Article

Helping Others Regulate Emotion Predicts Increased Regulation of One's Own Emotions and Decreased Symptoms of Depression

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Abstract

Although much research considers how individuals manage their own emotions, less is known about the emotional benefits of regulating the emotions of others. We examined this topic in a 3-week study of an online platform providing training and practice in the social regulation of emotion. We found that participants who engaged more by helping others (vs. sharing and receiving support for their own problems) showed greater decreases in depression, mediated by increased use of reappraisal in daily life. Moreover, social regulation messages with more other-focused language (i.e., second-person pronouns) were (a) more likely to elicit expressions of gratitude from recipients and (b) predictive of increased use of reappraisal over time for message composers, suggesting perspective-taking enhances the benefits of practicing social regulation. These findings unpack potential mechanisms of socially oriented training in emotion regulation and suggest that by helping others regulate, we may enhance our own regulatory skills and emotional well-being.

Keywords

emotion regulation, social support, perspective taking, social interaction

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When emotions become too much to handle, people often turn to others for help in managing them. For example, a friend might quell our nerves before an important job interview by framing it as a nothing-to-lose chance to showcase our talents and skills, or we might help that friend see the end of a romantic relationship as an opportunity for personal growth. In these instances, emotion regulation occurs in the context of a two-way social interaction.

Although such *social regulation of emotion* is thought to be common, with a few exceptions (Beckes & Coan, 2011; Coan & Maresh, 2014; Eisenberger et al., 2011), surprisingly little work has investigated it empirically (Butler & Randall, 2013; Reeck, Ames, & Ochsner, 2016; Zaki & Williams, 2013). Instead, research in the emotion regulation tradition has focused primarily on the processes individuals use to manage their own emotions (see Gross, 2015). In parallel, research on social support has posed questions about costs and benefits of emotional support for recipients but paid relatively less attention to benefits of support provision for the provider (see Uchino, 2009).

Importantly, there are many ways of socially regulating emotion, ranging from physical contact and proximity (see Coan, Schaefer, & Davidson, 2006) to verbal expressions, which we focus on here. Verbal expressions can serve social regulatory functions in different ways. Two core methods are *acceptance*, which entails validating a person's feelings and expressing empathy for their negative experience (Thoits, 2011; Uchino, 2009), and *reappraisal*, which entails providing someone with a different way of thinking about a distressing event (Gross, 2015; Zaki & Williams, 2013).

Although constructing and expressing messages of acceptance and reappraisal may entail an immediate cost in resources (time, effort, etc.), converging lines of evidence prompt the hypothesis that providing such help may be sometimes as beneficial for the provider as for the recipient. In particular, helping others regulate provides an opportunity to practice emotion regulation skills that may transfer to

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future situations (see J. Taylor & Turner, 2001; S. E. Taylor, 2011). These opportunities may be especially useful to the extent that they provide an opportunity to take the psychological perspective of another person, providing psychological distance that can enhance reasoning and emotion regulation success (Kross & Ayduk, 2011; Kross & Grossmann, 2012). Receiving support, on the contrary, can call attention to our own problems and our difficulties in dealing with them (Bolger, Zuckerman, & Kessler, 2000). Moreover, receiving support from others does not require motivated initiation of the regulation process or self-generation of content, processes that are known to enhance skill learning more generally (Colquitt, LePine, & Noe, 2000; Crutcher & Healy, 1989). Taken together, prior research prompts the hypothesis that inhabiting the perspective of others and helping them regulate their emotional reactions to stressful situations may be a particularly powerful way to practice and hone our own regulation skills, which can then be applied to improve our own emotional well-being.

Recently, these issues have become relevant in an acutely modern domain—online social environments. In addition to emotional support processes enacted through popular, multipurpose environments like Facebook or Twitter (Indian & Grieve, 2014; Kivran-Swaine, Ting, Brubaker, Teodoro, & Naaman, 2014), in the past 5 years, an entire industry of scalable mobile applications for mental wellness has emerged, many of which rely on facilitating peer-to-peer support and dialogue (see Schueller, Munoz, & Mohr, 2013). However, at present, there is scant empirical data that can speak to the psychological mechanisms of social emotion regulation these applications rely on.

