The Hidden Costs of Gratitude: Gratitude Amplification Is Costly for Personal and Relationship Well-Being

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Abstract

Expressing gratitude often strengthens relationships, yet many people say "thank you" despite not feeling especially grateful. Although this may seem innocuous, are there hidden costs? We tested the effects of expressed, perceived, and accurate perceptions of gratitude amplification on romantic couples' personal and relational well-being across four dyadic studies ($N_{couples}$ = 639), including lab conversations (Studies 1a and 2a), naturalistically in daily life (Studies 1b and 2b), and over time (Studies 3 and 4). Findings indicated that higher expressed and perceived gratitude amplification did yield personal and interpersonal costs, which were mediated by lower authenticity and responsiveness. Effects could not be accounted for by alternative explanations, including expressers feeling lower relationship satisfaction or less grateful for their partner. Altogether, we identify a hidden cost of gratitude expressions, indicating that amplified gratitude can undermine couples' well-being by compromising authenticity and responsiveness.

Within relationships, partners often engage in kind actions that benefit each other. When people recognize these prosocial actions, they may feel and express gratitude to their partner (Algoe & Haidt, 2009). Gratitude acts as a signal of affiliation, binding people together and enhancing closeness (Algoe, 2012; Algoe et al., 2013, 2020; Algoe & Haidt, 2009; Fischer & Manstead, 2018). Gratitude predicts many relationship benefits, including greater responsiveness, communal strength, relationship maintenance behaviors, and commitment (Gordon et al., 2012; Kubacka et al., 2011; Lambert et al., 2010). However, there are also times when partners do not feel as grateful as they want to, or feel like they should, but express gratitude nonetheless. In other words, people may engage in *gratitude amplification*— expressing more gratitude to a partner than is truly felt. Gratitude amplification falls within the broader framework of amplification as an emotion regulation strategy (Gross, 1998) and is defined as enhancing an expression of emotion to be greater than what one actually feels (Côté & Morgan, 2002). Specifically, we conceive of high gratitude amplification as cases in which expressed gratitude exceeds one's level of felt gratitude (i.e., an over-expression of gratitude). On the other hand, low amplification includes expressions

that closely match felt gratitude or indicate less gratitude than one actually feels (i.e., under-expression). In the current work, we examined the potential costs of gratitude amplification for romantic couples' well-being during in-person expressions of gratitude in the lab, in daily life, and over the long term.

Broadly, people engage in amplification when they wish to express a certain emotion to another person, despite not experiencing that emotion or not to the degree that they desire to (Greenaway et al., 2021). This can occur for a variety of reasons, including both personal and interpersonal motives and varies depending on the context. For instance, in organizational settings, previous work finds that employees amplify positive emotions to achieve personal goals like maintaining a professional image and signaling competence, in addition to interpersonal goals like facilitating smoother team dynamics

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and cooperation (Grandey et al., 2012; Wong et al., 2013). However, in closer bonds between romantic partners, people are strongly motivated to express themselves in ways that will best maintain these cherished relationships; thus, people may amplify to promote stability and preserve satisfaction (Horan & Booth-Butterfield, 2013, 2019). In addition, amplification aids in face-saving (e.g., masking negative feelings or improving a partner's mood), conflict management (e.g., preventing arguments), and emotion management (e.g., maintaining routine positive expressions).

Most research on the consequences of emotion amplification pertains to workplace contexts given the demands of many jobs to perform "service with a smile." In these settings, research has found both benefits (goal attainment, higher perceived competence; Levine & Wald, 2020; Wong et al., 2013) and costs (emotional exhaustion, lower well-being, and lower job satisfaction; Grandey, 2003; Hülsheger & Schewe, 2011) of amplification. However, those who perceive amplified or inauthentic expressions in others tend to view the expresser as less friendly, warm, or sincere (Grandey, 2003; Grandey et al., 2005; Groth et al., 2009). Some research has also uncovered the effects of positive emotion amplification within close relationships and largely finds costs to well-being. For example, when parents amplify positive emotions to their children, they report lower authenticity, lower emotional well-being, poorer relationship quality with a child (Le & Impett, 2016), and greater parental burnout (Lin et al., 2021). Among romantic partners, amplification might also be costly given the importance placed on expressing oneself openly and honestly in these relationships (Le et al., 2022; Reis et al., 2000; Roggensack & Sillars, 2014).

Exaggerating positive expressions to romantic partners is common (e.g., affection, sexual desire; Horan & Booth-Butterfield, 2013; Horne et al., 2022), and yet there has been no research testing the consequences of amplifying gratitude in romantic relationships. As emotions serve different social functions (Sels et al., 2021; Van Kleef, 2009), it is valuable to understand how amplifying gratitude in particular impacts relationships given this is a key emotion for building intimacy in relationships. As a positive, other-oriented emotion, gratitude may be amplified to strengthen romantic bonds, fostering benefits like reciprocity, prosociality, and perceived responsiveness (Algoe, 2012; Algoe et al., 2013, 2008, 2020; Stellar et al., 2017). Thus, the pull to express gratitude can be strong, even if one does not truly feel it, to reap these relational rewards. In the current work, we sought to investigate how amplifying gratitude impacts personal and relational well-being among romantic partners.

The Costs of Amplifying Gratitude

We tested preregistered hypotheses on the effects of *expresser* gratitude amplification, *recipient perceived* gratitude amplification, and *accurate perceptions* of gratitude amplification on couples' personal and relational well-being. Although

these hypotheses concern distinct predictions on which manner of amplification (i.e., expressions, perceptions, or accurate perceptions) is primarily costly, it is possible that these effects may emerge uniquely or collectively. Below, we detail how each may negatively impact relationships.

We first propose that *expresser gratitude amplification* will be costly for the expresser's personal and relational outcomes. When expressers amplify gratitude, they may experience worse outcomes in the moment due to expending greater psychological effort, experiencing emotional exhaustion (Huppertz et al., 2020), and feeling stress over whether their expression was well-received by their partner (Clark et al., 1996). The emotional dissonance involved in amplification may also lead to feelings of incongruence with one's true self (Grandey et al., 2012; Grandey & Gabriel, 2015; Middleton, 1989; Morris & Feldman, 1996), compromising authenticity and contributing to poorer well-being and relationship functioning (Brunell et al., 2010; Wood et al., 2008). Therefore, we propose that expressers will experience poorer well-being when amplifying due to feeling less authentic.

We also posit that expressers' gratitude amplification may be costly for recipients' personal and relational outcomes, independent of whether the amplification is perceived by the recipient. Although recipients typically benefit from warm and sincere gratitude (Leong et al., 2020; Williams & Bartlett, 2015), these features may be lacking when expressers amplify gratitude, limiting its benefits for recipients. Furthermore, recipients may feel as if something is "off" about their partner's behavior, even if they cannot pinpoint what exactly has occurred. Expressers' gratitude amplification may be less effective in fostering feelings of appreciation in recipients, and they may feel more negatively about their partner and the gratitude they received. Therefore, we predict that expressers' gratitude amplification will also have negative consequences for recipients' personal and relationship well-being.

The Costs of Perceiving a Partner's Gratitude Amplification

Beyond expressers' amplification, it may also be costly if recipients *perceive* that their partner amplifies. When perceiving amplified gratitude, recipients may have trouble understanding their partner's true feelings and experience discomfort and stress while deciphering their partner's emotional cues (Clark et al., 1996; Van Kleef, 2016). In the long term, recipients may doubt and discount future gratitude expressions (Lee et al., 2019), undermining trust and reciprocation of future gratitude (Clark et al., 1996). We tested two pathways through which perceived gratitude amplification may be costly for recipients: perceiving the expresser as less authentic and less responsive to one's needs. Amplified expressions may be perceived as fake, practiced, or disingenuous, contributing to an overall sense that the amplifier is

not behaving authentically or true to their feelings (Grandey et al., 2005), which compromises trust, satisfaction, and commitment (Impett et al., 2014; Kernis & Goldman, 2006; Wickham, 2013). Recipients might also experience costs due to feeling that the expresser is being less responsive to their needs (Reis & Shaver, 1988). Although gratitude expressions are usually key signals of responsiveness (Algoe, 2012; Algoe et al., 2013; Algoe & Zhaoyang, 2016; Yoshimura & Berzins, 2017), perceiving amplified gratitude may feel less responsive because recipients feel their contributions have not been truly recognized or valued. Therefore, we predict that recipients will experience costs to personal and relationship well-being when perceiving amplified gratitude due to negative perceptions about the expresser's authenticity and responsiveness.

We also predict that recipients' perceptions of gratitude amplification will be costly for expressers' personal and relational outcomes. Expressers tend to believe expressing gratitude will be more uncomfortable or awkward than the experience actually is, and thus, prefer to express gratitude to others they expect to react positively (Kumar, 2022; Kumar & Epley, 2018). Therefore, if recipients of gratitude perceive the expression as amplified, then expressers may feel negatively given that their gratitude was not well-received or was misinterpreted as disingenuous and feel hesitant in expressing future gratitude. Expressers may also feel like they have been misunderstood by their partner (Reis et al., 2017) and that they missed an opportunity to convey vital appreciation and care. Therefore, we predict that recipient perceptions of gratitude amplification will also have negative consequences for expressers' personal and relationship well-being.

