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ARTICLE



Kind words do not become tired words: Undervaluing the positive impact of frequent compliments

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ABSTRACT

Compliments can satisfy others' need to belong, but expressers may underestimate their positive impact on recipients, creating a barrier to giving them more often. We assess how people expect recipients will react to multiple compliments over time, compared to recipients' actual experiences. Participants expected that recipients would adopt to multiple compliments, with each feeling less positive and sincere (Experiment 1). An experiment found no evidence of adaptation in recipients' actual experience, while expressers underestimated recipients' positive reactions (Experiment 2). Participants expected less adaptation among recipients when they saw the actual compliments received, suggesting that mistaken adaptation beliefs stem from overestimating similarity between multiple compliments (Experiment 3). Underestimating compliments' consistently positive impact may restrain people from expressing them more routinely.

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Thinking back during an interview on the most important moments in his life, the actor Brad Pitt recalled a time from his youth when he was called out of a large crowd at a Harlem Globetrotter's show to perform a trick with one of their legendary players, Meadowlark Lemon (Marchese, 2019). This brief brush with celebrity left Pitt feeling so great that he recognized the power of his own celebrity to make others feel great. "I'm trying to say that I have the opportunity to brighten someone's day. That's a rare thing."

Pitt's celebrity is indeed a rare thing, but empirical research suggests that his ability to brighten someone's day is not nearly as rare as he – or as most people – seem to expect. Human beings are the most social of all primates, whose long-term survival and reproduction depends on maintaining strong social bonds (Tomasello, 2014). Maintaining positive interpersonal relationships is a fundamental need that operates in ways that are similar to biological needs, such as eating or drinking (Baumeister & Leary, 1995; Bowlby, 1969). Signs of others' positive regard, appreciation, or warmth that satisfy a person's need to maintain positive interpersonal relationships therefore create strong positive emotions, just as satisfying other biological needs is pleasurable. Indeed, the extent to which people feel valued and accepted by others is a powerful determinant of a person's own sense of self-esteem (Leary et al., 1995). Brightening another person's day may be as straightforward as showing warmth, kindness, or appreciation, such as by

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 Supplemental data for this article can be accessed [here](#)

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performing a random act of kindness (Curry et al., 2018), expressing gratitude (Algoe et al., 2010), providing social support (Gleason & Iida, 2015), giving someone a compliment (Zhao & Epley, 2020a), or even just acknowledging a passerby's presence by making eye contact (Wesselmann et al., 2012). None of these day-brightening activities requires worldwide celebrity to accomplish.

More important, emerging research suggests that these prosocial activities brighten recipients' moods more than those performing the activities may expect. In one series of experiments, people asked to write a gratitude letter underestimated how positive their recipient would feel after reading the letter (Kumar & Epley, 2018). In another series of experiments, people visiting a public garden were instructed to ask another visitor to help by taking a picture of them in front of a nearby attraction. The helpers felt more positive after taking the requested picture than the requesters expected (Zhao & Epley, 2020b). In a third series of experiments, people asked to perform a random act of kindness for another person – such as giving him or her a cup of hot chocolate on a cold winter day – underestimated how positive the recipient would feel (Kumar & Epley, 2020). In a final series of experiments most closely related to our current hypotheses (Zhao & Epley, 2020a), people asked to write three compliments to a friend or romantic partner underestimated how positively their recipients would feel after reading the compliments, an effect that did not emerge in a control condition where people simply predicted how the other person in their pair felt at the moment. Undervaluing the positive consequences of prosocial actions matters because people tend to behave in ways that are consistent with their expectations, thereby creating a misplaced barrier to engaging in positive interpersonal behaviors more often in daily life.

Miscalibrated expectations about the consequences of prosocial actions are not random but seem to stem from two systematic mechanisms. First, being the recipient of a kind act creates an empathy gap between those performing the act and those receiving it (Loewenstein, 2005; Nordgren et al., 2011; Van Boven et al., 2013). A kind act is targeted directly at a recipient, producing uniquely positive feelings for the recipient that are not shared and hence not anticipated by the expresser (or by other observers; Zhao & Epley, 2020a). Second, those performing prosocial acts appear to evaluate their actions on somewhat different dimensions than recipients, focusing more on their competency (how well they perform the action) while recipients are focused more on the warmth conveyed by their action (the positive intent and meaning of the action; Kumar & Epley, 2018; Zhao & Epley, 2020a). This reflects a more general tendency for actors to evaluate their own behavior in terms of competency, while observers tend to evaluate the same behavior more in terms of its warmth (Abele & Wojciszke, 2007; Bruck et al., 2018; Fiske et al., 2007; Wojciszke et al., 1998). If expressers are attending to their competence while recipients are attending to their warmth, then expressers are likely to underestimate how positive a prosocial action will make a recipient feel (Kumar & Epley, 2018; Zhao & Epley, 2020a).

Of course, it is easy to imagine limits on the positive impact of prosocial acts on others. As lovely as receiving one act of kindness might feel, receiving subsequent acts may feel progressively less positive. Getting one compliment from a friend may make one's day, but getting a compliment each day from the same friend 5 days in a row might become more mundane by the end of a week. As with almost any positive stimulus (Kahneman & Snell, 1992; Rolls, Rolls, Towe, & Sweeney, 1981),

people may expect that repeatedly receiving compliments will become less and less positive over time. However, rates of adaptation vary across stimuli (Campbell et al., 2014; Frederick & Loewenstein, 1999; Galak & Redden, 2018; Holt et al., 1995; O'Brien & Kassirer, 2019), and we expect adaptation to prosocial acts such as multiple compliments may be relatively slow for three reasons. First, several experiments suggest that people may adapt more slowly to the positive experience of performing prosocial acts than to performing selfish acts (O'Brien & Kassirer, 2019). Similarly slow rates of adaptation may characterize the positive experience of receiving prosocial acts as well. Second, although "compliments" describe a specific category of statements, the precise details of those compliments are likely to vary a great deal, making each compliment uniquely meaningful to recipients (O'Brien, 2019). Finally, most needs are not satisfied by a single event but instead are recurring desires that can be repeatedly satisfied. Just as hunger is not satisfied for long after a good meal, so too one's sense of belonging is not likely to be satisfied by a single expression of warmth. If people fail to recognize that needs require repeated satisfaction over time (Read & Loewenstein, 1995), then they may fail to appreciate how consistently the recipient will enjoy multiple prosocial acts that occur over time.

