteen additional participants were excluded for failing an attention check. Four participants (three of whom also failed the attention check) were excluded because they did not provide any meaningful text about a benefit.

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Table 3
Descriptive Statistics and Zero-Order Correlations of all Variables in Study 3

Variables	<i>M (SE)</i>	Unexpectedness condition <i>M (SE)</i>	Expectedness condition <i>M (SE)</i>	1	2	3
1. Other-praising expression intentions	5.66 (1.12)	5.77 (1.05)	5.55 (1.19)	.74		
2. Self-benefiting expression intentions	5.37 (1.30)	5.41 (1.26)	5.32 (1.35)	.618**	.78	
3. Closeness	5.68 (1.68)	5.23 (1.86)	6.16 (1.30)	.226**	.167**	
<i>n</i>	395	202	193			

Notes. ** $p < .01$. The diagonal represents Cronbach's α . Sample demographics: 202 female, 193 male, $M_{\text{age}} = 34.95$, $SD_{\text{age}} = 10.81$. 26 additional participants were excluded for failing an attention check, two of whom also did not write meaningful text about a benefit.

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Table 4

Descriptive Statistics and Zero-order Correlations of all Variables in Study 4

Variables	<i>M</i> (<i>SE</i>)	Unexpectedness condition <i>M</i> (<i>SE</i>)	Expectedness condition <i>M</i> (<i>SE</i>)	1	2	3	4
1 Other-praising expressions	1.96 (1.20)	2.03 (1.33)	1.90 (1.07)				
2 Self-benefiting expressions	2.50 (1.17)	2.50 (1.17)	2.48 (1.18)	-.092			
3 Other-praising expression intentions	5.57 (1.92)	5.63 (1.99)	5.52 (1.85)	.120†	.003	.75	
4 Self-benefiting expression intentions	5.52 (2.03)	5.46 (2.05)	5.58 (2.02)	.019	.110†	.657**	.77
<i>n</i>	245	115	130				

Notes. ** $p < .01$. † $p < .10$. The diagonal represents Cronbach's α . Sample demographics: 196 female, 46 male, 3 diverse/n.a., $M_{\text{age}} = 27.00$, $SD_{\text{age}} = 7.26$. Six additional participants were excluded for failing an attention check, 47 for failing a manipulation check. Seven participants did not write a thank-you note, resulting in 54 exclusions in total.

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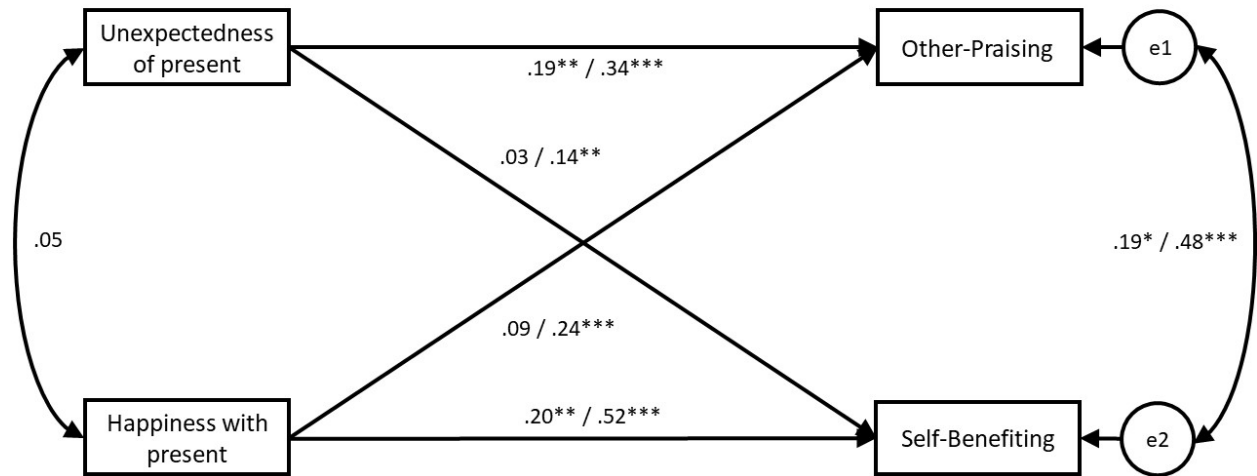


Figure 1. Path model of the relations between unexpectedness, happiness with the present, and gratitude expressions as coded in the thank-you notes and self-reported expression intentions, respectively (separated by slashes). Coefficients represent standardized regression weights (* $p < .05$, ** $p < .01$).