The Costs of Accurate Perceptions of Gratitude Amplification

Finally, it may be the case that gratitude amplification does not affect relationships unless it is *accurately detected* by the recipient. That is, if an expresser amplifies but the recipient does not perceive they are amplifying, expressers might feel relief or happiness that their amplification was not detected by their partner and recipients would be unaware, unaffected, or even benefit from receiving amplified gratitude. Similarly, if the recipient perceives their partner to amplify, but the expresser does not amplify, the recipient's initial impression may be discounted by observing their partner's later genuine feelings and behaviors, sparing costly outcomes. Accordingly, it may be congruence between partners, where the expresser amplifies and the recipient accurately perceives this amplification, that is costly for couples. Supporting the idea of accurate detection of amplification, research suggests that when amplifying positive emotions, true feelings may "leak out" in the expression (Ekman & Friesen, 1969) or partners may simply have greater understanding of each other's emotional states regardless of what is expressed (Colvin et al., 1997).

This accurate detection could be critical for couples' outcomes as some research has found that faking one's emotions is only costly when it is detected by recipients, with no consequences for displays missed by recipients (Groth et al., 2009). Accordingly, we predict that when expressers amplify and recipients accurately perceive this amplification (i.e., expresser and recipient congruence at higher levels of amplification), this will be costly for couples' personal and relationship well-being.

The Current Studies

We tested preregistered hypotheses on the personal and relational costs of *expresser* gratitude amplification, *recipient-perceived* gratitude amplification, and *accurate perceptions* of gratitude amplification. Hypotheses were tested across four dyadic studies using varied methods, including social interactions in the lab (Studies 1a and 2a), naturalistic experiences in couples' daily lives (Studies 1b and 2b), and longitudinally over time (Studies 3 and 4). We also tested the robustness of effects against potential alternative explanations to ensure results were not due to expressers simply being less happy in their relationship to start or differences in their underlying feelings of gratitude. We conclude with an internal meta-analysis to establish reliable estimates of the effects of authenticity and responsiveness as mechanisms of gratitude amplification across studies.

Studies 1a and 2a: The Dyadic Effects of Gratitude Amplification During Lab Social Interactions

In Studies 1a and 2a, we examined the dyadic effects of gratitude amplification on couples' outcomes during gratitude discussions in the lab. These studies used similar protocols, but across independent samples of couples from different countries. In Study 1a, we tested confirmatory hypotheses on the costs of gratitude amplification for expressers based on pilot results from a daily experience study ($N = 178$ individuals; see the supplement). We tested competing hypotheses on whether gratitude amplification was costly *or* beneficial for recipients. In Study 2a, we simultaneously tested the role of expresser gratitude amplification, recipient perceived gratitude amplification, and accurate perceptions of gratitude amplification on couples' outcomes. Control analyses and mediation results for each individual study appear in the supplement. However, we provide a general summary of these results across all studies at the end of the paper. Finally, for all studies in this paper, our preregistered hypotheses, measures, codebooks, R analysis script, and anonymized data (available upon request) can be found on our Open Science Framework (OSF) page: https://osf.io/32d4r/overview?view_only=1fde7ebcfaa2412 1855f7d65121d95b4.

Table 1. Sample Demographics of All Studies.

Demographics	Study 1	Study 2	Study 3	Study 4
Sample size	111 couples (N = 222 individuals)	214 couples (N = 428 individuals)	150 couples (N = 300 individuals)	164 couples (N = 328 individuals)
Age	M = 26.7 years SD = 7.2	M = 35.9 years SD = 13.7	M = 28.0 years SD = 5.8	M = 35.7 years SD = 12.8
Gender or sex	50.0% female 46.8% male	49.8% female 46.7% male	50.7% women 47.0% men	46.3% male 45.7% female
Race or Ethnicity	23.0% Western European, 17.0% South Asian	80.6% White, 7.71% Asian	26.0% Western European, 13.7% East Asian	78.0% White, 8.8% Biracial or Multiracial
Relationship status	76.5% in a relationship, 23.5% married	53.3% in a monogamous marriage, 43.9% in a monogamous relationship	59.3% in a relationship, 28.7% married	53.3% in a monogamous marriage, 40.9% in a monogamous relationship
Relationship length	M = 4.1 years SD = 2.7	M = 15.2 years SD = 12.0	M = 5.1 years SD = 4.5	M = 12.3 years SD = 10.9

Note. Values reported for gender or sex, race or ethnicity, and relationship status represent the category with the highest percentages. Eligibility criteria included couples having to be in a relationship for at least 3 years (Study 1), 1 year (Study 3), or 6 months (Studies 2 and 4). Both same-sex and mixed-sex couples were eligible to participate in all studies. Full breakdowns of all demographics are reported in the supplement.

Method

Samples of 111 couples (Study 1a) and 214 couples (Study 2a) were recruited from two university communities in North America for multi-part studies. Sample sizes were chosen based on the available budget for the projects and to exceed previous sample sizes with romantic couples participating in lab discussions (e.g., Impett et al., 2010; Le et al., 2020). Summary demographics for all studies are in Table 1. Participants first completed a background survey, took part in a lab interaction, and a 2-week daily experience study. In the lab, participants took part in a gratitude conversation where they alternated roles as speaker and listener so both partners had a chance to express and receive gratitude. Participants were instructed to share something they were thankful or appreciative of about their partner that had occurred in the past or is something they are currently grateful for. In Study 1a, each person had 1 minute to speak about their own gratitude. In Study 2a, each person had one and a half minutes to speak, and listeners had one and a half minutes to respond. Measures across all studies in this paper are reported in Table 2. Full details on the demographics and conversation procedure appear in the supplement.

Study 1a Results

Analyses were conducted using R v. 4.1.2 (R Core Team, 2021) and the lme4 (Bates et al., 2015), lmerTest (Kuznetsova et al., 2017), and lavaan packages (Rosseel, 2012). We conducted multilevel modeling with individuals (Level 1) nested within couples (Level 2). We tested random intercept models with fixed slopes and grand-mean centered all predictors. We tested the effects of expresser gratitude amplification on couples' outcomes (Table 3). Participants who amplified gratitude more than others during the gratitude conversation reported lower relationship quality. In addition, the recipient of this gratitude perceived their expression as less authentic, felt more negatively about the gratitude, and felt lower relationship quality.

Study 2a Analyses

In Study 2a, we simultaneously tested hypotheses on the effects of expresser gratitude amplification, recipient perceived gratitude amplification, and accurate perceptions of gratitude amplification (i.e., congruence of expresser and recipient reports) using multilevel response surface analysis (ML-RSA; Nestler et al., 2019). We used ML-RSA rather than dyadic response surface analysis (Schönbrodt et al., 2018) as ML-RSA can account for multiple sources of non-independence in the data and suits models that do not fit the traditional APIM framework. Polynomial multilevel models regressed each expresser and recipient outcome onto five terms: expresser gratitude amplification (X), recipient perceived gratitude amplification (Y), the interaction between expressed and perceived gratitude amplification (XY), a squared term for expresser gratitude amplification (X^2), and a squared term for recipient perceived gratitude amplification (Y^2). Predictors were grand-mean centered on the mean of both expresser gratitude amplification and recipient perceived gratitude amplification. All models specified participants nested in couples with random intercepts and fixed slopes. Analyses were conducted using the RSA package (Schönbrodt & Humberg, 2023) with the ML-RSA function (Nestler et al., 2022) in R.

To test hypotheses concerning the main effect of expresser gratitude amplification, we examined the effect of expresser gratitude amplification (X in Table 4), controlling for all

Table 2. List of Measures by Study.