Here we present experiments investigating people's experience of receiving repeated acts of kindness compared to expectations about recipients' experiences. Specifically, we designed an experimental procedure in which we asked one member of an acquainted pair to write 5 compliments to his or her partner, with one compliment being shown each day to the recipient, and then to predict how the recipient would feel each day after he or she read the compliment. We measured people's expectations of how this experience would unfold for recipients in Experiment 1 by describing eight different variations of this procedure and asking participants to predict the recipients' experiences. Based on existing theory and past research (Kahneman & Snell, 1992), we predicted that people would generally expect recipients to "tire" of receiving these compliments, feeling a little less positive after reading each one. In contrast, we expected that actual recipients would feel similarly positive after reading each compliment. We also predicted, consistent with prior research (Zhao & Epley, 2020a), that compliment expressers would generally underestimate how positive their recipients would feel. We tested these predictions in Experiment 2 by conducting the procedure described at the beginning of this paragraph. We further explored people's expectations about adaptation in Experiment 3 by asking participants to report how they expected compliment recipients to feel either after reading concrete compliments, or without reading them. If failing to appreciate the uniqueness of specific compliments leads people to expect more adaptation than is actually experienced, then seeing the exact compliments should diminish this tendency.

All experiments were pre-registered. We reported all measures, manipulations, and exclusions in the paper. All materials, protocols, data, analyses, and preregistration files can be found online (<https://osf.io/wfmqb/>).

Experiment 1: Expecting adaptation?

People's behavior is guided at least partly by the expected value of their choices, making people's expectations of how others might respond to repeated prosocial acts potentially important for understanding behavior. We asked participants in Experiment 1 to predict how a person would respond each day after receiving a compliment for 5 days in a row. Participants did so by imagining themselves in the role of a compliment expresser or recipient, who communicated the compliment via text or in person, with compliments prepared in advance or generated each day. We included these latter factors to test whether changing the context in Experiment 2, where compliments were delivered over text and generated at the beginning of a 5-day period, would affect participants' expectations about adaptation. We predicted, as with most stimuli (Kahneman & Snell, 1992), that people would generally expect that people would adapt to receiving multiple compliments, with each producing a little less positive response than the one preceding it.

Method

Participants

We targeted a sample size of 400 participants in order to obtain 50 in each of our eight experimental conditions. A total of 410 Amazon Mechanical Turk (MTurk) workers completed our study ($M_{age} = 38.20$, $SD_{age} = 11.22$, $range_{age} = 18-73$; 48% female) in exchange for 0.50 USD.

Procedure

We first instructed participants in the survey to think of someone they were close to and interacted with often. We then randomly assigned participants to one of eight conditions in a 2 (perspective: expresser vs. recipient) \times 2 (modality: text delivery vs. in-person delivery) \times 2 (preparation: prepared in advance vs. generated each day) between-participants design.

Participants who imagined expressing compliments first predicted how their recipient would react on Monday after reading their compliment: how positive their recipient would feel ("How positive/negative do you predict the other person would feel after receiving this compliment?"), how awkward their recipient would feel ("How awkward do you predict the other person would feel after receiving this compliment?"), and how sincere their recipient would rate the compliment to be ("How sincere do you think the other person would perceive this compliment to be?"). Those who imagined receiving a compliment reported how they thought they would feel on the same constructs. All items were presented with a scale of 0 (*not at all*) to 10 (*extremely*), except for the positive/negative item, which had a scale ranging from -5 (*much more negative than normal*) to 5 (*much more positive than normal*), with 0 (*no different than normal*) as the midpoint. Participants completed the same procedure for the remaining four days from Tuesday through Friday.

Finally, participants completed additional questions on exploratory measures and memory checks (see the Supplemental Material for full details), provided demographic information (gender, age, race, education), and were debriefed and then compensated.

Results

To detect changes in participants' expectations across five days, we analyzed the data using growth curve modeling. To account for interdependence among responses from the same participant across multiple days, we constructed a linear mixed model¹ for each of the three primary DVs (mood, awkwardness, sincerity) by entering the linear effect of time, perspective, delivery modality, preparation, and their interaction terms as fixed effects and participant-specific intercepts as random effects.²

Results indicated that people generally expected recipients to adapt to the experience of receiving multiple compliments, regardless of what perspective they imagined taking, in what modality their compliments were exchanged, or whether the compliments were prepared in advance. As shown in Figure 1(a), participants expected recipients to feel a little less positive each day after receiving a new compliment, $b = -.22$, $SE = .02$, 95% confidence interval (CI) = $[-.25, -.19]$, $t(1640) = -14.48$, $p < .001$. Participants also expected the perceived sincerity of each compliment to steadily decline over the course of the week (see Figure 1(c)), $b = -.30$, $SE = .02$, 95% CI = $[-.33, -.26]$, $t(1640) = -16.30$, $p < .001$. Expectations about awkwardness were somewhat more complicated (see Figure 1(b)), and did not show the same pattern of steady decline observed on the other measures (see the Supplemental Material for full results and graphs by each condition). Participants expected repeated compliments to grow somewhat "tired" over time, with each one leaving the recipient feeling a little less positive than the one before it. Experiment 2 tests the extent to which these expectations match recipients' actual experiences.

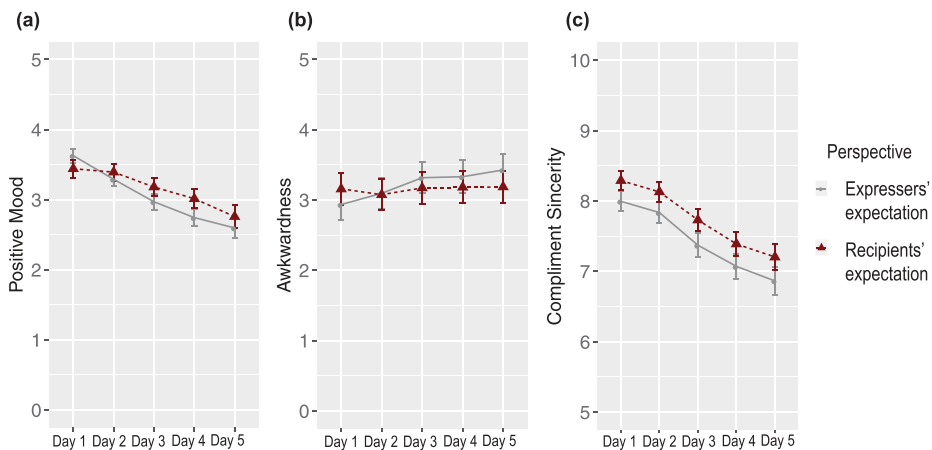


Figure 1. Mean expected positive mood (a), awkwardness (b), and sincerity ratings (c) for recipients who read one compliment each day over a period of five days, among those who imagined either expressing or receiving the compliments. Error bars indicate ± 1 SE.

Ratings on positive mood ranged on a scale of -5 (much more negative than normal) to 5 (much more positive than normal). Ratings on awkwardness and sincerity ranged on a scale of 0 (not at all) to 10 (extremely).