Supplementary Online Material

Study 1: Coding Scheme (closely following Algoe et al., 2016)

Other-praising behavior within a gratitude expression.

The extent to which the beneficiary genuinely praises the benefactor for his or her actions or personal qualities **related to the actions**.

1 = **no statement** of praise for the benefactor's action

2 = little praise for benefactor's actions, more formal than heartfelt, with **NO details** of the nice thing the benefactor did

3 = **average expression** of genuine praiseworthiness, **some details** of the praiseworthy actions

4 = good expression of genuine praiseworthiness, including **explicit and detailed elaboration** on the benefactor's praiseworthy action (also may refer to **how the behavior is just one example of a class of behaviors**)

5 = excellent expression of benefactor's praiseworthiness, including **elaboration on the praiseworthy features of the benefactor's actions and may generalize the behavior to the character** of the benefactor

Self-benefiting behavior within a gratitude expression.

The extent to which the beneficiary focuses on how the benefactor's actions enhanced or benefited the self; conveys the degree of pleasure/enjoyment they experienced as a result of the gesture, or emphasize how good the act made them feel. Expression of enthusiasm/joy.

1 = **no statement** of the action benefiting the self, absence of focus on the benefit-to-self, expresses no joy and low activation

2 = **little focus on benefits to self**, marked by infrequent, or **less descriptive, mention**

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of benefits to self, less expression of joy and activation (engaged, energized) while verbalizing benefits

3 = **average focus on benefit to self**; expressions of benefits to the self, characterized by average joy and activation while verbalizing benefits

4 = greater focus on benefit to self, **greater elaboration on how the benefactor's action benefited the self**, greater expression of joy and activation (engaged, energized) while verbalizing benefit-to-self (i.e., spikes in joy or energy)

5 = **major focus on benefit to self**, elaboration of **how the benefactor's act improved the speaker's life or "made them feel good," emphasis on all of the positive outcomes that he or she experienced as a result of the act**, characterized by high joy and physical activation while verbalizing benefits.

Additional coding rules

- Read all notes before starting to code their content.
- "Thank you" is not yet worth coding as it is obligatory in a thank you note (But: "Thank you for giving/presenting/buying me the pullover" would be codable for other-praising (i.e., other praising = 2).
- E.g., "I love you": refer to context to disambiguate.
- If participants use the word *appreciate*, refer to the context in order to interpret whether it is more self-benefiting or other-praising.

If participants mention that the benefactor helped them out (e.g., "I really needed X") or refer to the inference of the participant's mental states by the benefactor (e.g., "You know how much I love X"): The first is solely self-benefiting, the latter is both self-benefiting and other-praising.

Materials for Study 1

Instructions

Survey on Christmas Presents

Many people receive presents at Christmas.

This survey explores the giving and reception of Christmas presents. On the following pages, please answer a couple of questions on a present you received.

Present recall instructions (text boxes provided)

Below, please name a particular present that you received for Christmas this year for which you feel GRATEFUL. Please also indicate who gave it to you, including some further information on who the gift-giver is or how you know that person (e.g., sister, colleague etc.).

- Please name a present you received:
- Who gave you this present? Please also indicate how you know the person.

Surprise

Please think back to the situation when you received this present:

- How surprised did you feel in that moment? (*1 = not at all surprised, 7 = very surprised*)

Unexpectedness

Now, we will ask you a few additional questions about the present you got. Please indicate your agreement with the following statements relating to the PRESENT itself, independently from the person who gave it to you:

(1 = completely disagree, 7 = completely agree)

- I did not expect to receive this present (that is, this object etc.) at all.
- I was really surprised to receive this particular present from anyone.
- I kind of expected to receive something like this for Christmas. [reversed]

Please indicate your agreement with the following statements relating to the PERSON who gave this present to you:

(1 = completely disagree, 7 = completely agree)

BENEFIT UNEXPECTEDNESS AND GRATITUDE EXPRESSIONS

- I did not expect to receive this present from this particular person at all.
- I was really surprised about this person to give me this present.
- I kind of expected this person to give me a present like this. [reversed]

Instructions thank you note (text box provided)

Now, we would like you to write a thank you note to the person who gave you this present.