We investigated these questions within the context of a 3-week study of a novel Internet application—named *Panoply*—that gives opportunities for training and practice in the social regulation of emotion within an anonymous online environment as well as a comparison application giving opportunities for nonsocial expressive writing (see Morris & Picard, 2012). We have previously shown that use of this social regulation platform elicits decrease in depressive symptoms (comparable to decreases seen with expressive writing) and increase in reported use of reappraisal over time (higher than increases seen with expressive writing; Morris, Schueller, & Picard, 2015). However, this prior work leaves open the fundamental question of what interpersonal and emotion regulatory mechanisms are responsible for bringing these beneficial effects about. Within this social regulation application, participants can *share* descriptions of distressing life experiences and also *help* other participants by providing social regulation messages in response to the shared posts of other users. Thus, the application enables us as researchers to measure behavioral acts of social regulation within a complex environment and to quantify the language used to accomplish this regulation, giving further insight into regulation and perspective-taking processes. If helping others is a particularly powerful way to build emotion regulation skills, helping others to regulate their emotions should bring about and thus prospectively predict increases in one's own use of reappraisal as well as decreases in one's own symptoms of depression. Moreover, if adopting the perspective of those we are helping contributes to the efficacy of social regulation, the use of more other-focused language when socially regulating should predict better psychological outcomes for recipients and providers of regulatory support.

Method

Participants and Design

Participants aged 18 to 35 were recruited online and randomly assigned to either the social regulation condition, in which they interacted with an online platform that gave opportunities for socially interactive practice in emotion regulation, or to a comparison condition, in which they interacted with an online platform that gave opportunities for expressive writing but did not include any socially interactive components (i.e., written messages could not be read or responded to by other users). A total of 108 participants activated an account on the social regulation platform, and 24 were lost from baseline to follow-up, leaving a sample size of 84 (62F [female]) for the social regulation condition. A total of 109 participants activated an account on the nonsocial expressive writing comparison platform, and 27 were lost from baseline to follow-up, leaving a sample size of 82 (62F) for the social regulation condition. Participants not lost to follow-up were included in all analyses.

The study was advertised as an opportunity to try a new, web-based stress reduction application open to the general public, and recruitment occurred via universities, websites (craigslist, research portals), and social media channels (Facebook, Twitter). Participants were not paid for participation in the study but instead offered a chance to win an iPad Mini (valued at US$300) for completing baseline and follow-up assessments, not contingent on use of the platform. All study procedures were approved by the MIT (Massachusetts Institute of Technology) Committee on the Use of Human Subjects as Experimental Subjects. Although the design of the platform (Morris & Picard, 2012) and outcome data showing its effectiveness have been reported previously (Morris et al., 2015), we report only novel analyses here that were designed to unpack psychological mechanisms underlying benefits of socially regulating other people's emotions.

Procedure

Participants completed questionnaire assessments at baseline and follow-up, and interacted with their assigned application—either the social regulation platform (Panoply) or the expressive writing comparison platform—in the 3-week interim.