Experiment 2: Compliment week

Method

Participants

Pairs of participants were recruited to an experiment advertised as the “Interpersonal Relationship Study” in one of three different locations: in a privately-owned coffee shop in Chicago ($n = 45$ pairs), in a public park located in Chicago ($n = 12$ pairs), or in a research laboratory on the University of Chicago campus ($n = 9$ pairs). Each participant received either a small novelty gift (in the coffee shop or park) or a 1 USD bonus (in the laboratory) for signing up and a 5 USD gift card upon completion. We targeted a total sample size of 50 pairs. Anticipating an attrition rate of at least 20%, we planned to recruit 63 pairs and finished collecting data through the end of our last scheduled shift as we approached that target. We ended that shift recruiting a total of 66 pairs who completed the initial session. Sadly, we excluded one pair from data analysis because the expresser died in a car crash mid-week, dramatically altering the recipient’s experience compared to other recipients in the experiment. This yielded 65 pairs of participants ($M_{age} = 23.47$, $SD_{age} = 7.48$; $range_{age} = 18\text{--}62$; 67% female, 31% male, 2% other) that were composed of friends ($n = 40$), romantic couples ($n = 13$), spouses ($n = 7$), family ($n = 3$), and colleagues ($n = 1$) and had known each other for an average of 5.64 years (range = 2 months to 39 years; $SD = 7.51$ years).

Procedure

We recreated one scenario from Experiment 1 in which one participant wrote 5 compliments all at once that were then delivered one at a time over a period of 5 days to the recipient over text. Specifically, we first recruited participants in acquainted pairs to complete an initial session where one person wrote compliments and reported how they expected their recipient to respond. In the week following this initial session, recipients received one compliment each day (from Monday through Friday) and reported their reactions. Finally, both expressers and recipients completed an exit survey on the subsequent Saturday. We describe the details of each of these time periods below.

Initial session. After both participants agreed to participate, one was randomly assigned to be the compliment expresser and the other to be the compliment recipient. Participants were then separated and given brief verbal descriptions of the experiment’s timeline before receiving a tablet to start their respective surveys.

The first survey block was identical for expressers and recipients and asked basic relationship information questions. Participants first reported their current relationship quality on two bipolar scales, the first measuring how close they felt to their partner on a scale ranging from -5 (*feels like we’re miles apart*) to 5 (*feels like we’re really close*), and the second measuring how satisfied they were with their relationship on a scale ranging from -5 (*extremely dissatisfied*) to 5 (*extremely satisfied*). Participants then reported how frequently they communicated with each other (ranging from a few times per day to once or twice per month). Participants then reported how often they gave compliments to and received compliments from the other person on two 7-point scales ranging from -3 (*a lot less often than I think I should*) to 3 (*a lot more often than I think I should*), with 0 (*exactly as often as I think I should*) as the midpoint. Finally, participants provided numeric estimates

of how many times they gave compliments to and received compliments from the other person over the past week.

Expressers then proceeded to the second part of their survey, where they received the following compliment-writing instructions followed by five text boxes on the same page where they were to write their compliments, each labeled with a specific day from Monday to Friday:

In this study, we want you to write down five separate compliments you could give to your study partner. Please think about positive characteristics or actions you see in your study partner that would be worth complimenting him or her on.

These should be positive things you have noticed but have not, for whatever reason, had a chance to compliment your study partner on yet.

Below, please write down five separate compliments you could give to your study partner. Over the next week from Monday to Friday, we're going to send your compliments to your study partner in the order below.

After writing the five compliments, expressers were presented with the first compliment they wrote and predicted how their study partner would report feeling after reading that compliment on Monday. Expressers first predicted the recipient's mood on two separate items: "How positive/negative do you predict your partner will report feeling?", and "How pleasant do you predict your partner will report feeling?" Expressers then predicted how awkward ... their study partner would report feeling. Finally, participants reported how sincere their compliment was and then predicted how sincere their study partner would perceive the compliment to be. Participants answered all items on scales ranging from 0 (*not at all*) to 10 (*extremely*), except for the first item, which ranged from -5 (*much more negative than normal*) to 5 (*much more positive than normal*), with 0 (*no different than normal*) as the midpoint. Expressers completed the same procedure for the remaining four compliments matched to each day from Tuesday through Friday. Finally, expressers predicted how their recipient's week-long experience of receiving compliments would change over the course of the week on a scale of -5 (*get worse over time*) to 5 (*get better over time*), with 0 (*stay the same over time*) as the midpoint, and also predicted the extent to which their partner would get tired of receiving one compliment each day by the end of the week on a scale from 0 (*not at all*) to 10 (*extremely*). Expressers finished the second block of their survey by providing an e-mail address to receive the exit survey on the following Saturday.

The recipient's second survey block was much shorter than the expressers' second block. Recipients first reported their relationship type and duration. They then learned that they would receive one survey each day over the following week and provided an e-mail address to receive those surveys.

The final survey block for both expressers and recipients asked them to report basic demographic information including gender, age, race/ethnicity, and education level and also provided a text box for writing any additional comments or feedback about the experiment.

Receiving compliments (Monday through Friday). We sent recipients an e-mail containing a unique survey link at noon each day of the week following the initial session.

Upon opening the survey, recipients saw their compliment for that given day of the week and a short survey asking them to report how positive/negative, pleasant, and awkward they felt after receiving this compliment, and also how sincere they perceived the compliment to be. The next survey page presented recipients with an open-ended question asking them to describe how they felt. All surveys automatically expired after midnight.

Final exit survey. At noon on Saturday following the week of compliments, we sent both expressers and recipients e-mails directing them to an exit survey measuring their overall perception of the experience. In this survey, participants first reported their relationship satisfaction on two bipolar items identical to those in the first survey. Expressers then reported how they thought their recipient's experience had changed over the course of the week and also how tired the recipients were of receiving compliments by the end of week, using the same items included in the initial experimental session. Expressers then reported how interested they thought their recipient would be in receiving a new compliment the following Monday on a 11-point scale ranging from 0 (*not at all*) to 10 (*extremely*). Recipients responded to the same items phrased from their perspective to measure their actual experience and beliefs.

Next, to understand whether the recipients attempted to reciprocate compliments back to the expresser over the course of the week, we asked both expressers and recipients to report how often the recipient complimented the expressers by providing a numeric estimate as well as responding to a 11-point scale ranging from -5 (*a lot less often than usual*) to 5 (*a lot more often than usual*), with 0 (*as often usual*) as the midpoint.

Finally, we gave participants an opportunity to give additional feedback (in a text box), a full debriefing, and a compensation voucher.

Results

Response rates

All expressers reported their expectations of the recipient's reactions at the initial screening session, but not all recipients responded to each daily survey. Of the 65 recipients, we received 59, 51, 57, 55, 54 recipients on each day of the week, respectively. All but 1 participant filled out at least one daily survey. We received completed exit surveys from 52 expressers and 53 recipients. Although less than perfect, these response rates (from 78% to 91%) do not suggest that participants were slowly dropping out over the course of the week because they were losing interest in receiving compliments, as we observed the lowest response rates on Tuesday. We also note that recipients needed to open the survey URL in order to read their compliment. Our records indicate that all participants who opened a survey completed the survey, meaning that any attrition came from participants not opening the survey to see the compliment in the first place. Therefore, we know that recipients were not first reading the compliments and then selectively responding to favorable compliments while ignoring less favorable ones. These results suggest that attrition is not creating systematic selection biases in our analyses.