Measures	Study 1a	Study 1b	Study 2a	Study 2b	Study 3	Study 4
Expresser measures						
Gratitude amplification	1 item: "I expressed more gratitude to my partner than I actually felt," (M = 2.29, SD = 1.65)	1 item: "I expressed more gratitude to my partner than I actually felt" (M = 2.80, SD = 1.75)	1 item: "I expressed more gratitude to my partner than I actually felt" (M = 1.48, SD = 0.98)	1 item: "I expressed more gratitude to my partner than I actually felt" (M = 2.03, SD = 1.51)	1 item: "This week, I expressed gratitude for my partner's efforts to change even when I did not really feel it" (M = 2.57, SD = 1.81)	4 items: e.g., "Sometimes I show more gratitude to my partner than I actually feel" (M = 3.03, SD = 1.64, α = 0.95)
Authenticity	1 item: "I felt authentic (true to myself) in this discussion" (M = 6.33, SD = 0.93; Le & Impett, 2013, 2016)	1 item: "When I expressed gratitude for what my partner did for me, my gratitude was genuine" (M = 5.47, SD = 1.31)	2 items: e.g., "I felt authentic (true to myself)" (M = 6.59, SD = 0.63, r = 0.89; Le & Impett, 2013, 2016)	Not assessed in Study 2b	Not assessed in Study 3	2 items: e.g., "I feel true to myself (i.e., authentic)" (M = 5.96, SD = 0.90, r = 0.68; Le & Impett, 2013, 2016)
Recipient measures						
Perceived gratitude amplification	Not assessed in Study 1a	Not assessed in Study 1b	1 item: "My partner expressed more gratitude to me than they actually felt" (M = 1.70, SD = 1.13)	Not assessed in Study 2b	1 item: "This week, my partner expressed gratitude for my efforts to change when they did not really feel it" (M = 2.57, SD = 1.81)	1 item: "Sometimes my partner shows more gratitude to me than they actually feel" (M = 2.83, SD = 1.47, α = 0.95)
Perceived authenticity	1 item: "When my partner expressed gratitude to me: their gratitude was genuine" (M = 6.36, SD = 1.07)	Not assessed in Study 1b	1 item: "My partner felt authentic (true to themselves)" (M = 6.53, SD = 0.71, r = 0.90)	Not assessed in Study 2b	Not assessed in Study 3	2 items: e.g., "My partner feels true to themselves (i.e., authentic)" (M = 6.12, SD = 0.84, r = 0.61; Le & Impett, 2013, 2016)
Perceived responsiveness	Not assessed in Study 1b	Not assessed in Study 1b	3 items: e.g., "My partner understood me" (M = 6.52, SD = 0.75, α = 0.92; Gable et al., 2012)	Not assessed in Study 2b	3 items: e.g., "This week, my partner understood me" (M = 5.61, SD = 1.30, α = .92)	3 items: e.g., "My partner understands me" (M = 6.10, SD = 1.09, α = 0.87; Gable et al., 2012)
Positive feelings about gratitude	1 item: "When my partner expressed gratitude to me: Their gratitude made me feel good" (M = 6.36, SD = 1.02; Park et al., 2021)	Not assessed in Study 1b	1 item: "My partner's gratitude made me feel good" (M = 6.46, SD = 0.81; Park et al., 2021)	1 item: "My partner's gratitude made me feel good" (M = 4.21, SD = 0.88; Park et al., 2021)	1 item: "Their gratitude made me feel good" (M = 5.28, SD = 1.44; Park et al., 2021)	Not assessed in Study 4
Negative feelings about gratitude	1 item: "When my partner expressed gratitude to me: Their gratitude made me feel bad/uncomfortable/annoyed" (M = 1.67, SD = 1.45; Park et al., 2021)	Not assessed in Study 1b	1 item: "My partner's gratitude made me feel bad/uncomfortable/annoyed" (M = 1.62, SD = 1.21; Park et al., 2021)	1 item: "My partner's gratitude made me feel bad/uncomfortable/annoyed" (M = 1.16, SD = 0.63; Park et al., 2021)	1 item: "Their gratitude made me feel bad/uncomfortable/annoyed" (M = 1.77, SD = 1.33; Park et al., 2021)	Not assessed in Study 4

Table 2. (continued)

Measures	Study 1a	Study 1b	Study 2a	Study 2b	Study 3	Study 4
Measures completed by both partners						
Relationship quality/satisfaction	4 items: e.g., "I felt satisfied with my relationship in this discussion" ($M = 6.48$, $SD = 0.79$, $\alpha = .80$; Impett et al., 2013)	4 items: e.g., "How satisfied did you feel with your relationship" ($M = 5.29$, $SD = 1.23$, $\alpha = .78$; Impett et al., 2013)	4 items: e.g., "I felt satisfied with my relationship" ($M = 6.48$, $SD = 0.83$, $\alpha = 0.95$; Impett et al., 2013)	4 items: e.g., "I felt satisfied with my relationship" ($M = 6.40$, $SD = 0.79$, $\alpha = 0.79$; Impett et al., 2013)	3 items: e.g., "This week, how satisfied were you with your relationship?" ($M = 5.95$, $SD = 1.10$, $\alpha = .86$; Fletcher et al., 2000)	16 items: e.g., "Please indicate the degree of happiness, all things considered, of your relationship" ($M = 81.09$, $SD = 14.17$, $\alpha = 0.96$; Funk & Rogge, 2007)
Conflict	Not assessed in Study 1b	Not assessed in Study 1b	Not assessed in Study 2	Not assessed in Study 2	3 items: e.g., "This week, my partner and I argued" ($M = 2.47$, $SD = 1.38$, $\alpha = .89$)	Not assessed on Study 4
Break-up thoughts	Not assessed in Study 1b	Not assessed in Study 1b	Not assessed in Study 2	Not assessed in Study 2b	4 items: e.g., "Within the last 3 months, how often have you thought about breaking up with your partner?" ($M = 1.75$, $SD = 1.30$, $\alpha = 0.94$)	4 items: e.g., "How often do you think about breaking up with your partner?" ($M = 1.40$, $SD = 0.60$, $\alpha = 0.86$; Impett et al., 2014)
Control measures						
Baseline relationship quality/satisfaction	4 items: e.g., "I feel satisfied with my relationship" ($M = 5.55$, $SD = 1.16$, $\alpha = 0.85$; Impett et al., 2013)	4 items: e.g., "I felt satisfied with my relationship with my partner today" ($M = 5.52$, $SD = 1.18$, $\alpha = 0.79$; Impett et al., 2013)	4 items: e.g., "I feel satisfied with my relationship" ($M = 5.91$, $SD = 1.12$, $\alpha = 0.89$; Impett et al., 2013)	4 items: e.g., "I felt satisfied with my relationship with my partner today" ($M = 6.15$, $SD = 0.99$, $\alpha = 0.79$; Impett et al., 2013)	3 items: e.g., "How satisfied are you with your relationship?" ($M = 6.21$, $SD = 0.83$, $\alpha = 0.77$; Fletcher et al., 2000)	16 items: e.g., "Please indicate the degree of happiness, all things considered, of your relationship" ($M = 81.09$, $SD = 14.17$, $\alpha = 0.96$; Funk & Rogge, 2007)
Appreciation	9 items: e.g., "I appreciate my partner" ($M = 5.15$, $SD = 0.82$, $\alpha = 0.79$; Gordon et al., 2012)	9 items: e.g., "I appreciate my partner" ($M = 5.15$, $SD = 0.82$, $\alpha = 0.79$; Gordon et al., 2012)	9 items: e.g., "I appreciate my partner" ($M = 5.33$, $SD = 0.97$, $\alpha = 0.85$; Gordon et al., 2012)	9 items: e.g., "I appreciate my partner" ($M = 5.33$, $SD = 0.97$, $\alpha = 0.85$; Gordon et al., 2012)	9 items: e.g., "I appreciate my partner" ($M = 5.28$, $SD = 1.01$, $\alpha = 0.84$; Gordon et al., 2012)	9 items: e.g., "I appreciate my partner" ($M = 5.10$, $SD = 0.90$, $\alpha = 0.81$; Gordon et al., 2012)
Felt gratitude	1 item: "How much did YOU feel the following emotions during this discussion with your partner? Grateful" ($M = 6.62$, $SD = 0.64$)	1 item: "I felt grateful for what my partner did for me" ($M = 5.39$, $SD = 1.31$)	1 item: "How much did you feel the following emotions with your partner: grateful" ($M = 4.52$, $SD = 0.78$)	Not assessed in Study 2b	1 item: "How grateful did you feel toward your partner for their efforts to change this week?" ($M = 5.07$, $SD = 1.51$)	Not assessed in Study 4

Note. The majority of measures were rated on a 7-point Likert-type scale. The following measures were rated on 5-point scales: felt gratitude in Study 2a, feelings about the gratitude in Study 2b, and break-up thoughts in Study 4. Relationship satisfaction in Study 4 was measured on a variety of scale points as used in the original paper (Funk & Rogge, 2007). Control measures for baseline relationship quality/satisfaction were measured at the start of the lab session (Study 1a and Study 2a), at the daily level (Studies 1b and 2b), or at an initial background survey or at Time 1, prior to the other parts of the study (Study 3 and 4). All control measures for relationship quality/satisfaction were uniquely assessed from relationship quality/satisfaction as an outcome (with the exception of Study 4). The control measures for appreciation were measured at an initial background survey or at Time 1, prior to the other parts of the study (Studies 1a, 1b, 2a, 2b, 3, and 4). The control measures for felt gratitude were assessed at the daily or weekly level (Study 1a and 3) or after the gratitude conversation in the lab (Study 1b and 2).

Table 3. The Dyadic Effects of Expressers' Gratitude Amplification in a Lab Gratitude Conversation.

Outcomes	*b*	*SE*	*p*
Expresser outcomes			
Expresser authenticity	−0.066	0.037	.072
Expresser relationship quality	**−0.094**	**0.029**	**.001**
Recipient outcomes			
Recipient perceived authenticity	**−0.085**	**0.041**	**.040**
Recipient positive feelings	−0.065	0.039	.098
Recipient negative feelings	**0.176**	**0.060**	**.004**
Recipient relationship quality	**−0.073**	**0.029**	**.015**

Note. Values include unstandardized multilevel coefficients, *p*-values, and 95% confidence intervals for the estimate. Bolded values are significant at *p* < 0.05.

Table 4. Concurrent Effects of Expresser Gratitude Amplification and Recipient Perceived Gratitude Amplification.