Please take a moment and imagine you would want to write a note to express your gratitude to this particular person for this particular present.

Please write down your thank you note in the text box below, using full sentences.

Gratitude expression intentions

On the below scales, please indicate what you would like to express in particular to the person who made you the present:

(1 = not at all, 7 = very much)

1. I would like to express how much I appreciate the thought s/he invested to come up with the present.
2. I would like to express what the sacrifice in terms of money or time s/he invested mean to me.
3. I would like to praise him or her for making me this present.
4. I would like to express how much I appreciate the present.
5. I would like to express how perfectly the present suits me.
6. I would like to explain the value the present has for me.

(Other-praising items: 1-3; Self-benefiting items: 4-6)

Relationship

- How would you describe your general relationship with the person who gave you the gift?
(1 = not at all close, 7 = very close)
- How many Christmas presents in total did you receive from this person?

BENEFIT UNEXPECTEDNESS AND GRATITUDE EXPRESSIONS

Joy & monetary value items

Now, please think about the object itself (i.e., the present) that you received INDEPENDENTLY from the fact that it was given to you as a present. For example, imagine that you did already own this object or that you bought it for yourself.

We are interested in how you evaluate the object independent from everything else.

- How happy are you about the present itself, independent from the fact that you received it as a present? (*1 = not at all happy, 7 = very happy*)

Please indicate what you think the present was worth in USD (with two decimals).

Additional Analyses for Study 1

A confirmatory factor analysis revealed that a single-factor structure fitted participants' responses to the seven unexpectedness items adequately on some indices but not on others, Comparative Fit Index (CFI) = 0.895, Root Mean Square Error of Approximation (RMSEA) = 0.240, Square Root Mean Residual (SRMR) = 0.039. Path-modeling analyses including the happiness item and either the single surprise item, the mean of the three person-focused unexpectedness items, or the mean of the three gift-focused unexpectedness items as exogenous variables yielded results highly similar to the analysis including the seven-item unexpectedness index reported in the main text.

The two-factor structure of the expression-intention items revealed adequate fit in a confirmatory factor analysis on some but not all indices, CFI = 0.918, RMSEA = 0.146, SRMR = 0.047, but fitted the data better than a one-factor model, $\chi^2(1) = 11.161, p < .001$.

Materials for Study 2

Unexpectedness condition

How people react to benefits from others

The following task investigates how people react to benefits that they receive from others. Specifically, other people sometimes do something nice for us (e.g., a favor), or they give us something nice (e.g., a gift), and, as a result, we feel GRATEFUL.

Now, we would like you to think of an incident where someone else did something nice for you or gave you something nice, which you DID NOT EXPECT, and you felt GRATEFUL. Please recall such a situation from your personal experience and briefly describe below how and why you were VERY SURPRISED.

Please enter your text here:

Expectedness condition

How people react to benefits from others

The following task investigates how people react to benefits that they receive from others. Specifically, other people sometimes do something nice for us (e.g., a favor), or they give us something nice (e.g., a gift), and, as a result, we feel GRATEFUL.

Now, we would like you to think of an incident where someone else did something nice for you or gave you something nice, which you DID EXPECT, and you felt GRATEFUL. Please recall such a situation from your personal experience and briefly describe below how and why you were NOT AT ALL SURPRISED.

Please enter your text here:

BENEFIT UNEXPECTEDNESS AND GRATITUDE EXPRESSIONS

Gratitude expression intentions (including attention check)

Following up on the previous task:

Below, please indicate what you would like to express in particular to the person who was responsible for the benefit that you described. Depending on your specific case, "benefit" may refer to an object (e.g., a gift) or a behavior (e.g., a favor).

(1 = not at all, 7 = very much)

1. I would like to explain the value the benefit has for me.
 2. I would like to express my appreciation for how considerate it was from him or her.
 3. I would like to express how perfectly the benefit suits me or came in handy in this situation.
 4. I would like to express what the sacrifice in terms of money or time s/he invested mean to me.
 5. I would like to express how much I appreciate the benefit.
 6. I would like to praise him or her for giving me this benefit.
- To monitor data quality, please choose *very much* as response to this item.

(Other-praising items: 2, 4, 6; Self-benefiting items: 1, 3, 5)

Unexpectedness manipulation check

Please once more recall the incident that you described earlier:

(1 = not at all, 7 = very much)

- How surprised were you about it?
- Did it come unexpected?