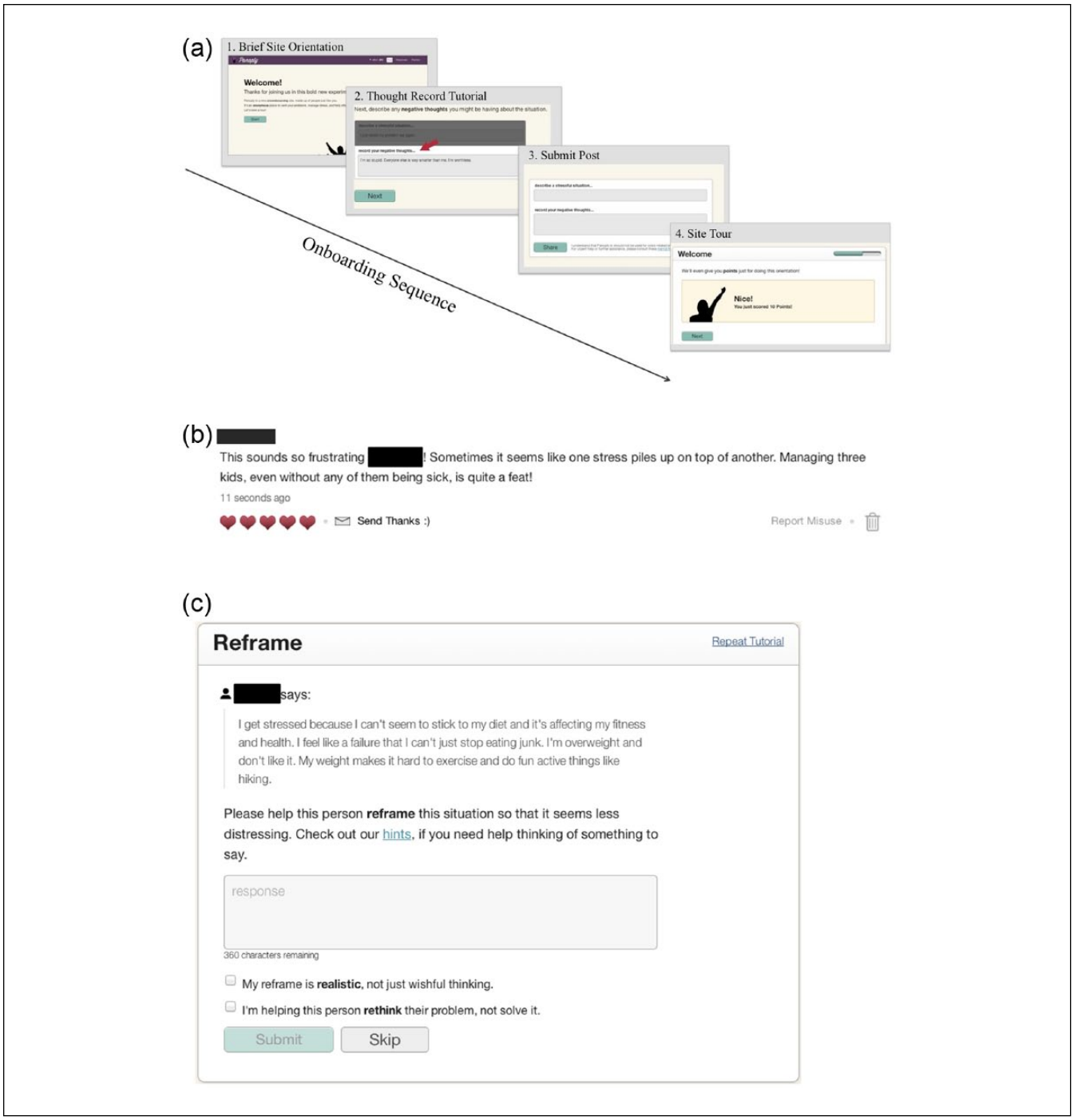

Figure 1. Screenshots of online interface within social regulation platform.
Note. (a) When participants activated their accounts, they moved through (1) a brief overview, (2) an introduction to writing about distressing experiences, (3) a chance to write about a distressing experience, and (4) a tour of the site's features. (b) A screenshot of an example acceptance message. Participants could rate helpfulness and/or send a thank-you note. (c) A screenshot of the reappraisal interface. Participants were asked to help another user by providing a different way of thinking about a distressing experience.

Figure 1 shows a schematic of what interacting with the social regulation application entails: Essentially, the environment is an anonymous social network website where users can interact with peers in structured ways. Initially, participants logged into a website, went through training in how to use it, and were asked to write about a distressing experience (see Figure 1a for a schematic). Subsequently, they began to receive messages of acceptance and reappraisal from other users (see Figure 1b) and were trained in how to compose such messages to send to other users (see Figure 1c).

Automated training modules instructed participants in how to generate acceptance and reappraisal responses in response to such texts, provided examples, and assessed successful comprehension with interactive quizzes (for further details, see Morris & Picard, 2012). In the expressive writing comparison platform, participants were similarly asked to write about distressing experiences (500 characters maximum). The web and interface design for the expressive writing platform was identical to the social regulation platform and the instructions/tutorial for describing stressful situations and negative thoughts were exactly the same. However, there was no social component to the platform—participants were asked only to write deeply about their own stressful situations and negative thoughts, and did not receive responses to their posts or have the opportunity to read or respond to posts of anyone else.

After initial training, users could interact with the social regulation application by *sharing* descriptions of stressful personal experiences (500 characters maximum) and/or by *helping* other users regulate their emotional responses—that is, reading posts shared by others and sending short empathetic responses (280 characters maximum), pointing out possible distortions in thinking (by selecting from a list of common thought distortions), and/or sending short reappraisals (360 characters maximum). For every post of a stressful experience that users shared, they received messages of acceptance and reappraisal from other users. Participants were encouraged to rate these responses in terms of how helpful (1 = *not helpful* to 5 = *very helpful*) the response was in for coping with the shared experience, and were also given the option of sending a short thank-you note (360 characters maximum) to any user who sent them an acceptance or reappraisal message (see Figure 2 for a simulated example exchange). In terms of time commitment, participants were asked to use the application for a minimum of 25 min per week for 3 weeks and received four automated emails throughout the study reminding them to do so.

Online questionnaires administered at baseline and Week 3 assessed our primary outcomes of interest: depression symptoms (Center for Epidemiologic Studies Depression Scale [CESD]; 0 = *fewest symptoms* to 60 = *most symptoms*; Radloff, 1977) and frequency of reappraisal use in daily life (Emotion Regulation Questionnaire [ERQ]-Reappraisal Subscale; 1 = *infrequent use* to 7 = *frequent use*; Gross & John, 2003) as well as three other outcome measure of secondary interest (Positive and Negative Affect Schedule [PANAS], Subjective Happiness Scale [SHS], and Perseverative Thinking Questionnaire [PTQ]). The full texts of all application sharing and helping behaviors were recorded and stored.