Predictor	Expresser authenticity			Recipient perceived authenticity			Recipient perceived responsiveness		
	b	*SE*	*p*	*b*	*SE*	*p*	*b*	*SE*	*p*
Intercept	**6.397**	**0.033**	**<.001**	**6.531**	**0.037**	**<.001**	**6.470**	**0.044**	**<.001**
X	**−0.616**	**0.047**	**<.001**	−0.087	0.051	.089	−0.100	0.057	.082
Y	−0.046	0.042	.275	**−0.391**	**0.046**	**<.001**	**−0.449**	**0.051**	**<.001**
X^2	**0.126**	**0.014**	**<.001**	0.024	0.015	.118	0.019	0.017	.265
XY	−0.014	0.021	.519	**0.070**	**0.023**	**.003**	**0.052**	**0.027**	**.049**
Y^2	0.009	0.013	.469	0.009	0.014	.530	**0.055**	**0.016**	**.001**

Predictor	Expresser relationship quality			Recipient relationship quality			Recipient positive feelings			Recipient negative feelings		
	b	*SE*	*p*	*b*	*SE*	*p*	*b*	*SE*	*p*	*b*	*SE*	*p*
Intercept	**5.818**	**0.047**	**<.001**	**5.881**	**0.107**	**<.001**	**6.346**	**0.048**	**<.001**	**1.628**	**0.073**	**<.001**
X	**−0.659**	**0.065**	**<.001**	**−0.100**	**0.038**	**.009**	**−0.237**	**0.067**	**<.001**	**0.205**	**0.103**	**.047**
Y	−0.035	0.058	.547	**−0.179**	**0.038**	**<.001**	**−0.411**	**0.060**	**<.001**	**0.308**	**0.092**	**.001**
X^2	**0.125**	**0.019**	**<.001**	**0.055**	**0.022**	**.013**	**0.054**	**0.020**	**.007**	−0.047	0.030	.124
XY	−0.046	0.030	.126	−0.010	0.022	.654	0.023	0.031	.458	**−0.136**	**0.047**	**.004**
Y^2	−0.012	0.018	.501	0.023	0.024	.334	**0.066**	**0.019**	**<.001**	0.026	0.028	.356

Note. Values include unstandardized multilevel coefficients, standard errors, and *p*-values for the polynomial coefficients, including the intercept, *X*, *Y*, X^2, *XY*, and Y^2. The slopes $\hat{\alpha}_1$, $\hat{\alpha}_2$, $\hat{\alpha}_3$, $\hat{\alpha}_4$, and $\hat{\alpha}_5$ can be found in Table S2 in the Supplemental Material. Significant effects are bolded. *X* = expresser gratitude amplification, *Y* = recipient perceived gratitude amplification.

other variables in the multilevel polynomial models, on couples' outcomes. To test hypotheses concerning the main effect of recipient perceived gratitude amplification, we examined the effect of recipient perceived gratitude amplification (*Y* in Table 4), controlling for all other variables in the multilevel polynomial models, on couples' outcomes. To test hypotheses concerning the role of accurate perceptions of gratitude amplification, we examined the significance of five slopes ($\hat{\alpha}_1$, $\hat{\alpha}_2$, $\hat{\alpha}_3$, $\hat{\alpha}_4$, $\hat{\alpha}_5$) on the response surface as derived from the multilevel polynomial models. The key slopes were $\hat{\alpha}_1$ and $\hat{\alpha}_4$. We examined the $\hat{\alpha}_4$ slope along the line of congruence where expresser reports of gratitude

amplification match recipient perceptions of gratitude amplification. This tells us whether congruence in partners' reports, rather than incongruence, is predictive of outcomes. In addition, the $\hat{\alpha}_1$ slope determines whether there is a mean-level effect of combined expresser and recipient gratitude amplification, such that congruence at higher (or lower) levels of gratitude amplification predicts outcomes. Together, this information is used to determine whether a broad congruence pattern exists, supporting hypotheses on the role of accuracy. Specifically, the following pattern would denote a congruence (accuracy) effect for positive outcomes (e.g., relationship quality): $\hat{\alpha}_1 < 0$, $\hat{\alpha}_2 = 0$, $\hat{\alpha}_3 = 0$, $\hat{\alpha}_4 < 0$, $\hat{\alpha}_5 = 0$,

whereas the following pattern would denote a congruence (accuracy) effect for negative outcomes (e.g., negative feelings about the gratitude): $\widehat{\alpha}_1 > 0$, $\widehat{\alpha}_2 = 0$, $\widehat{\alpha}_3 = 0$, $\widehat{\alpha}_4 < 0$, $\widehat{\alpha}_5 = 0$. Given that these parameters should not be interpreted in isolation (see Humberg et al., 2019), we evaluated results based on whether the full set of coefficients aligned with the pattern of effects required to infer accuracy.

Study 2a Results

We found support for the main effects of both expresser gratitude amplification and recipient perceived gratitude amplification on couples' outcomes (Table 4). More specifically, higher expresser gratitude amplification during a gratitude conversation predicted lower expresser and recipient relationship quality, lower expresser authenticity, lower recipient positive feelings about the gratitude, and higher recipient negative feelings about the gratitude. Higher recipient perceived gratitude amplification predicted lower recipient relationship quality, lower recipient perceived authenticity, lower recipient perceived responsiveness, lower recipient positive feelings about the gratitude, and higher recipient negative feelings about the gratitude, but did not predict any expresser outcomes. Accurate perceptions of gratitude amplification did not predict either partner's outcomes (i.e., there were no outcomes for which the $\widehat{\alpha}_1$-$\widehat{\alpha}_5$ slopes fit the hypothesized patterns: see the supplement for full results).

Summary

Across Studies 1a and 2a, we identified costs of gratitude amplification during face-to-face interactions between partners. Amplifying gratitude was associated with both expresser and recipient poorer relationship outcomes and recipients feeling worse about the gratitude they received. Perceiving amplified gratitude was costly, but only for this perceiver. Finally, we did not find evidence that accuracy mattered, suggesting that simply expressing or perceiving higher gratitude amplification is sufficient for personal and relational costs.

Studies 1b and 2b: The Dyadic Effects of Expresser Gratitude Amplification in Daily Life

After the lab conversation, the same samples of couples completed diary surveys for 14 consecutive days. In Study 1b, couples reported on gratitude amplification in the context of making compromises or sacrifices. Specifically, each evening, participants answered four questions asking the extent to which their own needs, desires, or interests conflicted with their partner's needs, desires, or interests. If they indicated a conflict had occurred, they were asked to indicate how it was resolved. We analyzed data on days when participants

indicated that either a compromise had occurred (354 reports) or that their partner had sacrificed what they wanted (95 reports) because these are situations where people may intentionally incur personal costs to benefit their partner.[1] Therefore, these are contexts in which people likely amplify gratitude to recognize their partner's costly acts. In Study 2b, couples reported on gratitude amplification in a more general context. Each evening, participants answered three questions asking whether they told their partner about something the partner did that they liked, appreciated, or were grateful for (expressed gratitude) *and* whether their partner told them something they did that their partner liked, appreciated, or were grateful for (perceived gratitude). Using these items, we analyzed data on days when one individual reported expressing gratitude and their partner reported perceiving this gratitude, which occurred in 37% of all diaries.

Studies 1b and 2b Analyses

In both studies, we conducted multilevel modeling with individuals (Level 1) nested within couples (Level 2) with diaries crossed between partners. We tested random intercept models with fixed slopes.[2] We simultaneously tested both person-mean centered and grand-mean centered predictors to distinguish within-person (i.e., higher gratitude amplification compared to own average) and between-person (i.e., higher gratitude amplification across the diary as compared to other people) effects. Recipient perceptions of gratitude amplification were not measured in the current studies.

Study 1b Results

We tested daily and chronic effects of expressers' gratitude amplification on couples' personal and relational outcomes in the context of compromises or partner sacrifices (Table 5). On days when expressers amplified their gratitude more than usual (i.e., within-person effect), they reported lower relationship quality for the compromise or sacrifice. Expressers who amplified gratitude more than others across the diary (i.e., between-person effect) felt that they expressed themselves less authentically and felt lower relationship quality for the compromises or sacrifices. Expresser gratitude amplification, at the daily level or on average across days, was not significantly related to recipient relationship quality.

Study 2b Results

We again tested daily and chronic effects of expressers' gratitude amplification on couples' personal and relational outcomes in the context of typical gratitude expressions (Table 5). On days when expressers amplified their gratitude more than usual (i.e., within-person effect), both they and their partner felt lower relationship quality.[3] In addition, for expressers who amplified gratitude more than others across the diary (i.e., between-person effect), both they and their partner felt lower

Table 5. The Dyadic Effects of Gratitude Amplification in Daily Life.

Outcomes	Study 1b			Study 2b		
	b	SE	p	b	SE	p
Within-person effects						
Expresser authenticity	−0.067	0.059	.255	—		
Expresser relationship quality	**−0.107**	**0.047**	**.023**	**−0.077**	**0.011**	**<.001**
Recipient relationship quality	0.001	0.054	.985	**−0.049**	**0.016**	**.002**
Recipient positive feelings	—			−0.013	0.012	.299
Recipient negative feelings	—			0.001	0.010	.954
Between-person effects						
Expresser authenticity	**−0.130**	**0.054**	**.018**	—		
Expresser relationship quality	**−0.268**	**0.049**	**<.001**	**−0.237**	**0.025**	**<.001**
Recipient relationship quality	−0.036	0.051	.484	**−0.072**	**0.034**	**.034**
Recipient positive feelings	—			0.018	0.034	.597
Recipient negative feelings	—			**0.054**	**0.021**	**.010**

Note. Values include unstandardized multilevel coefficients, *p*-values, and 95% confidence intervals for the estimate. Bolded values are significant at *p* < 0.05. — indicates that the variable was not included in that study.

relationship quality and their partner felt more negatively about the gratitude they received.

Summary

Across Studies 1b and 2b, we identified costs of the daily and chronic use of gratitude amplification during couples' typical day-to-day lives. On specific days when expressers amplified gratitude more than they usually do, there were consistent costs for their own relationship outcomes, with some evidence for their partner's costs as well. In addition, chronic use of gratitude amplification across daily life was associated with costs for both partners.