Additional Analyses for Study 2

As a secondary analysis, we subjected the data to a 2×2 mixed-measures ANOVA with condition (unexpectedness vs. expectedness) as a between-subjects factor and gratitude expression (OP vs. SB) as within-subjects factor. Neither the effect of expression, $F(1, 297) = 1.96, p = .162$, nor the effect of condition, $F(1, 297) = 1.92, p = .167$, or their interaction, $F(1, 297) = 1.77, p = .185$, reached conventional levels of significance.

Preregistration for Study 3

Note: The first author accidentally failed to approve the preregistration upon the co-authors' approval. Hence, a screenshot of the preregistration—as approved by the other two authors before data collection—taken after data collection is pasted below:

aspredicted.org

You are logged in as: alexa.weiss@uni-koeln.de (Log out)

HOME BACK Make Suggestion Change your email

As Predicted: "AW_UnExpect_Praise2" (#4080)

Created: 05/15/2017 06:39 AM (PT)

Author(s)
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Pascal Burgmer (University of Cologne) - pascal.burgmer@uni-koeln.de
Jens Lange (University of Cologne) - jens.lange@uni-koeln.de

1) What's the main question being asked or hypothesis being tested in this study?
The current study explores the effect of unexpectedness (vs. expectedness) of a benefit on how people express their gratitude for said benefit. Specifically, we predict that unexpectedness associated with the benefit will lead to more other-praising expressions towards the benefactor.

2) Describe the key dependent variable(s) specifying how they will be measured.
We measure gratitude expressions with an 8-item questionnaire comprising 4 items that assess other-praising expressions and 4 items that assess self-benefit expressions.

3) How many and which conditions will participants be assigned to?
Participants will be randomly assigned to two between conditions: They will be asked to recall and describe in writing either a benefit that they did not expect (unexpectedness condition) or a benefit that they did expect (expectedness condition).

4) Specify exactly which analyses you will conduct to examine the main question/hypothesis.
We will conduct a t-test for independent samples investigating the effect of the (un)expectedness manipulation on other-praising expressions.

5) Any secondary analyses?
An ANOVA with (Un)Expectedness as between-factor and Type of Expression (other-praising vs. self-benefit) as within-factor will explore (main and interactive) effects on self-benefit expressions. This analysis will examine whether other-praising expressions are more strongly affected by (Un)Expectedness compared to self-benefit expressions.

2 exploratory items will assess the participants' relationship to the benefactor, and 2 further items will assess how (un)expected the benefit itself versus the benefactor was. Exploratory analyses will be conducted to see how other-praising and self-benefiting expressions are related to either of these measures, and whether they are affected by the (un)expectedness manipulation.

6) How many observations will be collected or what will determine sample size?
No need to justify decision, but be precise about exactly how the number will be determined.
We aim to run $n = 200$ participants per between condition, that is, a total of $N = 400$ participants, which will allow to detect an effect of $d = 0.30$ with at least 80% power.
To achieve this, we will set 420 participants as the batch size on MTurk (accounting for potential exclusions, see #7).

7) Anything else you would like to pre-register? (e.g., data exclusions, variables collected for exploratory purposes, unusual analyses planned?)
Data exclusions will be based on participants' responses to an attention-check item implemented in the gratitude-expression scale. Further, we will inspect participants' descriptions of the unexpected or expected benefit and exclude those participants who clearly did not comply with task instructions (i.e., no meaningful description that fits the respective task instruction, depending on condition).

8) Have any data been collected for this study already?
No, no data have been collected for this study yet

Recall: Approved pre-registrations remain private until a participating author acts to make it public

APPROVE REJECT
Want to make changes?

BENEFIT UNEXPECTEDNESS AND GRATITUDE EXPRESSIONS

Materials for Study 3

Unexpectedness condition

How people react to benefits from others

The following task investigates how people react to benefits that they receive from others. Specifically, other people sometimes do something nice for us (e.g., a favor), or they give us something nice (e.g., a gift), and, as a result, we feel GRATEFUL.

Now, we would like you to think of an incident where someone else did something nice for you or gave you something nice, which you DID NOT EXPECT, and you felt GRATEFUL. Please recall such a situation from your personal experience and briefly describe below how and why you were VERY SURPRISED.