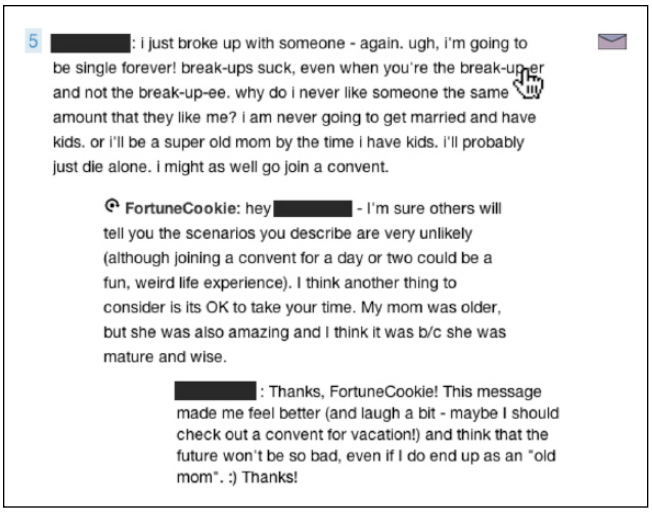

Figure 2. An example exchange between two users, involving an initial description of a distressing event, a message of social regulation, and a subsequent thank-you note.
Note. FortuneCookie is the username for an administrator account, not a participant.

Analyses

Analyses were implemented in R (R Core Team, 2016). We used robust regression models (Wang et al., 2014) to examine relationships between online behaviors and subsequent change in psychological variables, estimating effect sizes with unstandardized coefficients. For models that considered change over time, we accounted for baseline measures of reappraisal use or depression symptoms as covariates—that is, all analyses of change used a *regressed change* approach (see Maris, 1998; Oakes & Feldman, 2001). Counts of sharing and helping behaviors (i.e., the number of times shared an experience or helped by sending a supportive message to another user) exhibited positive skew, so we log-transformed these variables (corresponding to log-linear effects of behavior on psychological outcomes). Because the logged sharing and helping variables were collinear (r = .62), we residualized the helping variable against the sharing variable to isolate variance unique to helping (this collinearity is to be expected, because both sharing and helping behaviors increase with general engagement with the platform). This effectively created helping scores for each participant that were statistically adjusted for levels of sharing—that is, scores that reflect relative engagement with the platform via helping, independent from overall engagement. We conducted mediation analyses (Tingley, Yamamoto, Hirose, Keele, & Imai, 2014) to examine whether the observed relationships were consistent with a causal pathway, whereby the effect of online behavior on later depression is mediated by increased use of reappraisal in daily life.

Previous work has shown that pronoun use in written text is reflective of psychological perspective-taking processes (Kross et al., 2014; Tausczik & Pennebaker, 2010). To quantify language in social regulation texts, we processed them with Linguistic Inquiry and Word Count (LIWC; Pennebaker, Booth, & Francis, 2007), a linguistic software that computes counts of different categories of words, generating counts for

the number of second-person pronouns (e.g., you, you'll, your), the number of first-person pronouns (e.g., I, I'd, my), and the total number of words for each regulation text generated within the social regulation application (906 texts total from 84 participants). We used single-level robust regression models for aggregated person-level word count data, and multilevel regression models for message-level data, including random effect terms allowing model intercepts and slopes to vary by participant (see Bates, Maechler, Bolker, & Walker, 2015).

Results

Demographic Characteristics

We compared demographic characteristics (age, gender, and years of education) across participants who completed the study and those who dropped out between baseline and Week 3 assessments. Participants who completed the entire study were broadly similar demographically compared with those who dropped out, but were slightly more likely to be female ($\%F_{retained}$ = 70%, 95% confidence interval [CI] = [61%, 77%]; $\%F_{lost}$ = 59%, 95% CI = [48%, 70%]), slightly younger ($M_{retained}$ = 23.2, 95% CI = [22.4, 24.0]; M_{lost} = 25.4, 95% CI = [24.3, 26.6]), and had slightly less postsecondary education ($M_{retained}$ = 3.1, 95% CI = [2.6, 3.6]; M_{lost} = 3.7, 95% CI = [3.3, 4.0]. There were no differences in age, gender, or years of education between the retained participants assigned to the social regulation versus expressive writing conditions.