Reactions to multiple compliments

We were primarily interested in how expressers' expectations and recipients' experiences of mood, awkwardness, and sincerity might change over the course of the compliment week. Given that time is nested within individual participants and that expressers and recipients are nested within pairs, we again analyzed our data using growth curve modeling. We accounted for interdependence by constructing a linear mixed model for each of the three primary DVs (mood, awkwardness, sincerity), with the linear effect of time (zero-centered on Wednesday), perspective ($-1 = \text{expresser}$, $1 = \text{recipient}$), and their interactions as the fixed effects and participant-specific intercepts and pair-specific intercepts as random effects.

To enable easy comparison between expectations and experiences over the course of the week, we also preregistered our intention to compare participants' Monday versus Friday responses using a 2 (day: Monday vs. Friday) \times 2 (perspective: expresser vs. recipient) repeated measures ANOVA. However, we later realized that repeated measures ANOVA could not properly account for the interdependence between expressers and recipients. We therefore constructed the same linear mixed model as specified above, except that we treated time as a categorical variable ($-1 = \text{Monday}$, $1 = \text{Friday}$) instead of a continuous variable as in the case of growth curve modeling.

Positive mood. We first created a composite score of expected and actual positive mood by adding 5 to the negative/positive mood item so that it was on a 0–10 scale and then averaged it together with the pleasantness item ($r_{\text{expresser}} = .78$; $r_{\text{recipient}} = .86$; $p_s < .001$). A linear mixed model revealed a significant main effect of time, $F(1, 475.49) = 10.39$, $p = .001$, and a marginally significant main effect of perspective, $F(1, 64.31) = 2.77$, $p = .10$, qualified by a significant interaction between time and perspective, $F(1, 475.49) = 5.55$, $p = .019$. As shown in Figure 2(a), recipients remained in a very positive mood consistently over the course of the week, $b = .03$, $SE = .05$, 95% CI = $[-.06, .12]$, $t(215.77) = .59$, $p = .56$.

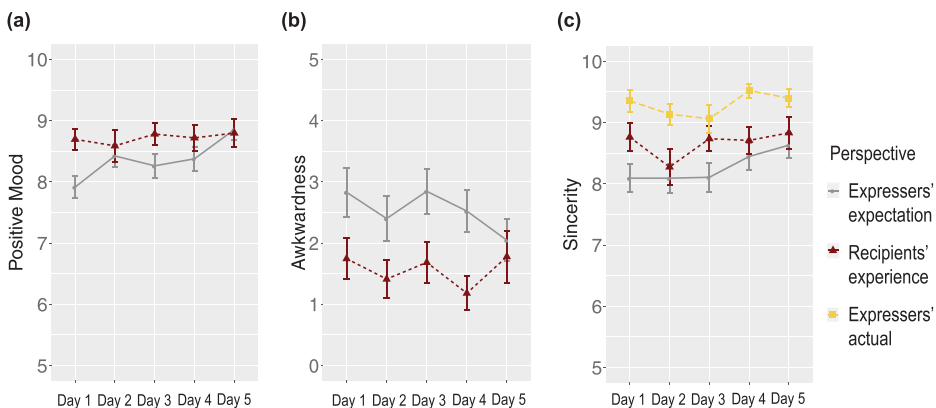


Figure 2. Expressers' and recipients' ratings regarding positive mood (a), awkwardness (b), and sincerity (c) on each compliment across 5 days (Experiment 2). Error bars indicate ± 1 SE.

"Positive Mood" is a composite of positive/negative mood and pleasantness (with 5 added to the positive/negative mood item to make the scale range from 0–10). Awkwardness and sincerity ranged from 0 (not at all) to 10 (extremely).

Interestingly, expressers expected recipients' mood to become increasingly positive over the course of the week, $b = .18$, $SE = .04$, 95% CI = [.09, .27], $t(259) = 4.08$, $p < .001$. We did not predict this result, which is the opposite pattern observed in Experiment 1. We will return to this issue in the Discussion section of this experiment.

An additional analysis comparing participants' responses on Monday and Friday supported the above findings. The linear mixed model revealed a significant main effect of time, $F(1, 119.56) = 15.03$, $p < .001$, and a marginally significant main effect of perspective, $F(1, 63.08) = 2.96$, $p = .09$, qualified by a significant interaction, $F(1, 119.56) = 8.50$, $p = .004$. Specifically, compliment expressers significantly underestimated how positive their recipient would feel on Monday ($M_s = 7.91$ vs. 8.69, $SD_s = 1.50$ vs. 1.29, respectively), $F(1, 60.81) = 10.91$, $p = .001$, supporting prior research suggesting that people tend to underestimate the positive impact of their compliments on the recipients (Zhao & Epley, 2020a). By contrast, compliment expressers did not significantly underestimate how positive their recipient would feel on Friday ($M_s = 8.85$ vs. 8.80, $SD_s = 1.36$ vs. 1.72, respectively), $F(1, 63.21) = 0.03$, $p = .86$. As mentioned earlier, expressers expected their recipient's positive mood to improve over the course of the week, such that they no longer significantly underestimated recipients' positive mood by the end of the week.

Awkwardness. A linear mixed model on awkwardness revealed only a significant main effect of perspective, $F(1, 62.85) = 8.78$, $p = .004$. Consistent with prior research (Zhao & Epley, 2020a), expressers overestimated how awkward recipients would feel (see Figure 2(b)).

Comparing participants' responses on Monday vs. Friday mirrored these results, although the main effect of perspective was only marginally significant, $F(1, 62.32) = 3.22$, $p = .077$, likely due to a smaller number of observations on two days as opposed to five days.

Compliment sincerity. The same linear mixed model on expressers' expectation versus recipients' experienced sincerity revealed a significant main effect of time, $F(1, 475.58) = 6.63$, $p = .010$, a marginally significant main effect of perspective, $F(1, 62.46) = 3.41$, $p = .069$, and a non-significant interaction between perspective and time, $F(1, 475.58) = 1.15$, $p = .28$. The main effect of time indicates that both expected and experienced sincerity increased over the course of the week. The marginally significant main effect of perspective indicates that expressers somewhat underestimated how sincere their compliments would be perceived to be by recipients (see also Zhao & Epley, 2020a).

Comparing participants' responses on Monday vs. Friday again mirrored these results, yielding a significant effect of time, $F(1, 121.60) = 4.46$, $p = .037$, a marginally significant main effect of perspective, $F(1, 60.81) = 3.87$, $p = .054$, and a nonsignificant interaction between perspective and time, $F(1, 121.60) = 1.41$, $p = .24$.