Please enter your text here:

Expectedness condition

How people react to benefits from others

The following task investigates how people react to benefits that they receive from others. Specifically, other people sometimes do something nice for us (e.g., a favor), or they give us something nice (e.g., a gift), and, as a result, we feel GRATEFUL.

Now, we would like you to think of an incident where someone else did something nice for you or gave you something nice, which you DID EXPECT, and you felt GRATEFUL. Please recall such a situation from your personal experience and briefly describe below how and why you were NOT AT ALL SURPRISED.

Please enter your text here:

Gratitude expression intentions (including attention check)

Following up on the previous task:

There are numerous ways to express one's gratitude and to indicate that one is thankful. Among other things, we can emphasize how we profited from the benefit and/or we can praise the other person for his or her efforts.

We are interested in what you would like to express in particular to the person who was responsible for the benefit that you described.

If you could talk or write to the person about the benefit, and say "thank you", how much would you like to emphasize the different aspects below?

BENEFIT UNEXPECTEDNESS AND GRATITUDE EXPRESSIONS

Depending on your specific case, "benefit" may refer to an object (e.g., a gift) or a behavior (e.g., a favor).

(1 = not at all, 7 = very much)

I would like to emphasize...

1. ...how much I praise him or her for giving me the benefit.
2. ...how considerate s/he was.
3. ...the sacrifice in terms of money or time s/he invested.
4. ...how the benefit reflects that s/he is a great person.

I would like to emphasize...

1. ...the value the benefit has or had for me.
 2. ...how perfectly the benefit suited me and my needs.
 3. ...how the benefit came in handy in my particular situation.
 4. ...how much I profit(ed) from the benefit.
- To monitor data quality, please choose *very much* as response to this item.

(Other-praising items: 1-4; Self-benefiting items: 5-8)

Exploratory measures: closeness

Please answer the following questions about your relationship to the person who was responsible for the benefit you described:

- How close do you feel to the person who gave you the benefit?
(1 = not at all close, 7 = very close)
- What is your relationship with the person who gave you the benefit you described? Please choose the most applicable option from the list below. *(Family member/relative, Partner, Best friend, Friend, Acquaintance, Colleague/boss etc., Stranger)*

Exploratory measures: source of unexpectedness (unexpectedness condition)

Please recall once again the incident you described earlier

- Why was the benefit unexpected? In a few sentences, please describe why you were surprised.

BENEFIT UNEXPECTEDNESS AND GRATITUDE EXPRESSIONS

In addition, please answer the following questions about the incident:

(1 = not at all, 7 = very much)

- How much did the unexpectedness relate to the person responsible for the benefit?
- How much did the unexpectedness relate to the benefit itself?

Exploratory measures: source of expectedness (expectedness condition)

Please recall once again the incident you described earlier.

- Why was the benefit expected? In a few sentences, please describe why you were not at all surprised.

In addition, please answer the following questions about the incident:

(1 = not at all, 7 = very much)

- How much did the expectedness relate to the person responsible for the benefit?
- How much did the expectedness relate to the benefit itself?

Additional Analyses for Study 3

As a secondary analysis (see preregistration), we subjected the data to a 2×2 mixed-measures ANOVA with condition (unexpectedness vs. expectedness) as a between-subjects factor and gratitude expression (other-praising vs. self-benefiting) as within-subjects factor. While the effect of expression was significant, $F(1, 393) = 29.84, p < .001, \eta_p^2 = .071$, neither the effect of condition, $F(1, 393) = 2.14, p = .144$, nor their interaction, $F(1, 393) = 1.44, p = .230$, reached conventional levels of significance.

Furthermore, we explored the relation between perceived closeness and other-praising in planned ancillary and exploratory analyses. In an ANCOVA with closeness as a covariate, simultaneous significant effects on OP of both condition, $F(1, 394) = 12.39, p < .001, \eta_p^2 = .031$, 95% CI [.006, .071], and closeness, $F(1, 394) = 29.91, p < .001, \eta_p^2 = .071$, 95% CI [.029, .123], emerged. The effect of condition in this analysis is equivalent to $g = 0.34$, 95% CI_g [0.15, 0.54], as calculated with the compute.es package for *R* (Del Re, 2013).