Participant Engagement With the Online Platforms

On average, expressive writing participants logged in 10 times, stayed for an average of 3 min per session, and posted 7.7 problems over the course of the 3-week study. Social regulation participants logged in an average of 21 times and stayed for an average of 9 min per session. On average, social regulation participants posted (i.e., shared) 3.3 problems and helped others 18.3 times, comprising 5.3 messages of acceptance, 6.1 messages of reappraisal, and 6.9 instances of pointing out distortions in thinking.

More Frequent Posting Behavior Was Not Highly Predictive of Benefits

We first examined the relationship between posting descriptions of life stressors and subsequent change in reappraisal and depressive symptoms (adjusting for baseline scores of these variables). For the expressive writing participants, we found no relationship between posting frequency (i.e., posting descriptions of distressing experiences) and subsequent change in depressive symptoms, b = −0.89, 95%[−2.68, 0.89], p = .33, but we saw a trend-level relationship between posting behavior and subsequent increase in use of reappraisal, b = .04, 95% CI = [−.01, .08], p = .09. For the social regulation platform, we found no relationship between posting frequency (i.e., posting descriptions of distressing experiences that were shared with other users) and change in depressive symptoms, b = .62, 95% CI = [−2.6, 3.8], p = .70, or reported reappraisal use, b = −.02, 95% CI = [−.27, 0.24], p = .89.

More Frequent Helping Behavior Predicted Increased Use of Reappraisal and Decreased Depressive Symptoms

The social regulation platform we studied was specifically designed to train users in reappraisal and provide opportunities for practicing this cognitive skill in a socially interactive context. In our core analyses, we asked whether change in self-reported use of reappraisal could be predicted by helping behaviors enacted over the 3 weeks of application use (see Figure 3a). We found that helping behavior (i.e., sending messages of acceptance and reappraisal to other users, adjusting for engagement via sharing) was predictive of baseline to follow-up increase in reappraisal use, b = 0.33, 95% CI = [0.09, 0.56], p = .007 such that participants who engaged more by helping others showed the largest increases in self-reported use of reappraisal. Next, we considered change in depressive symptoms—the primary psychological outcome targeted by the design of the social regulation application (see Figure 3b). Helping behavior was also predictive of decreases in depressive symptoms over the course of the study, b = −3.33, 95% CI = [−6.05, −0.61], p = .009. Notably, helping scores were neither related to baseline (Time 1) depressive symptoms, b = 0.001, 95% CI = [−.014, .012], p = 0.88, nor reappraisal use, b = −0.003, 95% CI = [−.12, .11], p = 0.95.

The Relationship Between Helping Behavior and Depressive Symptoms Was Mediated by Increased Use of Reappraisal

We used mediation analysis to assess whether the observed relationships were consistent with a theoretically specified causal model whereby helping other users leads to increased use of reappraisal, which in turn leads to decreased depression symptoms. The results of the model (see Figure 3c) indicated that the predictive relationship between helping behavior and decreased depression symptoms was mediated by increased reappraisal frequency, indirect path a × b = −1.15, 95% CI = [−2.51, −0.19], p = .01. When controlling for reappraisal frequency, the predictive effect of helping on depression change decreased in magnitude and dropped to nonsignificant, direct path c′ = −2.14, 95% CI = [−5.21, 0.91], p = .16. Moreover, this mediation pathway held when