Because expressers also reported how sincere each of their compliments actually was, we explored the extent to which recipients' perceptions of sincerity were calibrated, as well as the extent to which expressers expected their recipients' perceptions to be calibrated. To assess the calibration of recipients' perceptions, we replaced the perspective factor in the previous linear mixed model – that is, expressers' expectations versus recipients' actual experience – with a comparison between expressers' self-reported sincerity against recipients' actual experience. This analysis revealed only a significant

main effect of perspective, $F(1, 61.32) = 9.74, p = .003$, suggesting that recipients perceived the compliments to be less sincere than expressers reported them to be ($M_s = 8.67$ and 9.30 , respectively $SD_s = 1.80$ and 1.39). To assess the extent to which expressers expected their recipients to be calibrated, we replaced the perspective factor in the linear mixed model with a comparison between expressers' self-reported sincerity and their expectations on how the recipients would think. This analysis revealed a significant main effect of perspective, $F(1, 582) = 98.04, p < .001$, and a significant main effect of time, $F(1, 582) = 6.84, p = .009$, with a non-significant interaction between perspective and time, $F(1, 582) = 1.71, p = .19$. The significant main effect of perspective indicates that expressers expected their recipient to perceive the compliments as considerably less sincere than they actually were ($M_s = 8.27$ and 9.30 , respectively, $SD_s = 1.83$ and 1.39) – and, as already described, as even less sincere than they were perceived by the recipients to be.

Exit survey: Perceived change

In addition to inferring changes from participants' ratings of positive mood, awkwardness, and sincerity across 5 days, we also directly asked expressers how they expected their recipient's experience to change over the course of the week (both in the initial session and at the final survey), and we also asked recipients to report how they perceived their experience to have actually changed over the week. Interestingly, expressers' expectations (both in the initial survey and the exit survey) as well as recipients' reported experience all indicated similar levels of improvement over the course of the week ($M_s = 2.14, 2.08$, and 1.79 , respectively, $SD_s = 2.25, 1.87$, and 1.86); $F(2, 167) = .47, p = .63$. Although expressers did not expect their recipients to grow especially tired of their complements (on a 0–10 scale), expressers did expect their recipients to grow more tired of receiving one compliment each day than their recipient actually did ($M_s = 2.14$ and 1.17 , respectively, $SD_s = .30$ and $.25$), $t(52) = 2.65, p = .011$. Finally, recipients reported being moderately interested in receiving another new compliment on Monday ($M = 7.34, SD_s = 2.81$), a level of interest that did not differ significantly from what the expressers predicted ($M = 6.73, SD = 3.10$), $t(46) = -1.08, p = .29$.

Exploratory analyses

We compared participants' self-reported relationship quality before and after the week-long experience and found that a weeklong series of compliments did not significantly influence the overall quality of people's long-term relationships. We also analyzed people's self-reported compliment frequency before and during the compliment week and found that people overall thought they gave fewer compliments than they should, and that recipients reciprocated the expressers' compliments over the course of the week by giving more compliments than they normally did. We describe these exploratory analyses fully in the Supplemental Material.

Discussion

Contrary to the expectations for adaptation we observed from survey respondents in Experiment 1, an actual week-long experience of receiving compliments did not turn kind words into tired words in the recipients' minds. Instead, recipients responded very positively to each new compliment they received, with no decrease in reported positive mood over

the course of the week, and also rated each compliment as being similarly sincere over the course of the week. This discrepancy between imagined recipients' expectations in Experiment 1 and actual recipients' responses in Experiment 2 suggests that people's expectations about adapting to receiving multiple compliments may be miscalibrated. We suggest that this could come either from an overgeneralization of the typical experience of affective adaptation that people have with most stimuli (Kahneman & Snell, 1992), or from a failure to recognize that each new compliment is distinct and so repeatedly receiving compliments is more unique than people abstractly imagine (O'Brien, 2019).

In line with prior research (Zhao & Epley, 2020a), expressers underestimated how positively recipients would react to the initial compliments early in the week. Expressers did not, however, significantly underestimate recipients' positive response to the last compliment, nor did they expect recipients' adaptation to receiving multiple compliments. In fact, expressers expected the opposite, believing that their recipient's positive mood would actually increase as they received more compliments. This pattern seems unlikely to have resulted from expressers' belief that recipients might get happier as they moved closer to the weekend, because respondents in Experiment 1 also made predictions from Monday to Friday without exhibiting a similar pattern. Instead, this pattern could either reflect a systematic tendency among people anticipating the outcome of actual compliments expressed over time in daily life, or it could reflect an artifact of our experimental design.

If it reflects a systematic tendency, then it may stem from the difference between knowing the concrete details of a compliment (as expressers did in Experiment 2) versus only considering compliments in the abstract (as participants did in Experiment 1). Knowing a compliment's concrete details may mitigate the application of a more general heuristic about affective adaptation. If so, then we would expect that observers who read the same compliments actually written by expressers would also expect little adaptation, if any, in the recipients' reactions over time. We test this directly in Experiment 3.

If it reflects an artifact of our experimental design, then it could come from allowing expressers to write their compliments in whatever order they wanted, meaning that the expressers may have assigned what they thought was their best compliment to be delivered at the end of the week rather than at the beginning, perhaps hoping to create an improving sequence over the course of the week that ends "on a high note" (Loewenstein & Prelec, 1993; O'Brien & Ellsworth, 2012). A closer look at expressers' predictions in Figure 1(a,c) is consistent with this potential artifact. Note that expressers' expectations did not follow a linear pattern, but instead showed a notable increase on the last day of the week (Friday). In fact, excluding Friday from the growth curve models reveals a much more gradual change in the expressers' expectations of their recipients' positive mood ($b = .12$, $SE = .06$, 95% CI = [0, .24], $t(194) = 1.97$, $p = .051$), no change in expected awkwardness ($b = -.05$, $SE = .11$, 95% CI = [-.26, .16], $t(194) = -.44$, $p = .66$), and no change in expected ratings of sincerity ($b = .11$, $SE = .08$, 95% CI = [-.05, .26], $t(194) = 1.36$, $p = .18$). Furthermore, the compliments themselves also differed over the course of the week, with those written for the last day being significantly longer compared to those written for the first day, $t(256) = -2.86$, $p = .004$ (see Table 1).

Although we can only speculate about what these extra words in the Friday compliments mean, they could be viewed as a proxy for how much effort expressers put into

Table 1. Means (and standard deviations) of word count for each day's compliments in Experiment 2.