Considering closeness as a suppressor variable, we additionally ran a mediation analysis controlling for self-benefiting by including it as another exogenous variable and allowing a covariance with condition (coded expected = 0, unexpected = 1; Fig. 2). Closeness was significantly predicted by both condition, $B = -0.955, SE = 0.159, p < .001$, 95% CI_B [-1.266, -0.643], and self-benefiting, $B = 0.228, SE = 0.061, p < .001$, 95% CI_B [0.109, 0.348]. In line with the previous results, there was a significant total effect indicating that condition predicted other-praising above and beyond self-benefiting, $B = 0.175, SE = 0.088, p = .047$, 95% CI_B [0.002, 0.347]. Further, in this model, not only self-benefiting, $B = 0.504, SE = 0.034, p < .001$, 95% CI_B [0.438, 0.570], but also closeness significantly predicted other-praising, $B = 0.109, SE = 0.027, p < .001$, 95% CI_B [0.055, 0.163]. Importantly, condition continued to predict other-praising, as indicated by a significant direct effect, $B = 0.279, SE =$

BENEFIT UNEXPECTEDNESS AND GRATITUDE EXPRESSIONS

0.090, $p = .002$, 95% CI_B [0.102, 0.456]. Furthermore, a significant indirect effect emerged, $B = -0.104$, $SE = 0.031$, $p < .001$, 95% CI_B [-0.165, -0.043]. These results indicate that closeness functions as a suppressor of the effect of unexpectedness on other-praising gratitude expressions.

Omitting self-benefiting expression intentions from the suppressor analysis examining the indirect effect of (un)expectedness on other-praising via closeness results in similar effects. When additionally including participants' ratings of the degree to which (un)expectedness related to the benefit and the person (see materials above), results remain highly similar, as well. Neither of the latter had a significant predictive effect on other-praising above and beyond condition and closeness.

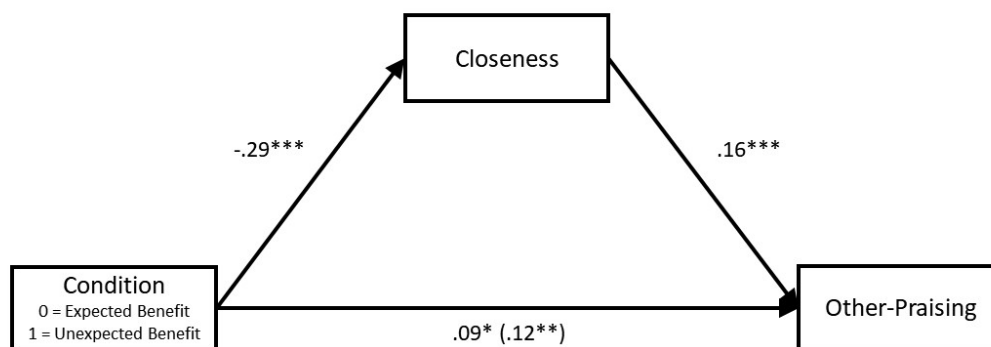


Figure 2. Effect of condition (0 = expected benefit, 1 = unexpected benefit) on other-praising intentions via perceived closeness to the benefactor. Self-benefiting was included as exogenous variable, covarying with condition and predicting closeness and other-praising. These paths are omitted for clarity. Coefficients represent standardized regression weights ($*p < .05$, $**p < .01$, $***p < .001$).

Materials for Study 4

Please vividly imagine the described situation:

A couple of weeks ago, you started a job as a student assistant at a research institution. You like the job and the atmosphere in the group.

Your new colleagues, who all pursue different studies, all seem nice. You slowly get to know your colleagues better, for example during coffee breaks. Generally though, the student assistants work individually on single tasks. Therefore, you have not befriended your colleagues closely yet.

One week, you work on a little project on your own, which you are supposed to complete the same week. Jana, one of your colleagues, is at the office as well to work on a different task. Jana, who knows that you are new, spontaneously helps you with your project: She takes over a necessary task, which you have barely any experience with, but she knows well (working with a specific software). Her content-related knowledge is useful, as well. This way, you do not only learn things, but are also able to focus on the other tasks.

Unexpectedness condition

Jana's help comes rather unexpected. Students assistants mostly work on their own, and you have not worked with Jana often yet. When you have met her at the office, it has not happened before that she helped you with your work. Thus, you are very surprised when Jana offers you her help.

Expectedness condition

Jana's help does not come unexpected. Students assistants mostly work on their own, and you have not worked with Jana often yet. But when you have met her at the office, it has happened frequently that Jana has helped you with your work. Thus, you are not at all surprised when Jana offers you her help.