Study 3: The Short- and Long-Term Effects of Expressed and Perceived Gratitude Amplification for Change Efforts

In the previous studies, we identified consistent costs of gratitude amplification, but these effects were all momentary or in daily life. Accordingly, we wanted to test whether these costs persist over time, such that gratitude amplification could promote long-term unhappiness or issues within the relationship. In Study 3, we tested the effects of expresser gratitude amplification, recipient perceived gratitude amplification, and accurate perceptions of gratitude amplification both concurrently (averaged across eight weekly diaries) and over time (at a 6-month follow-up) in the context of requests for partner change. Making a change request to a partner can be a sensitive and vulnerable topic where people may amplify gratitude to help soften the blow of the initial request and to encourage a partner's long-term effort and motivation to change (Sisson et al., 2024).

Method

A sample of 150 couples (*N* = 300) was recruited from communities in North America through online advertisements for a multi-part online study. This sample size was predetermined based on available resources and past research examining relationship outcomes using repeated measures designs (e.g., 122 couples; Impett et al., 2019). In an initial survey, participants were asked to list three key aspects they wanted their partner to change. Research assistants selected a requested change for each participant that was highly desired by the requesting partner but not identified as a key goal changing partners had for themselves to ensure that changes were indeed requested and not mutual goals (Overall et al., 2006). Each participant acted as both a changing and requesting partner and was informed which requested change they would be completing the study about via phone calls from the research team. Participants first completed a background survey, followed by eight consecutive weekly surveys, and a final follow-up survey 6 months later. Completion and retention rates were high with 91% of weekly surveys (*N* = 2,178 reports) at least partially completed and 82% of participants (*N* = 245) completing the follow-up survey.

Analyses

As described in Study 2, we conducted multilevel response surface analysis (Nestler et al., 2019) to test the effects of expresser gratitude amplification, recipient perceived gratitude amplification, and accurate perceptions of gratitude amplification on couples' outcomes concurrently and longitudinally. Concurrent models examined the between-person association between gratitude amplification and outcomes on average across the eight weekly diaries. Models specified participants nested in couples with weeks crossed between

Table 6. Concurrent Effects of Expresser Gratitude Amplification and Recipient Perceived Gratitude Amplification.

Predictor	Expresser relationship quality			Recipient relationship quality			Recipient perceived responsiveness		
	b	*SE*	*p*	*b*	*SE*	*p*	*b*	*SE*	*p*
Intercept	**5.854**	**0.019**	**<.001**	**5.830**	**0.074**	**<.001**	**5.500**	**0.081**	**<.001**
X	**−0.052**	**0.019**	**.007**	0.021	0.020	.280	−0.006	0.024	.794
Y	−0.005	0.020	.812	**−0.073**	**0.021**	**<.001**	**−0.062**	**0.026**	**.015**
X²	**0.025**	**0.007**	**<.001**	−0.003	0.007	.624	0.001	0.009	.938
XY	0.008	0.006	.189	0.005	0.005	.377	0.009	0.007	.221
Y²	−0.001	0.008	.925	**0.026**	**0.008**	**<.001**	**0.028**	**0.010**	**.003**

Predictor	Expresser conflict			Recipient conflict			Recipient positive feelings			Recipient negative feelings		
	b	*SE*	*p*	*b*	*SE*	*p*	*b*	*SE*	*p*	*b*	*SE*	*p*
Intercept	**2.621**	**0.087**	**<.001**	**2.637**	**0.086**	**<.001**	**4.978**	**0.086**	**<.001**	**1.889**	**0.068**	**<.001**
X	**0.080**	**0.026**	**.003**	0.051	0.026	.054	**−0.080**	**0.030**	**.007**	0.034	0.027	.215
Y	**0.094**	**0.028**	**<.001**	**0.167**	**0.028**	**<.001**	**−0.094**	**0.031**	**.003**	**0.295**	**0.029**	**<.001**
X²	−0.017	0.009	.064	−0.012	0.009	.219	**0.029**	**0.010**	**.005**	−0.013	0.010	.181
XY	−0.006	0.008	.496	−0.008	0.008	.333	−0.002	0.009	.796	0.011	0.009	.178
Y²	**−0.027**	**0.011**	**.012**	**−0.033**	**0.011**	**.002**	**0.061**	**0.012**	**<.001**	−0.019	0.011	.079

Note. Values include unstandardized multilevel coefficients, standard errors, and *p*-values for the polynomial coefficients, including the intercept, *X*, *Y*, *X²*, *XY*, and *Y²*. The slopes $\hat{\alpha}_1$, $\hat{\alpha}_2$, $\hat{\alpha}_3$, $\hat{\alpha}_4$, and $\hat{\alpha}_5$ can be found in Table S4 in the Supplemental Material. Significant effects are bolded. *X* = expresser gratitude amplification, *Y* = recipient perceived gratitude amplification.

partners. Longitudinal models examined the association between gratitude amplification aggregated across the diaries on partners' outcomes 6 months later, controlling for these outcomes assessed at the background survey. All models included random intercepts and fixed slopes. We analyzed data only from weeks that expressers reported that their partner had put at least some effort into making change (i.e., a score of 2 or higher on the item "This week, my partner has put effort into making this change"). This helps ensure that any costs are not due to expressers or recipients reporting lower well-being simply because the recipient did not make any effort to change that week.

Results

Overall, we found effects consistent with the main effects of both expresser gratitude amplification and recipient perceived gratitude amplification on couples' outcomes (Table 6). More specifically, expressers who amplified their gratitude more on average across the weekly diaries reported lower relationship quality, higher conflict, and their partner felt less positively about the gratitude. Recipients who perceived higher gratitude amplification across the weekly diaries reported lower relationship quality, perceived the expresser as less responsive, felt more negatively and less positively about the gratitude, and both they and their partner reported higher conflict. Accurate perceptions of gratitude amplification did not predict either partner's outcomes (i.e., there were no outcomes for which the $\hat{\alpha}_1$-$\hat{\alpha}_5$ slopes fit the hypothesized patterns: see the supplement for full results).

Finally, we tested whether there were long-term costs of gratitude amplification on outcomes 6 months later, controlling for these outcomes at baseline (Table 7). Expresser gratitude amplification was not a significant predictor of any long-term outcomes. Higher recipient perceived gratitude amplification on average across the weekly diaries predicted residual increases in expresser break-up thoughts 6 months later. Contrary to expectations, recipient perceived gratitude amplification predicted residual decreases in their own break-up thoughts 6 months later. Again, accurate perceptions of gratitude amplification did not predict either partner's long-term outcomes (i.e., there were no outcomes for which the $\hat{\alpha}_1$-$\hat{\alpha}_5$ slopes fit the hypothesized patterns: see the supplement for full results).

Study 4: The Short and Long-Term Effects of Expressed and Perceived Gratitude Amplification During Goal Pursuit

We conducted another test to help elucidate the longitudinal effects from Study 3. Specifically, we tested the effects of expressed gratitude amplification, perceived gratitude amplification, and accurate perceptions of gratitude amplification on couples' outcomes concurrently and 3 months later. We also present mediation models examining the mechanisms of gratitude amplification given that we had multiple repeated assessments over time to establish directionality in these models. The concurrent mediation models

Table 7. Longitudinal Effects of Expresser Gratitude Amplification and Recipient Perceived Gratitude Amplification.

Predictor	Expresser relationship quality			Recipient relationship quality			Expresser break-up thoughts			Recipient break-up thoughts		
	b	SE	p	b	SE	p	b	SE	p	b	SE	p
Intercept	**6.088**	**0.076**	**<.001**	**6.011**	**0.074**	**<.001**	**1.797**	**0.089**	**<.001**	**1.798**	**0.072**	**<.001**
X	−0.009	0.013	.520	−0.010	0.013	.480	−0.010	0.013	.449	0.020	0.011	.078
Y	0.007	0.014	.626	−0.026	0.014	.068	**0.049**	**0.013**	**<.001**	**−0.034**	**0.012**	**.004**
X^2	0.006	0.005	.187	−0.001	0.005	.777	0.001	0.005	.749	−0.006	0.004	.119
XY	0.003	0.005	.530	−0.004	0.005	.383	−0.002	0.004	.554	0.004	0.004	.312
Y^2	**−0.014**	**0.006**	**.013**	**0.019**	**0.006**	**<.001**	−0.004	0.005	.440	0.002	0.005	.720

Note. Values include unstandardized multilevel coefficients, standard errors, and *p*-values for the polynomial coefficients, including the intercept, *X*, *Y*, X^2, *XY*, and Y^2. The slopes $\hat{\alpha}_1$, $\hat{\alpha}_2$, $\hat{\alpha}_3$, $\hat{\alpha}_4$, and $\hat{\alpha}_5$ can be found in Table S5 in the Supplemental Material. Significant effects are bolded. *X* = expresser gratitude amplification, *Y* = recipient perceived gratitude amplification.

across all studies are presented in the internal meta-analysis. This study was conducted in the context of partners working toward desired goals. We believed this would be an opportunity for partners to amplify gratitude given that gratitude can facilitate motivation for personal growth and development (Armenta et al., 2017).

Method

A sample of 164 couples (*N* = 328) was recruited from the online recruitment platform Research Match for a four-wave longitudinal study. The sample size was predetermined based on power analyses conducted for other analyses (i.e., Actor-Partner Interdependence Model; Ackerman & Kenny, 2016). Either the first author or a research assistant met with both partners on a brief Zoom call to detail the purpose, procedure, scheduling, and compensation for the study. The calls also allowed couples to meet and talk with the research team to encourage their interest and retention in the study (Ruan et al., 2024) and helped us ensure data quality (e.g., guarding against participants pretending to be in a relationship). After the call, participants completed four surveys online over 3 months: Time 1, Time 2 was 45 days later, and Time 3 was another 45 days later. The fourth survey was completed 1 week after Time 3 but is not included in the current analyses given that we were interested in understanding longer-term changes. Retention was 89% (*N* = 291) at Time 2 (T2) and 80% (*N* = 263) at Time 3 (T3).