	Day 1	Day 2	Day 3	Day 4	Day 5
	18.91 (16.70)	15.80 (14.89)	18.55 (16.81)	17.45 (12.17)	23.42 (20.40)
– Count compared to Day 1	–	$t = -1.97$	$t = -.22$	$t = -.93$	$t = 2.86$
	–	$p = .049$	$p = .82$	$p = .35$	$p = .004$

creating a positive experience for their recipient on the last day (even though the number of words in a compliment did not significantly affect the recipients' reactions in reality, $p = .60$). Given that expressers were free to specify the order in which their compliments were delivered, we cannot conclude that expressers' expectations over the course of the week were primarily driven by the repeated nature of the compliments rather than by the presumed quality of the compliments themselves. Experiment 3 again addresses this issue in more detail by examining expectations about adaptation among a separate sample of participants who either saw the actual compliments that were delivered, or did not see the actual compliments and instead predicted reactions to unspecified compliments.

Experiment 3: Expectations of concrete vs. abstract compliments

People imagining how others would respond to a series of compliments anticipated that the recipients would grow tired of them over time (Experiment 1), while those who were randomly assigned to actually write compliments to a recipient did not (Experiment 2). Experiment 3 was designed to clarify the nature of people's expectations and to better explain these seemingly inconsistent results. Specifically, we tested whether having specific compliments in mind would prevent people from applying the concept of adaptation when predicting recipients' reactions to multiple compliments. We did so in the *concrete compliment* condition by yoking one participant to each pair in Experiment 2 and asked them to read the actual compliments expressers delivered to the recipients and then make the same predictions that the actual expressers did. In comparison, we asked participants in two *abstract compliment* conditions to predict, with no specific compliments in mind, how a recipient would react in the procedure we used in Experiment 2. We predicted that people expect adaptation to experiencing the same event repeatedly, meaning that participants in the two abstract compliment conditions would expect more adaptation to receiving multiple compliments than would participants in the concrete compliment condition.

Method

Participants

Amazon MTurk workers agreed to participate in a three-minute "survey on social interaction" and received .50 USD in exchange. We targeted 67 participants in each of our 3 experimental conditions, so that one participant in the concrete compliment condition could be yoked to every one of the 67 pairs in Experiment 2.³ A total of 226 participants completed our experiment. We excluded 6 participants who failed our bot-screening check and 21 in the concrete compliment condition who were the second participants randomly assigned to the same expressers in Experiment 2,⁴ yielding 199 participants for

data analysis ($M_{age} = 35.37$, $SD_{age} = 10.38$, $range_{age} = 18-70$; 41% female). Including these 21 duplicates does not, however, meaningfully alter any of the following analyses.

Procedure

Participants were assigned to one of three conditions. Participants in the *concrete compliment* condition were each yoked to one pair in Experiment 2, read a brief summary of Experiment 2's procedure, and then saw the exact compliments delivered to their yoked recipient on each day of the experiment. These participants were told that those compliments were sent to the recipient from Monday to Friday and reported how they expected the recipient to respond on the same three items used in Experiment 2 (positive/negative mood, awkwardness, and compliment sincerity) across five days. Participants in the *abstract compliment (observer)* condition followed the same procedure except that they were not shown the actual compliments sent; instead, they were asked to imagine how someone would respond to abstract, unspecified, "compliments." Finally, participants in the *abstract compliment (expresser)* condition were asked to identify one specific person they were close in their life as their recipient (as in Experiment 1), imagined going through Experiment 2's procedure as the expresser, and predicted how that person would react to their compliments without actually writing any.

Finally, all participants predicted how the recipient's overall experience would change over the week on two items identical to those in Experiment 2 (i.e., getting better/worse, getting tired), provided their demographic information (i.e., gender, age, race, and education), and were debriefed and compensated.

Results

As in Experiment 2, we constructed a linear mixed model for each of the three primary DVs (positive mood, awkwardness, and perceived sincerity) with the linear effect of time, the effects of experimental condition, and their interaction terms as fixed effects and participant-specific intercepts as random effects. Given that our experimental manipulation has three conditions, we conducted two *a priori* Helmert contrasts to examine the effect of compliment concreteness: the first comparing the two abstract compliment conditions against each other, and the second comparing the two abstract compliment conditions against the concrete compliment condition. Following reviewers' suggestions during the publication process, we also compared participants' expectations in the current experiment against the yoked expressers' expectations and the yoked recipients' experiences in Experiment 2. Overall, we found that participants in Experiment 3 expected *even less* positive reactions from the recipients than the actual expressers in Experiment 2 did, and thereby underestimated even further how positive the recipients in Experiment 2 actually felt. We report these additional analyses in the Supplemental Material.

Positive mood

Participants generally expected recipients' positive mood to decline over the course of the week, $b = -.18$, $SE = .03$, 95% CI = $[-.24, -.13]$, $t(796) = -6.67$, $p < .001$. As shown in [Figure 3](#) (panel A), this expected decline was similar in the two abstract compliment conditions, as indicated by the lack of an interaction between time and the contrast between the two abstract conditions, $b = 0$, $SE = .03$, $p = .95$. By comparison, this expected decline was more

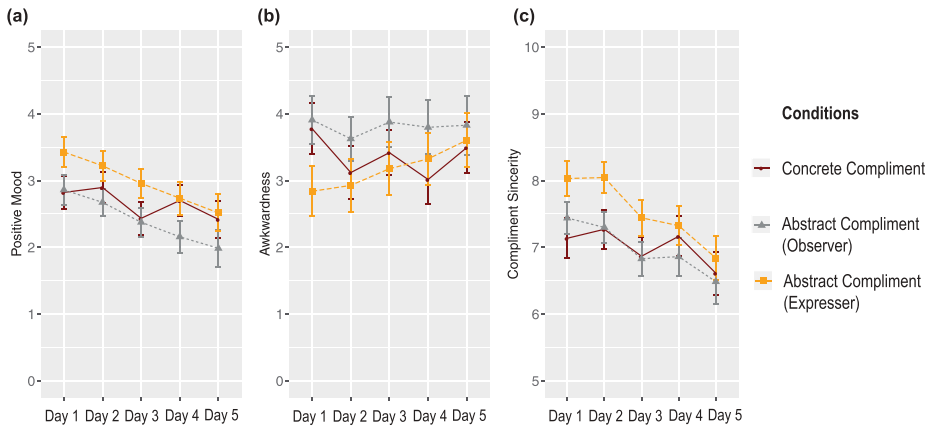


Figure 3. Expected positive mood (a), awkwardness (b), and perceived sincerity (c) among participants in the concrete compliment, abstract compliment (observer), and abstract compliment (expresser) conditions in Experiment 3. Error bars indicate ± 1 SE.