(Before completing the imagination task, participants provided demographics. Stimulus materials were gender-matched to prevent romantic interpretations for heterosexual participants (we refrained to ask about participants' sexual orientation to this end for privacy reasons). The male research assistant's name was Jens.)

Unexpectedness manipulation check

Please answer the following question about the situation described on the previous page:

How unexpected came Jana's help? (*1 = not at all, 7 = very much*)

- Jana's help came **unexpected** and surprised me.
- Jana's help did **not** come **unexpected** and did *not* particularly surprise me.
- Don't know/n.a.

BENEFIT UNEXPECTEDNESS AND GRATITUDE EXPRESSIONS

Gratitude expressions

The next day, you would like to thank Jana for her help, and write her an e-mail.

Please write your e-mail to Jana in the text box below.

Please write the e-mail as you would actually write it to your colleague Jana in this situation.

Gratitude expression intentions

Below, you find some sentences. Please indicate to what degree each of these sentences reflects what you expressed in your e-mail respectively what you would like to express in this situation. Please give your answers spontaneously. There are no right or wrong questions. (1 = does not apply at all, 9 = applies a hundred percent)

1. Thank you for putting so much work in this task.
2. I am very happy that I could complete the project in time.
3. Thank you, I learned a lot through your help!
4. It was agreeable and helpful for me to work in a team.
5. You made a big contribution to this project.
6. You have really applied yourself.
7. I was impressed with how skillfully you dealt with the software.
8. Your help alleviated a lot of my initial insecurities.

(Other-praising items: 1, 5, 6, 7; Self-benefiting items: 2, 3, 4, 8)

Attention check

Please select answer option 1 to this question.

This question serves to ensure data quality.

(Scale item with seven response options labeled 1 through 7)

Original materials for Study 4 in German language

Bitte stellen Sie sich die beschriebene Situation möglichst lebendig vor:
Vor einigen Wochen haben Sie eine Stelle als studentische Hilfskraft in einer Forschungseinrichtung angetreten. Ihnen gefällt der Job, und die Atmosphäre am Lehrstuhl ist nett.

Ihre neuen Kolleginnen und Kollegen, die unterschiedliche Fächer studieren, machen alle einen netten Eindruck. Sie lernen Ihre Kollegen langsam besser kennen, zum Beispiel während gemeinsamer Kaffeepausen. Prinzipiell arbeiten die Hilfskräfte jedoch individuell an einzelnen Aufgaben. Bisher haben Sie sich daher noch nicht enger mit Ihren Kollegen angefreundet.

In einer bestimmten Woche bearbeiten Sie alleine ein kleines Projekt, das Sie innerhalb derselben Woche abschließen sollen. Jana, eine Ihrer Kolleginnen, ist ebenfalls im Büro, um eine andere Aufgabe zu erledigen.

Jana, die weiß, dass Sie neu sind, hilft Ihnen spontan bei Ihrem Projekt: Sie übernimmt einen notwendigen Part, mit dem Sie noch kaum Erfahrung haben, mit dem sie sich aber gut auskennt, nämlich die Arbeit mit einer spezifischen Software. Dabei sind auch ihre inhaltlichen Kenntnisse nützlich. So lernen Sie nicht nur etwas dazu, sondern können sich auch auf die anderen Aufgaben konzentrieren.

Unexpectedness condition

Die Hilfe von Jana kommt für Sie recht unerwartet. Es wird meist einzeln gearbeitet, und auch mit Jana haben Sie bisher noch nicht oft zusammengearbeitet. Wenn Sie sie am Lehrstuhl getroffen haben, kam es bisher noch nicht dazu, dass Jana Ihnen bei Ihrer Arbeit geholfen hat. Sie sind also sehr überrascht, als Jana Ihnen ihre Hilfe anbietet.

Expectedness condition

Die Hilfe von Jana kommt für Sie nicht unerwartet. Es wird zwar meist einzeln gearbeitet, und auch mit Jana haben Sie bisher noch nicht oft zusammengearbeitet. Wenn Sie sie am Lehrstuhl getroffen haben, kam es bisher aber schon häufiger dazu, dass Jana Ihnen bei Ihrer Arbeit geholfen hat. Sie sind also überhaupt nicht überrascht, als Jana Ihnen ihre Hilfe anbietet.