Analyses

As in Studies 2 and 3, we conducted multilevel response surface analysis (Nestler et al., 2019) to test the effects of expresser gratitude amplification, recipient perceived gratitude amplification, and accurate perceptions of gratitude amplification on couples' outcomes concurrently and longitudinally. Concurrent models tested the effect of expresser reports, recipient perceptions, and accurate perceptions of gratitude amplification on outcomes with all variables measured at T1. Longitudinal models tested the effect of expresser reports, recipient perceptions, and accurate perceptions of gratitude amplification from T1 on outcomes at T3, controlling for these outcomes at T1. For all models, participants were nested in couples, and we specified random intercepts and fixed slopes. Multilevel mediation analyses were conducted using the Monte Carlo Method for Assessing Mediation (MCMAM) to generate a 95% confidence interval (CI) for the indirect effect using 20,000 bootstrapped samples (Selig & Preacher, 2008). Mediation occurred when the 95% CI did not include zero.

Results

Overall, we found effects consistent with the main effects of both expresser gratitude amplification and recipient perceived gratitude amplification on couples' outcomes (Table 8). Concurrently, higher expresser gratitude amplification predicted lower expresser relationship quality, lower expresser authenticity and lower recipient perceived authenticity, lower recipient perceived responsiveness, and higher expresser and recipient break-up thoughts. Higher recipient perceived gratitude amplification predicted lower recipient relationship quality, lower recipient perceived authenticity, lower recipient perceived responsiveness, and higher recipient break-up thoughts. Accurate perceptions of gratitude amplification did not predict either partner's outcomes (i.e., there were no outcomes for which the $\hat{\alpha}_1$-$\hat{\alpha}_5$ slopes fit the hypothesized patterns: see the Supplemental Material for full results).[4]

Next, we tested effects of expresser gratitude amplification and recipient perceived gratitude amplification on outcomes longitudinally at T3, controlling for these outcomes at T1. Overall, we found some support for the costs of both expresser gratitude amplification and recipient perceived gratitude amplification on long-term outcomes (Table 9). More specifically, higher expresser gratitude amplification predicted residual decreases in recipient perceived authenticity 3 months later. Higher recipient perceived gratitude amplification also predicted residual decreases in recipient

Table 8. Concurrent Effects of Expresser Gratitude Amplification and Recipient Perceived Gratitude Amplification.

Predictor	Expresser authenticity			Expresser relationship quality			Expresser break-up thoughts		
	b	SE	p	b	SE	p	b	SE	p
Intercept	**5.727**	**0.090**	**<.001**	**79.318**	**1.319**	**<.001**	**1.391**	**0.061**	**<.001**
X	**−0.164**	**0.037**	**<.001**	**−2.475**	**0.444**	**<.001**	**0.059**	**0.021**	**.005**
Y	−0.034	0.036	.356	−0.876	0.449	.052	0.028	0.021	.195
X^2	**0.052**	**0.022**	**.017**	0.319	0.254	.209	0.005	0.012	.705
XY	−0.034	0.021	.098	0.099	0.253	.696	0.004	0.012	.713
Y^2	**0.053**	**0.023**	**.024**	**0.648**	**0.271**	**.017**	−0.005	0.013	.678

Predictor	Recipient perceived authenticity			Recipient perceived responsiveness			Recipient relationship quality			Recipient break-up thoughts		
	b	SE	p	b	SE	p	b	SE	p	b	SE	p
Intercept	**5.953**	**0.081**	**<.001**	**5.881**	**0.107**	**<.001**	**80.314**	**1.332**	**<.001**	**1.512**	**0.062**	**<.001**
X	**−0.103**	**0.033**	**.002**	**−0.100**	**0.038**	**.009**	−0.832	0.446	.064	**0.053**	**0.021**	**.012**
Y	**−0.151**	**0.033**	**<.001**	**−0.179**	**0.038**	**<.001**	**−2.235**	**0.452**	**<.001**	**0.072**	**0.021**	**.001**
X^2	0.011	0.020	.588	**0.055**	**0.022**	**.013**	0.253	0.255	.322	**−0.025**	**0.012**	**.035**
XY	−0.036	0.019	.056	−0.010	0.022	.654	−0.410	0.255	.108	0.005	0.012	.683
Y^2	**0.069**	**0.021**	**.001**	0.023	0.024	.334	0.181	0.272	.507	−0.021	0.013	.102

Note. Values include unstandardized multilevel coefficients, standard errors, and p-values for the polynomial coefficients, including the intercept, X, Y, X^2, XY, and Y^2. The slopes $\widehat{\alpha}_1$, $\widehat{\alpha}_2$, $\widehat{\alpha}_3$, $\widehat{\alpha}_4$, and $\widehat{\alpha}_5$ can be found in Table S6 in the Supplemental Material. Significant effects are bolded. X = expresser gratitude amplification, Y = recipient perceived gratitude amplification.

perceived authenticity 3 months later. Again, accurate perceptions of gratitude amplification did not predict either partner's outcomes (i.e., there were no outcomes for which the $\widehat{\alpha}_1$-$\widehat{\alpha}_5$ slopes fit the hypothesized patterns: see the Supplemental Material for full results).

We also tested a set of longitudinal mediation models. For the expresser models, we tested lower expresser authenticity as a mediator between expresser gratitude amplification and expresser outcomes. For the recipient models, we tested lower recipient perceived authenticity and lower recipient perceived responsiveness as simultaneous mediators between recipient perceived gratitude amplification and recipient outcomes. The variables included predictors assessed at T1, mediators at T2, and outcomes at T3. Mediators and outcomes assessed at T1 were included in the models as covariates so estimates would reflect residual change over time.

Expresser gratitude amplification at T1 predicted residual decreases in expresser authenticity at T2 ($b = −.087$, $p = .001$), but did not predict changes in expresser relationship quality or break-up thoughts at T3 directly (ps > .200) or indirectly via lower authenticity (all indirect effect 95% CIs included 0). Recipient perceived gratitude amplification at T1 predicted residual decreases in recipient perceived responsiveness at T2 ($b = −.105$, $p < .001$), but not perceived authenticity at T2 ($b = −.005$, $p = .852$). Recipient perceived gratitude amplification at T1 also did not directly predict recipient relationship quality at T3 ($b = −1.800$, $p = .076$) or break-up thoughts at T3 ($b = .026$, $p = .147$).

Recipient perceived gratitude amplification at T1 indirectly predicted residual increases in break-up thoughts via lower perceived responsiveness (indirect effect 95% CI [0.005, 0.021]).

Summary

Across Studies 3 and 4, we identified concurrent and long-term costs of expressed and perceived gratitude amplification. Concurrent effects replicated earlier findings, in that amplifying gratitude was costly for both partners, whereas perceiving amplified gratitude was costly mainly for the self. There were some long-term costs of gratitude amplification for expressers and recipients. Although the effects we identified were limited, many in the broader set of results were in the predicted direction. It is possible that increasing power may yield more stable estimates of the long-term effects of gratitude amplification. Finally, none of the concurrent or long-term costs were dependent on recipients' accurately perceiving their partner's amplification; simply expressing or perceiving amplification was sufficient for yielding short- and long-term costs.

Testing Alternative Explanations Across Studies

Across all studies, we conducted a rigorous set of control analyses in separate models to rule out potential alternative

Table 9. Longitudinal Effects of Expresser Gratitude Amplification and Recipient Perceived Gratitude Amplification.

Predictor	Expresser authenticity			Expresser relationship quality			Expresser break-up thoughts		
	b	SE	p	b	SE	p	b	SE	p
Intercept	**5.907**	**0.089**	**<.001**	**67.613**	**2.968**	**<.001**	**1.306**	**0.052**	**<.001**
X	−0.039	0.035	.255	−1.516	1.412	.185	0.021	0.019	.277
Y	−0.026	0.033	.443	0.121	1.094	.912	−0.015	0.019	.434
X^2	0.012	0.019	.548	0.427	0.631	.499	−0.000	0.011	.964
XY	−0.005	0.019	.812	0.662	0.625	.290	0.020	0.011	.073
Y^2	−0.006	0.022	.794	0.401	0.681	.557	−0.006	0.012	.640

Predictor	Recipient perceived authenticity			Recipient perceived responsiveness			Recipient relationship quality			Recipient break-up thoughts		
	b	SE	p	b	SE	p	b	SE	p	b	SE	p
Intercept	**5.884**	**0.083**	**<.001**	**5.866**	**0.101**	**<.001**	**66.465**	**2.957**	**<.001**	**1.300**	**0.053**	**<.001**
X	**−0.085**	**0.033**	**.012**	−0.052	0.036	.153	−1.304	1.088	.232	−1.052	0.019	.584
Y	**−0.072**	**0.034**	**.036**	−0.065	0.038	.093	−2.188	1.129	.054	0.018	0.020	.357
X^2	**0.052**	**0.019**	**.007**	0.017	0.021	.430	1.037	0.628	.100	−0.006	0.011	.568
XY	−0.009	0.019	.630	0.002	0.021	.930	−0.477	0.625	.446	0.000	0.011	.970
Y^2	0.007	0.021	.735	−0.023	0.022	.311	0.303	0.673	.653	0.012	0.012	.300