Ratings on positive mood ranged from a scale of -5 (much more negative than normal) to 5 (much more positive than normal). Ratings on awkwardness and compliment sincerity ranged from a scale of 0 (not at all) to 10 (extremely).

gradual in the concrete compliment condition, as indicated by a significant interaction between time and the contrast between the concrete condition and two abstract conditions, $b = .04$, $SE = .02$, $95\% \text{ CI} = [0, .08]$, $t(796) = 2.18$, $p = .029$. Specifically, participants expected significant adaptation to repeatedly receiving compliments over the course of the week in both the abstract compliment (observer) condition, $b = -.23$, $SE = .04$, $95\% \text{ CI} = [-.31, -.15]$, $t(256) = -5.54$, $p < .001$, and in the abstract compliment (expresser) condition, $b = -.23$, $SE = .04$, $95\% \text{ CI} = [-.31, -.15]$, $t(272) = -5.39$, $p < .001$, but they expected a more gradual decline in the recipients' positive mood in the concrete compliment condition, $b = -.10$, $SE = .06$, $95\% \text{ CI} = [-.22, .02]$, $t(268) = -1.71$, $p = .088$.

Awkwardness

Similar to Experiment 1, participants' expectations about awkwardness were somewhat more complicated than expectations about positive mood. Overall, participants expected little change in awkwardness over the course of the week, $b = .04$, $SE = .04$, $p = .20$, but this varied by experimental conditions. As shown in Figure 3(b), expected awkwardness of receiving multiple compliments varied somewhat between the two abstract compliment conditions, as indicated by a marginally significant interaction between time and the contrast between two abstract conditions, $b = -.09$, $SE = .05$, $95\% \text{ CI} = [-.19, 0]$, $t(796) = -1.94$, $p = .052$. In addition, the pattern was also somewhat different in the concrete compliment condition compared to the two abstract conditions, as indicated by a marginal interaction between time and the contrast between the concrete condition and the two abstract conditions, $b = -.05$, $SE = .03$, $95\% \text{ CI} = [-.11, 0]$, $t(796) = -1.94$, $p = .053$. Specifically, participants in the abstract compliment (expresser) condition imagined that someone in their own life would feel increasingly awkward over the course of the week, $b = .19$, $SE = .05$, $95\% \text{ CI} = [.09, .30]$, $t(272) = 3.68$, $p < .001$, while participants expected little change in awkwardness over the course of the week in the abstract

compliment (observer) condition, $b = 0$, $SE = .06$, $p = .98$, or in the concrete compliment condition, $b = -.07$, $SE = .09$, $p = .44$.

Compliment sincerity

Participants generally expected recipients to perceive multiple compliments to be increasingly less sincere over the course of a week, $b = -.22$, $SE = .03$, 95% CI = $[-.28, -.16]$, $t(796) = -6.79$, $p < .001$. As shown in Figure 3(c), this expectation of decline was similar in the two abstract compliment conditions, as indicated by the lack of an interaction between time and the contrast between the two abstract conditions, $b = .04$, $SE = .04$, $p = .34$. By comparison, this decline was more gradual in the concrete compliment condition, as indicated by a significant interaction between time and the contrast between the concrete condition and the two abstract conditions, $b = .05$, $SE = .02$, 95% CI = $[.01, .10]$, $t(796) = 2.30$, $p = .022$. Specifically, participants expected other people to perceive each compliment as a bit less sincere over the course of the week in both the abstract compliment (observer) condition, $b = -.23$, $SE = .05$, 95% CI = $[-.33, -.13]$, $t(256) = -4.62$, $p < .001$, and in the abstract compliment (expresser) condition, $b = -.31$, $SE = .04$, 95% CI = $[-.40, -.22]$, $t(272) = -6.78$, $p < .001$. Participants in the concrete compliment condition, however, expected perceived sincerity to decline more gradually, $b = -.11$, $SE = .07$, 95% CI = $[-.25, .02]$, $t(268) = -1.67$, $p = .096$.

Predicted change

Finally, we analyzed the two items that directly asked participants to report their expectations about changes over the course of the week (i.e., get better or worse/get tired by the end of the week) and found no main effect of condition in either measure, $F_s = .15$ and $.25$, $p_s = .86$ and $.78$, respectively. Overall, participants expected the recipients' experience to get slightly better ($M = .45$, $SD = 2.44$; $t(198) = 2.645$, $p = .009$) and that the recipients would feel moderately tired of the repeated experience at the end of the week ($M = 4.88$, $SD = 3.15$; $t(198) = 21.90$, $p < .001$).

Discussion

These results from Experiment 3 indicated that participants in the abstract conditions – regardless of whether imagining being an expresser or an observer – generally expected the recipients to adapt to multiple compliments, consistent with the survey results reported in Experiment 1. In contrast, those who read the actual compliments in Experiment 2 expected somewhat weaker adaptation over the course of the week. This suggests that one difficulty in appreciating the value of giving compliments repeatedly may come from failing to recognize the diversity of compliments when considering the act abstractly. Expressers may only come to recognize their consistently positive impact on the recipients once they have actually generated the compliments, yet anticipated adaptation could serve as a barrier to routinely generating compliments for a recipient in daily life. We observed no systematic tendency for participants in any condition to expect recipients' experience to improve over the course of the week, suggesting that those results among expressers in Experiment 2 may stem from an artifact of the procedure used in that experiment. In hindsight, that artifact could have been removed by informing expressers in Experiment 2 that their compliments would be delivered to their recipients

in a random order. Further research will be necessary to understand whether expressers still expect increasing positivity in the recipients' mood when the quality of their compliments is rendered independent of the order in which they are expressed.

General discussion

"My child, I could live on a good compliment two weeks with nothing more to eat."

-Mark Twain, 1906

Twain was obviously exaggerating when noting that kind words could satisfy his hunger needs for two weeks, but it is no exaggeration to say that satisfying a person's need for belonging may be just as fundamental as satisfying a person's hunger (Baumeister & Leary, 1995). Behavior that signals strong relationships is deeply satisfying, both to one's happiness and sense of self-worth. However, just as one good meal does not satisfy hunger for weeks, signs of positive regard – like a good compliment – are also unlikely to satisfy belonging needs for weeks. Indeed, recipients in Experiment 2 did not grow tired of receiving one compliment every day for a week, but instead found each one to make them feel just as positive (on average) as the one before it. A compliment, like a good meal, may leave people feeling satisfied for a while, but the hunger for a sense of belonging likely will not go away for long.

More important, our research also suggests that people can misunderstand how others react to compliments, at times overestimating the extent to which others will adapt and "grow tired" of receiving multiple compliments. These results provide an important extension beyond existing research demonstrating that people underestimate how positively others respond to receiving compliments at a single point in time (Zhao & Epley, 2020a). This extension is important because relationships require maintenance in the form of repeated affirmations, assurances, and relational bonding in order to succeed over time. A person who assumes that another person will be satisfied with a single compliment for two weeks may do less of this maintenance, at least in the form of positive affirmations and compliments, than would be optimal for both their own and others' wellbeing.