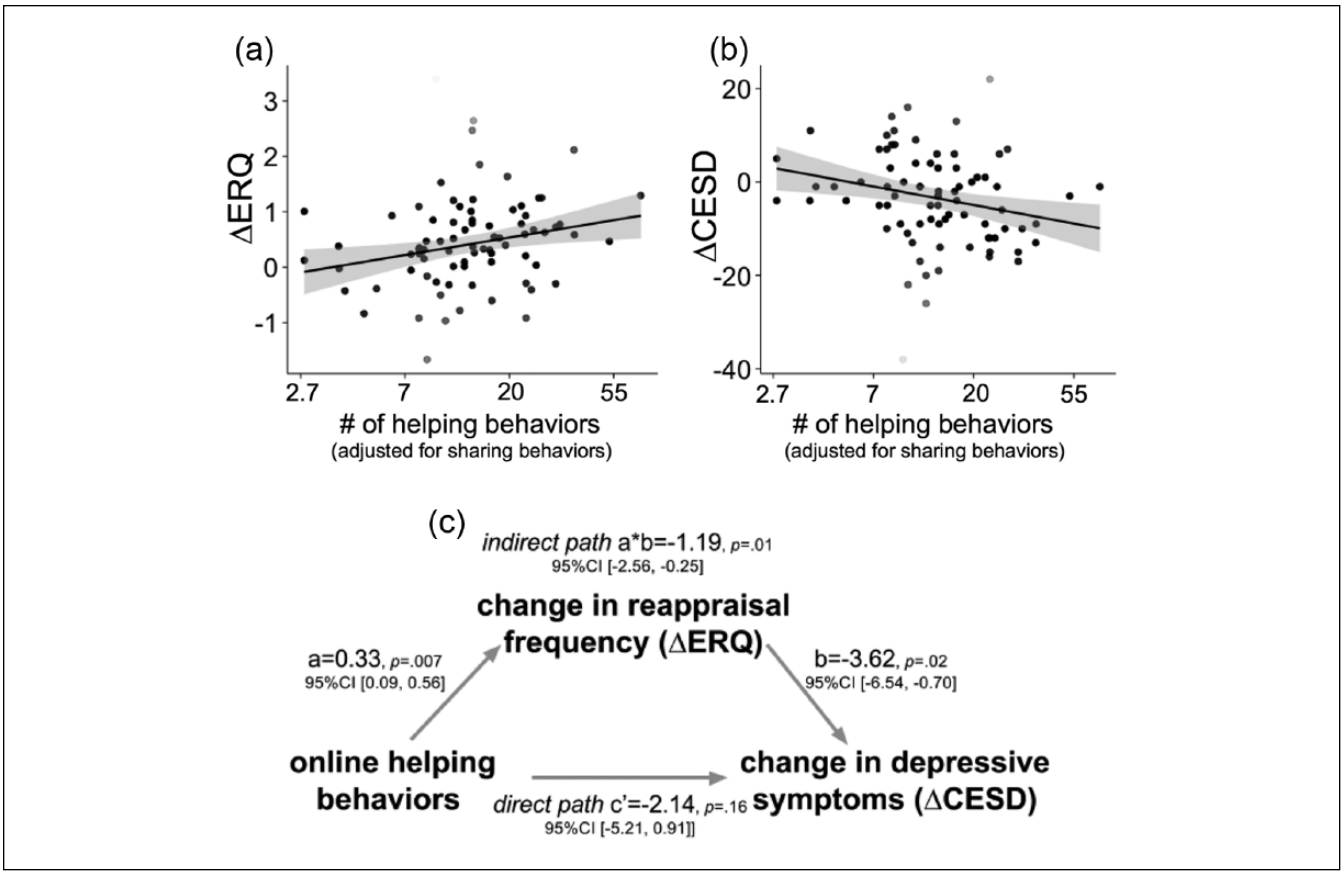

Figure 3. Enacting more social regulation helping behaviors (adjusted for sharing behaviors) was predictive of (a) increased reported use of reappraisal to regulate emotion, and (b) decreased depressive symptoms, over the 3-week study duration (datapoint opacity reflects robust regression weights); (c) the relationship between online helping behaviors and decrease in depressive symptoms was mediated by increased reappraisal frequency.
Note. All models adjusted for baseline scores.

additionally controlling for age and gender, indirect path a × b = −1.02, 95% CI = [−2.32, −0.10], p = .02. In an exploratory follow-up, we conducted a parallel mediation analysis with the data from our expressive writing control group, using frequency of (expressive writing) posting behavior as the x-variable. This analysis estimated a direct path of more frequent posting behavior to change in depression, b = −0.89, 95% CI = [−2.68, 0.89], p = .33, and an indirect path mediated via change in reappraisal, a × b = −0.44, 95% CI = [−1.37, 0.15], p = .17, neither of which met significance.

More Helping Behavior Was Associated With Psychological Benefits Pooling Across All Primary and Secondary Outcome Variables Measured

Although our primary outcome variables reported use of reappraisal in everyday life (ERQ) and depressive symptoms (CESD), we also asked participants to complete questionnaires assessing subjective happiness (SHS), mood (PANAS), and perseverative thinking (PTQ). We conducted a follow-up analysis to ask whether helping behavior frequency was predictive of pre- to postchange in these three variables (adjusting for baseline scores). All questionnaire variables were normalized, and CESD and PTQ were reverse coded, such that higher scores on each variable reflect (in units of standard deviations) a positive change on that outcome measure from the beginning to the end of the study. This analysis, displayed in Figure 4, revealed that, pooling across the specific questionnaires, there was a strong relationship such that increased helping behavior predicted better psychological outcomes over the course of the study, b = .36, 95% CI = [.10, .62], p = .007. We also asked whether the mediation effect held when pooling across depressive symptoms, subjective happiness, mood, and perseverative thinking (instead of using depressive symptoms as the outcome variable, as we did in our primary analysis). Here we found that there was a significant total effect of helping on change in these outcomes, c′ = .31, 95% CI = [.53, .08], p = .009, and this effect was mediated by change in reappraisal, a × b = .07, 95% CI = [.18, .01], p = .01.