Note. Values include unstandardized multilevel coefficients, standard errors, and *p*-values for the polynomial coefficients, including the intercept, X, Y, X^2, XY, and Y^2. The slopes $\widehat{\alpha}_1$, $\widehat{\alpha}_2$, $\widehat{\alpha}_3$, $\widehat{\alpha}_4$, and $\widehat{\alpha}_5$ can be found in Table S7 in the Supplemental Material. Significant effects are bolded. X = expresser gratitude amplification, Y = recipient perceived gratitude amplification.
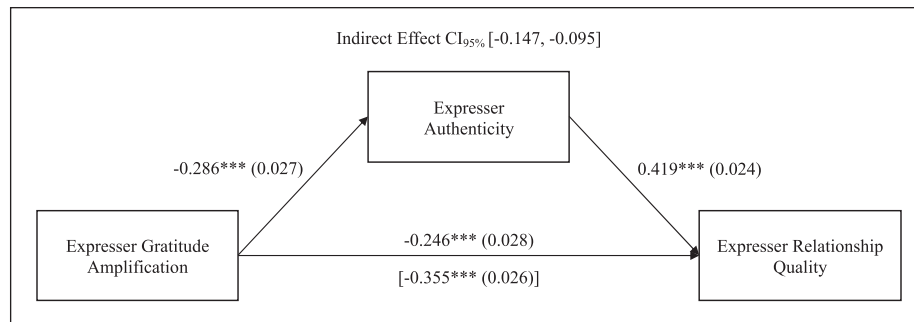
explanations.[5] First, we sought to determine that our effects could not be explained by the *expresser's general relationship quality*, given that expressers who are generally unhappy in their relationship could be more likely to amplify their gratitude or couples may have poorer outcomes. Second, we tested whether our effects were robust against the *expresser's general appreciation for the recipient*, given that expressers who are not appreciative of their partner in general could be more likely to amplify their gratitude or couples may have poorer outcomes. Third, we tested whether our results held when controlling for the *expresser's level of felt gratitude* in the moment when they shared their gratitude. This was done to determine results could not be attributed to expressers who simply felt ungrateful for the benefit they received, and therefore amplified their gratitude or couples reported poorer outcomes. The control measures can be found in Table 2 and detailed control results per individual study are in the Supplemental Material. In summary, expresser relationship quality, appreciation, and felt gratitude, accounted for some, but not all, of the short and long-term costs of expresser gratitude amplification and recipient perceived gratitude amplification. For expresser gratitude amplification, the intrapersonal costs remained robust, as well as some interpersonal costs. For perceived gratitude amplification, the intrapersonal, but not interpersonal, costs were robust. In other words, amplifying gratitude was costly for *both partners*, with these costs experienced largely in the moment. However, perceiving amplified gratitude was also costly, but only for the person

who held this bias, with these costs enduring in the moment and over time.
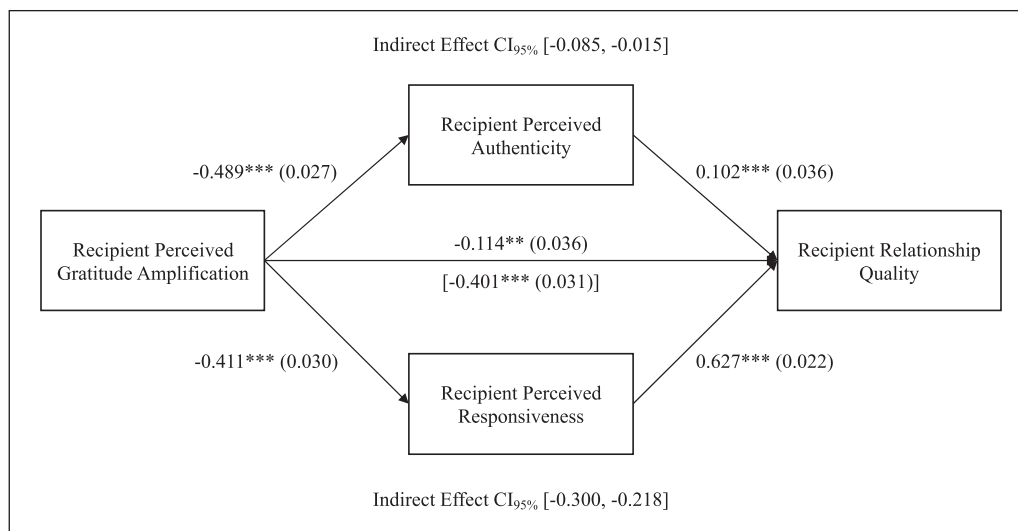
Internal Meta-Analysis Across Studies

Finally, we conducted an internal meta-analysis to generate a comprehensive, reliable summary of our concurrent results across all samples, measures, and methods. We chose meta-analysis as opposed to other analytic techniques (e.g., integrative data analysis) given that it accommodates variation in measurement across studies (Cooper & Patall, 2009). We first tested a meta-analytic mediation model (Figure 1) from expresser gratitude amplification to expresser relationship quality via expresser authenticity ($k = 4$, $N = 1,156$). The second model (Figure 2) tested recipient perceived gratitude amplification to recipient relationship quality via recipient perceived authenticity and responsiveness ($k = 2$, $N = 756$). Details on our full analyses are in the Supplemental Material. For expressers, we found that lower authenticity mediated the association between gratitude amplification and lower relationship quality. The association was reduced by a magnitude of 31% when authenticity was entered into the model. For recipients, we found that both lower perceived authenticity and lower perceived responsiveness mediated the association between perceived gratitude amplification and lower relationship quality. This association was reduced by a magnitude of 72% when both perceived authenticity and perceived responsiveness were entered into the model. Overall, we

Indirect Effect $CI_{95\%}$ [-0.147, -0.095]

Expresser
Authenticity

-0.286*** (0.027)   0.419*** (0.024)

Expresser Gratitude
Amplification

-0.246*** (0.028)   Expresser Relationship
[-0.355*** (0.026)]   Quality

Figure 1. Meta-Analytic Mediation Model of Expresser Authenticity as a Mediator Between Expresser Gratitude Amplification and Expresser Relationship Quality.
Note. Values are standardized beta coefficients. Values in parentheses indicate standard errors. Estimate in brackets indicates the total effect. All paths were significant at ***$p < .001$.

Indirect Effect $CI_{95\%}$ [-0.085, -0.015]

Recipient Perceived
Authenticity

-0.489*** (0.027)   0.102*** (0.036)

Recipient Perceived
Gratitude Amplification

-0.114** (0.036)   Recipient Relationship
[-0.401*** (0.031)]   Quality

-0.411*** (0.030)   0.627*** (0.022)

Recipient Perceived
Responsiveness

Indirect Effect $CI_{95\%}$ [-0.300, -0.218]

Figure 2. Meta-Analytic Mediation Model of Recipient Perceived Authenticity and Perceived Responsiveness as Simultaneous Mediators Between Recipient Perceived Gratitude Amplification and Recipient Relationship Quality.
Note. Values are standardized beta coefficients. Values in parentheses indicate standard errors. Estimate in brackets indicates the total effect. All paths were significant at **$p < .01$ or ***$p < .001$.

documented a robust pattern where amplifying gratitude was linked to lower relationship quality due to amplifiers feeling less authentic when amplifying, whereas perceiving amplified gratitude was linked to lower relationship quality due to recipients perceiving the amplifier as less authentic and less responsive.

General Discussion

Across four studies, we found consistent costs of gratitude amplification, demonstrating how amplifying a positive, socially connecting emotion can compromise couples' well-being. Expressing and perceiving amplified gratitude was linked to lower well-being and relationship outcomes for partners in the moment gratitude was expressed, across daily life, and over the long term (see summary of results in Table 10). These costs emerged across different contexts in

which gratitude was expressed, from acknowledging a partner's sacrifice to praising their effort to change. Altogether, this body of work elucidates amplification as a hidden cost of gratitude expressions, revealing that expressing more gratitude than one truly feels is linked to personal and relational costs.

The Personal and Interpersonal Costs of Gratitude Amplification

We identified consistent costs of expresser gratitude amplification for both partners. These costs were independent of recipients' perceptions, such that amplifying gratitude negatively impacted couples even when it went unnoticed by the recipients of these expressions. Our work finds that, for expressers, costs were due to feeling less authentic when amplifying gratitude. This is notable given that, at times,

Table 10. Summary of Findings Across Studies.