Several findings from the current experiments indicate that people can expect recipients to adapt to multiple compliments more than recipients actually do. In Experiment 1, those who imagined delivering or receiving one new compliment each day for 5 days expected that each compliment would leave the recipient feeling a little less positive than the one before, and would also seem a little less sincere. These results emerged regardless of how the compliment was expressed (in person or through text) or generated (all at once or one at a time each day). Describing similar results for a host of different stimuli (i.e., food and music), Kahneman and Snell (1992) argued that people have a "stereotyped prediction of declining liking for an initially liked stimulus," suggesting that our participants' expectations about compliments are not especially unique to prosocial behaviors.

Experiment 3 further suggests that people may expect others to adapt to compliments primarily when they are considered abstractly, rather than concretely, likely because this makes each new compliment seem less novel or unique than a series of real compliments actually is. People's emotional experience adapts to experiencing the same stimulus over time, but adapts more slowly (if at all) to experiencing different stimuli (Galak & Redden, 2018; O'Brien, 2019). Mistaken expectations of adaptation could come from

underestimating how unique repeated experiences will actually seem to those who are experiencing them (O'Brien, 2019).

It is worth noting, however, that we do not know from this research whether people would adapt as expected to receiving the *very same* compliment repeatedly. Although it is possible that people adapt to hearing the very same compliment repeated over time, we would still hypothesize that recipients adapt less than the expressers would anticipate. In fact, the gap between the expected and actual impact of a compliment could even increase if expressers assume that recipients adapt even more extremely to the very same compliment while recipients continue deriving positive value from it. After all, even the same words expressed over different days can take on new meaning for a recipient, and hence renewed emotional impact, because the context in which those words are expressed are likely to have changed over the course of different days. In addition, we presume that the same words can repeatedly satisfy a person's need for belonging simply by reaffirming another person's positive regard. Hearing a spouse say, "you are beautiful," on multiple days is unlikely to grow tired over time, in the same way that a favorite meal is unlikely to grow tired even when eaten repeatedly (Read & Loewenstein, 1995). Future research is needed to test these hypotheses.

Interestingly, those who were actually expressing compliments to a recipient in Experiment 2 did not expect their compliments to grow tired, but instead expected their recipient to feel more positive in response to the last compliment than they did in response to the first. This result was unexpected and requires more research to understand fully. At this time, we believe it is most likely that this result emerged because expressers in this experiment were able to specify the order in which their compliments would be delivered to a recipient, and so may have arranged them in a way that would yield an improving sequence over the course of the week. Future research that removes this confound is necessary to test this hypothesis directly.

Although our experiments suggest that compliments are a surprisingly good way to make others feel positive, a week of receiving compliments did not significantly increase the recipients' self-reported relationship satisfaction in Experiment 2. One possible explanation is that we were studying relationships with very high levels of satisfaction even before recipients entered the week-long experience, which then remained high through the end of the experiment ($M_s = 4.13$ and 4.08 ; $SD_s = 1.24$ and 1.26 , on a scale ranging from -5 to 5). Furthermore, recipients reported that their study partners already gave them 6.02 compliments per week, on average, prior to entering the week-long experience. The impact of compliments on a recipient's mood may be independent of relationship quality, but its impact on relationship satisfaction may be significantly larger in weaker relationships where satisfaction is lower. Indeed, a large literature on relationship maintenance strategies has shown that communication of positivity (such as giving compliments) and assurance (such as telling the relationship partner how much they mean) often strongly predicts relationship satisfaction among romantic partners (Stafford & Canary, 1991; Stafford et al., 2000), family members (Myers et al., 2001), and coworkers (Madlock & Booth-Butterfield, 2012). Considering that participants in a satisfying relationship with plenty of compliments exchanged still underestimated the positive impact of their compliments in Experiment 2, we believe it would be important to examine how dyads who rarely exchange compliments expect them to influence their recipient, and

whether it meaningfully impacts relationship satisfaction even over the course of a single week.

Although the experiments we report here have focused primarily on expected versus actual adaptation to prosocial acts, in this case of receiving compliments, it is worth noting that our experiments also indicated that recipients generally felt more positive than others expected. This result emerged when comparing those who wrote and expressed their compliments to a friend or a romantic partner in Experiment 2, and was especially strong when examining more generalized expectations about how others respond to repeated compliments in Experiment 3 (see analyses in the Supplemental Material). These results add to a growing body of new research reporting similar findings. People underestimate how positively others respond to complete honesty (Levine & Cohen, 2018), expressions of gratitude (Kumar & Epley, 2018), random acts of kindness (Kumar & Epley, 2020), requests for help (Zhao & Epley, 2020b), and constructive confrontations (Dungan & Epley, 2020). Human beings are deeply social, valuing positive signals of warmth and liking from others presumably because they serve to satisfying belonging and relational needs (Leary et al., 1995). These emerging results, however, suggest that people widely underestimate just how important those social signals are to others.

Finally, misunderstanding how others respond to prosocial actions matters because miscalibrated expectations can serve as a barrier to engaging in prosocial actions more often in daily life. Although we did not test this hypothesis in the experiments we report here, people's behavior is often guided by the expected value of possible actions. If a person believes that others will not react favorably to a repeated series of compliments, then they refrain from giving as many as they could. As just one anecdotal example of this possibility, one of the authors (Epley) suggested a new family tradition for the Christmas holiday to his wife while in the midst of writing this very paper. The idea was to have each family member write 5 compliments to each other member of the family, one each on a strip of paper, which could then be stapled into a series of rings and hung up on the Christmas tree. Each family member would then tear off and read one of the rings each day. The idea was almost immediately rejected because, "It would get old." Failing to fully appreciate just how positive repeated signs of warmth and affirmation could feel may even keep one of the author's family—at least for one holiday season—from feeling as positive and connected as they could otherwise be.

Notes

1. All analyses were conducted using the R statistical software (R Core Team, 2013) with functions from the lme4 package and the lmerTest package (Bates et al., 2015; Kuznetsova et al., 2017).
2. We did not include random slopes in this analysis because the random slope models did not provide superior model fit compared to the random intercept models based on our data; in addition, it has been suggested that random slope models may be unreliable for estimating growth when there are fewer than six time points (Wright, 2017), and we only have five time points in our design.
3. Two pairs in Experiment 2 each had one participant below the age of 18 according to their self-reported demographic information at the end of the survey and so had to be removed from all analyses. Because all participants indicated that they were at least 18 years old during

the consent procedure prior to study enrollment, we only noticed those two underage participants after we completed data collection for all experiments. We therefore based our sample size targets on the number of participants we believed were included in Experiment 2 at the time we conducted Experiment 3.

4. Due to the technological limitations of our Qualtrics survey design, during the initial data collection period, some pairs from Experiment 2 got yoked to two participants, while some did not get any participants. We therefore recruited an additional 21 participants and randomly assigned them to one of the pairs that did not get a yoked observer in our initial data collection period.

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