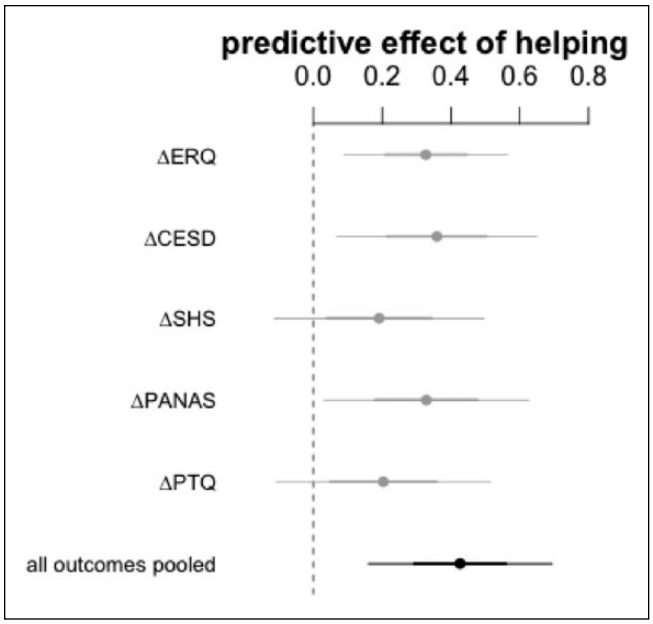

Figure 4. Predictive effect (i.e., regression coefficient) of helping behavior on change in outcome variables, including increased use of reappraisal (ΔERQ), decreased depressive symptoms (ΔCESD), increased subjective happiness (ΔSHS), more positive mood (ΔPANAS), and reduced perseverative thinking (ΔPTQ).
Note. The final coefficient represents all five of these outcome variables pooled (averaged) together. (All models adjusted for baseline scores). ERQ = Emotion Regulation Questionnaire; CESD = Center for Epidemiologic Studies Depression Scale; SHS = Subjective Happiness Scale; PANAS = Positive and Negative Affect Schedule; PTQ = Perseverative Thinking Questionnaire.

Predictive Effects of Helping Behavior Were Similar Across Different Kinds of Helping

Next, we conducted follow-up analyses exploring the three different kinds of helping—helping by offering messages of acceptance, offering messages of reappraisal, and pointing out distortions in thinking (adjusted for greater sharing behavior)—which were moderately correlated with each other, *r*s = .18 – .46. We saw very similar predictive effects across the three kinds of helping, with estimated 95% CIs highly overlapping (see Figure 5).

Social Regulation Messages With More Other-Focused Language Were Rated as More Helpful and Were More Likely to Elicit Messages of Gratitude

Our initial results showed that engaging with the social regulation application by helping others is predictive of better cognitive and emotional outcomes. However, because these analyses quantified behavior in a relatively coarse manner (i.e., helping either occurred or did not), they give little insight into the psychological processes apparent *within* acts of social regulatory helping. In particular, an important

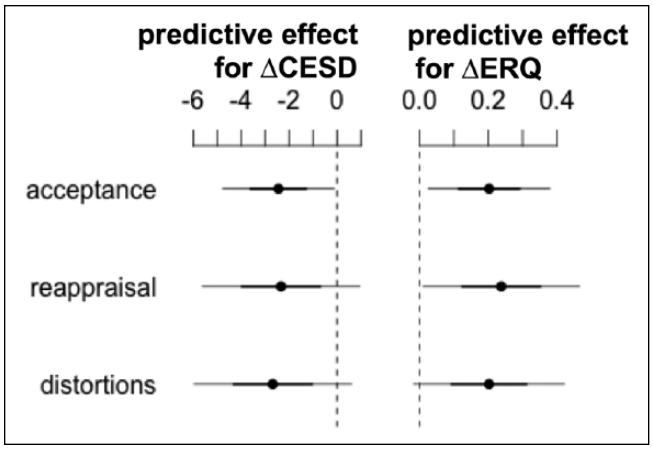

Figure 5. Predictive effect (i.e., regression coefficient) of helping behavior on change in depressive symptoms (ΔCESD) and change in use of reappraisal (ΔERQ), for helping by sending acceptance messages of acceptance, sending messages of reappraisal, and identifying distortions in thinking.
Note. All models adjusted for baseline scores. ERQ = Emotion Regulation Questionnaire; CESD = Center for Epidemiologic Studies Depression Scale.

question is whether more fully adopting the psychological perspective of the person you are helping is predictive of more effective social regulation.