Outcomes	Expresser gratitude amplification				Recipient perceived gratitude amplification		
	Lab studies	Diary studies	Longitudinal studies (concurrent effects)	Longitudinal studies (long-term effects)	Lab studies	Longitudinal studies (concurrent effects)	Longitudinal studies (long-term effects)
Expresser outcomes							
Authenticity	Lower	Lower	Lower	*ns*	*ns*	*ns*	*ns*
Relationship quality	Lower	Lower	Lower	*ns*	*ns*	*ns*	*ns*
Conflict	—	—	Higher	—	—	Higher	—
Break-up thoughts	—	—	*ns*	*ns*	—	Higher	Higher
Recipient outcomes							
Perceived authenticity	Lower	—	Lower	Lower	Lower	Lower	Lower
Perceived responsiveness	*ns*	—	Lower	*ns*	Lower	Lower	*ns*
Positive feelings about gratitude	Lower	*ns*	Lower	—	Lower	Lower	—
Negative feelings about gratitude	Higher	Higher	*ns*	—	Higher	Higher	—
Relationship quality	Lower	Lower	*ns*	*ns*	Lower	Lower	*ns*
Conflict	—	—	Higher	—	—	Higher	—
Break-up thoughts	—	—	Higher	*ns*	—	Higher	Lower

Note. Significant effects are listed if present in at least one of the two lab, diary, or longitudinal studies and are denoted as lower or higher to indicate the direction of the effect. See the individual studies for detailed results. For all studies, *ns* indicates a non-significant effect and — indicates an outcome was not assessed in that study.

engaging in costly emotion regulation strategies (e.g., suppressing negative emotions) *can* feel authentic when there are strong motives to benefit one's partner (Le & Impett, 2013). Perhaps because exaggerating a positive expression involves putting on a more explicit display as compared to withholding one's feelings (e.g., suppression), this may be why it feels inauthentic even under circumstances where people might intend to benefit their partner. Given that authenticity is important for intimacy and positive relationships (Brunell et al., 2010), we found that the inauthenticity from amplifying interfered with relationship quality, perhaps because expressers felt greater distance to their partner as a result of not behaving true to themselves.

We also identified persistent costs of recipients' perceptions of gratitude amplification, regardless of whether the expresser actually amplified or not, for the recipient in the moment and over time. However, expressers did not experience robust costs from recipients' perceptions, indicating that expressers must subjectively feel that they amplified for them to experience worse outcomes. Perceiving amplified gratitude was costly for recipients because they perceived the expresser to be both less authentic *and* less responsive to their needs. This adds a novel contribution to the literature on emotion amplification, which has primarily found that amplifying positive expressions is perceived as less genuine or authentic (Grandey et al., 2005) but has not examined perceptions of that individual as a responsive relationship partner. Although gratitude typically signals responsiveness between partners (Algoe et al., 2013; Yoshimura & Berzins,

2017), *amplified* gratitude may impair responsiveness because recipients feel that the expresser does not value them enough to tell them how they truly feel. It may also be that it is difficult to foster mutual understanding in a relationship with a person who is not fully forthcoming with their true feelings. Overall, impaired perceptions of authenticity and responsiveness contributed to recipients feeling worse about the gratitude and lower relationship quality given that these perceptions are important for effective gratitude messages (Algoe et al., 2013; Leong et al., 2020) and satisfying relationships (Reis et al., 2004; Wickham, 2013).

Theoretical Contributions to Emotion Regulation and Gratitude

By using a dyadic approach to simultaneously test expressions, perceptions, and accurate perceptions of amplification, the current work offers novel insight into the interpersonal consequences of emotion regulation. In addition, this work further demonstrates the costs of amplification beyond organizational contexts. Although amplifying positive emotions at work may facilitate some personal and interpersonal goals (Levine & Wald, 2020; Wong et al., 2013), romantic partners' relational goals of fostering intimacy are often better suited for honest and authentic emotional communication rather than amplification (Levine & Wald, 2020). Indeed, among close relationships, authentic expression is valued even when conveying challenging information (Yoo et al., 2011), suggesting that amplification

may be a violation to norms of honesty and openness in emotional expression (Reis et al., 2000; Roggensack & Sillars, 2014).

The current findings also provide important nuance among a prolific body of work on the benefits of gratitude. As with other processes that promote well-being (McNulty, 2010; McNulty & Fincham, 2012), it is important to understand how, when, and for whom gratitude expressions yield benefits or costs. While gratitude interventions are frequently featured in popular media and demonstrate effectiveness in boosting well-being (Davis et al., 2016; Folk & Dunn, 2023), recent research has also found that receiving reminders to express gratitude can undermine its genuineness (Wang et al., 2023) and that expressing intense gratitude can backfire (Laurin et al., 2025). Our work adds to this discourse and suggests that simply focusing on over-expressing gratitude, without changing the underlying feeling of gratefulness, is an ineffective way to strengthen relationships. Perhaps emphasizing greater awareness and recognition of the care and meaning behind a partner's kind acts can lead to more unprompted and meaningful gratitude (Visserman et al., 2019) and may alleviate the pressures of saying "thank you" when people do not truly feel it.

Limitations and Future Directions

This work has some notable limitations. First, our samples were predominantly composed of mixed-gender couples with partners identifying as heterosexual. Future research is needed to examine whether the costs of gratitude amplification extend to more diverse couples. In addition, while all samples were collected in North America, future work may consider the cultural context in which amplification occurs, as displays of gratitude and their underlying meaning can vary across cultures (Chang & Algoe, 2020; Yu & Chaudhry, 2023). For example, in collectivistic contexts, amplifying gratitude could be especially harmful or even less likely to occur in the first place.

Second, to minimize participant fatigue, we used single-item measures of expressed and perceived gratitude amplification in all studies except one. Although we sought to use face-valid items, future research should develop and validate multi-item scales to ensure valid measurement of emotion amplification, especially given that it is an understudied emotion regulation strategy. In addition, while the present studies focused on the amplification of gratitude, there are also times when people may withhold or suppress gratitude to avoid rejection, to not appear "clingy," or to prevent awkwardness (Carton & Horan, 2014; Kumar & Epley, 2018). Our measure of amplification could not directly distinguish between low amplification as representing genuine gratitude or suppressed gratitude. Therefore, future research could

further tease apart the impact of suppressing gratitude to determine whether there are similar costs to amplification.

Third, although our sample sizes exceeded some recommendations for multilevel modeling (Arend & Schäfer, 2019), requirements for multilevel response surface analysis are not yet established (Nestler et al., 2019). Moreover, calculating power to detect accuracy effects—especially higher-order terms in polynomial models—remains an open area of investigation (Schönbrodt et al., 2018). Some guidelines suggest that detecting these curvilinear effects may require two to three times the sample size needed for linear effects (Aiken & West, 1991). Therefore, despite the advantage of testing accuracy hypotheses across multiple studies, our analyses may have been underpowered to detect significant accuracy effects. Future research should continue to investigate questions pertaining to accuracy using larger samples to more definitively determine whether accurate perceptions of gratitude amplification shape relationship outcomes.

Finally, it is unclear how specific our effects are to the amplification of gratitude or whether the observed costs extend to amplifying other positive emotions (e.g., love, compassion). Some work suggests that amplifying other positive expressions like affection may yield neutral (Gillen & Horan, 2013) or even beneficial outcomes (Trask et al., 2020). Therefore, future work could explore how dimensions like social functions could offer explanatory power in predicting these divergent patterns based on the different types of positive expressions that can be amplified (Shiota et al., 2017; Van Kleef, 2016). Although we expect that amplification of gratitude may uniquely undermine relationships by signaling inauthentic and unresponsive appreciation compared to amplifying other emotions, we did not have the data to test this claim. Future research is needed to explore these distinctions by integrating theories of emotional social signaling and emotion regulation to better understand when and why amplification incurs relational costs or benefits.

Conclusion

Although gratitude typically strengthens our relationships, there are also times when we may express our thanks even when it is not truly felt. The current work identified that expressions and perceptions of gratitude amplification impaired well-being, relationship outcomes, and perceptions of the gratitude received in the moment and over time. This work underscores amplification as a hidden cost of gratitude expressions in close relationships. A strict emphasis on simply expressing more gratitude as a way to strengthen relationships may be ineffective and misplaced, whereas finding ways to foster authentic and responsive expressions is likely the best way to reap the benefits of gratitude expressions for relationships.

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The authors declared no potential conflicts of interest with respect to the research, authorship, and/or publication of this article.

Data Availability Statement

Our preregistrations, materials, codebooks, anonymized data (available upon request), and R analysis scripts can be found on our Open Science Framework page: https://osf.io/32d4r/overview?view_only=1fde7ebcfaa24121855f7d65121d95b4.

Supplemental Material

Supplemental material for this article is available online.

Notes

1. We originally preregistered analyses to focus only on compromise days given that partner sacrifices occurred at a low frequency. However, in final analyses, we included partner sacrifices to examine a broader range of contexts in which gratitude amplification might occur and to increase statistical power. Nonetheless, the results when testing hypotheses as originally preregistered on compromise days only are identical to those reported in the current paper (see the Supplemental Material).
2. Due to issues with model convergence and singular fit, in some models, we removed the correlations between the random parameters and modified the estimation technique from restricted maximum likelihood to maximum likelihood. These modifications yielded *b* estimates that were negligibly different from the models with the original specifications and did not influence the significance of any results presented here.
3. Recipient relationship quality items specific to perceiving a point of gratitude from their partner were unintentionally excluded from this study. Therefore, we assess recipient relationship quality as reported for that day generally and expresser's relationship quality as reported for the point of gratitude they expressed. Results are identical when using expresser relationship quality for the day generally as the outcome (see the Supplemental Material).
4. Across studies using response surface analysis, several models showed a significant quadratic effect for expresser gratitude amplification (i.e., X^2 coefficient), indicating that increases in expresser gratitude amplification may initially be associated with costs, up to a threshold beyond which further amplification becomes beneficial. However, this curvilinear pattern was not hypothesized a priori and was not consistently observed across outcomes and studies.
5. We also tested whether relationship length moderated effects across studies. We found some inconsistent evidence for moderation, with greater costs emerging for expressers in longer relationships and for recipients in shorter relationships. See Appendix G in the Supplemental Material for full details on these tests.

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