Unexpectedness manipulation check

Bitte beantworten Sie die folgende Frage zu der Situation, die auf der vorherigen Seite beschrieben wurde:

Wie unerwartet kam für Sie die Hilfe von Jana?

- Die Hilfe von Jana kam für mich unerwartet und hat mich überrascht.
- Die Hilfe von Jana kam für mich nicht unerwartet und hat mich nicht besonders überrascht.

BENEFIT UNEXPECTEDNESS AND GRATITUDE EXPRESSIONS

- weiß nicht / keine Angabe

Gratitude expressions

Am nächsten Tag möchten Sie sich bei Jana für ihre Hilfe bedanken, und schreiben ihr eine E-Mail.

Bitte schreiben Sie Ihre E-Mail an Jana in das unten stehende Textfeld.

Bitte schreiben Sie die E-Mail so, wie Sie sie in dieser Situation Ihrer Kollegin Jana tatsächlich schreiben würden.

Gratitude expression intentions

Unten finden Sie einige Sätze. Bitte geben Sie an, inwieweit jeder dieser Sätze das trifft, was Sie in Ihrer Email ausgedrückt haben, bzw. in dieser Situation ausdrücken möchten. Bitte treffen Sie Ihre Antwort spontan. Es gibt keine richtigen oder falschen Antworten.

(1 = trifft es absolut nicht, 9 = trifft es hundertprozentig)

1. Danke, dass du so viel Zeit in diese Aufgabe gesteckt hast.
2. Ich bin sehr froh, dass ich das Projekt rechtzeitig fertigstellen konnte.
3. Danke, durch deine Hilfe habe ich einiges dazugelernt!
4. Für mich war es angenehm und hilfreich, im Team zu arbeiten.
5. Du hast einen großen Anteil an diesem Projekt.
6. Du hast echten Einsatz gezeigt.
7. Ich war beeindruckt, wie gut du mit der Software umgehen konntest.
8. Deine Hilfe hat mir viel von meiner anfänglichen Unsicherheit genommen.

(Other-praising items: 1, 5, 6, 7; Self-benefiting items: 2, 3, 4, 8)

Additional Analyses for Study 4

As a secondary analysis, we subjected the data to a 2×2 mixed-measures ANOVA with condition (unexpectedness vs. expectedness) as a between-subjects factor and gratitude expressions as coded by our research assistant (other-praising vs. self-benefiting) as within-subjects factor. There was a significant effect of expression, $F(1, 243) = 21.664, p < .001$, but no effect of condition, $F(1, 243) = 0.507, p = .477$. Their interaction was nonsignificant, $F(1, 243) = 0.303, p = .582$.

In a 2×2 mixed-measures ANOVA with condition (unexpectedness vs. expectedness) as a between-subjects factor and gratitude expression intentions (other-praising vs. self-benefiting) as within-subjects factor, neither the effect of expression, $F(1, 243) = 0.290, p = .591$, nor the effect of condition, $F(1, 243) = 0.000, p = .990$, or their interaction, $F(1, 243) = 1.132, p = .288$, reached conventional levels of significance.

Additional Analyses for Studies 2-4

In addition to the meta-analysis across experimental studies, we analyzed the compiled data from Studies 2-4. To that end, we *z*-transformed the indices of other-praising and self-benefiting intentions within individual studies, given that the rating items were answered on 7-point scales in Studies 2 and 3, but on 9-point scales in Study 4.

Across the combined data, the effect of experimental manipulations of (un)expectedness on other-praising intentions was significant, $t(937) = 2.563, p = .011, g = 0.167, 95\% CI_g [0.039, 0.295]$. We additionally conducted the analyses preregistered as secondary for individual studies. The effect of our manipulations on self-benefiting intentions was not significant across the combined data from all three experimental studies, $t(937) = 0.746, p = .450, g = 0.049, 95\% CI_g [-0.079, 0.177]$. We additionally subjected the data to a 2×2 mixed-model ANOVA with condition (unexpectedness vs. expectedness) as a between-subjects factor and gratitude expressions intentions (other-praising vs. self-benefiting) as within-subjects factor. Neither the effect of expression, $F(1, 937) = 0.001, p = .972$, nor the effect of condition, $F(1, 937) = 3.298, p = .070$, were significant. Their interaction, however, was significant, $F(1, 937) = 4.880, p = .027, \eta_p^2 = .005, 90\% CI [.000, .016]$.

References

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