To address this question, we examined the social regulation messages sent from a provider of social regulation to a target person, on the topic of the distressing experience that target person shared. We focused on second-person pronouns as a linguistic proxy for adopting the perspective of the person being socially regulated (i.e., adopting an *other-focus* in composing these messages). Second-person pronouns were common in these messages—6.7% of all words were second-person pronouns, compared with 1.2% in normative data (Pennebaker et al., 2007). First, we asked whether messages with more second-person pronouns were rated as more helpful by people receiving them. To do this, we fit a multilevel linear regression with helpfulness rating as the outcome variable and number of second-person pronouns as the predictor variable. This model revealed that social regulation texts with more second-person pronouns tended to be rated as more helpful, $b = .08$, 95% CI = [.04, .12], $p = .0008$ (see Figure 6a). This positive relationship held, $b = .05$, 95% CI = [.01, .09], $p = .03$, when controlling for the total word count of the social regulation texts as well as the number of first-person pronouns.

In addition to rating message helpfulness, users who received social regulation messages could also enact a simple behavioral response—composing and sending a brief thank-you message to the person who helped them. With multilevel logistic regression, we found that social regulation texts with more second-person pronouns were also more likely to elicit messages of gratitude, $b = .21$, 95% CI = [.07, .37], $p = .005$ (see Figure 6b). As with helpfulness ratings,

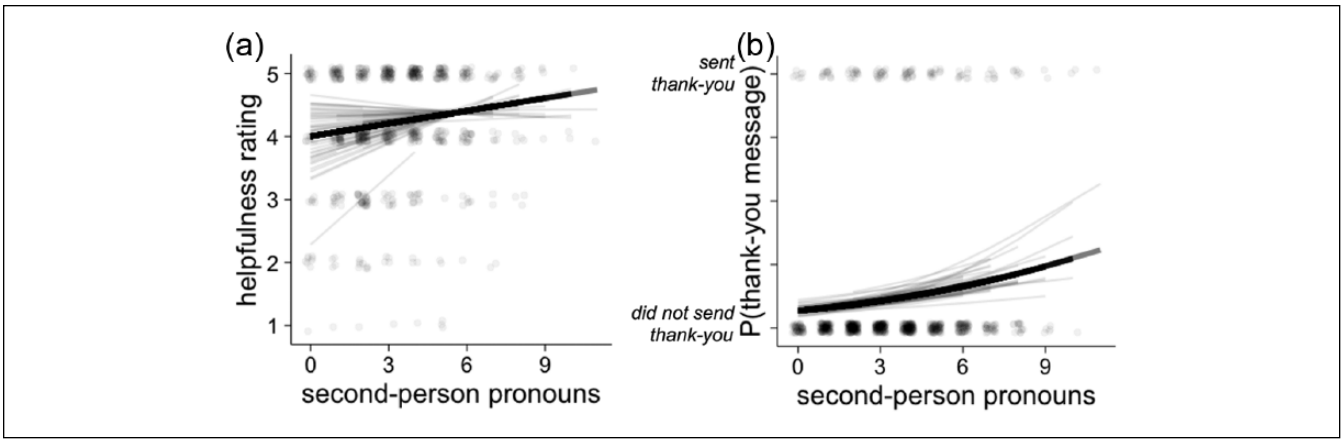

Figure 6. Social regulation messages that had more second-person pronouns (a) were rated as more helpful and (b) were more likely to elicit behavioral expressions of gratitude.
Note. Thick black lines reflect the overall ("fixed effect") slope, and thin gray lines show subject-specific ("random effect") model estimates for message senders. (Datapoint transparency and jitter are used to address overplotting.)

this relationship held, $b = .20$, 95% CI = [0.02, 0.37], $p = .03$, when controlling for the total word count of the social regulation texts and the number of first-person pronouns. Overall, these results indicate that regulation messages with more second-person pronouns (reflective of greater second-person perspective-taking) are perceived as more helpful and are more likely to elicit behavioral expressions of gratitude.

Composing Social Regulation Texts With More Other-Focused Language Was Predictive of Increased Use of Reappraisal Over Time

If messages with more second-person pronouns are perceived as more helpful in the moment, it may also be the case that such texts are more effective in eliciting increased emotion regulation over time, for either recipients of these message (i.e., people who receive messages that more fully adopt their perspective) or composers of these messages (i.e., people who compose messages that more fully adopt the perspective of their social regulatory target). To test this idea, we calculated the following for each user: (a) the average number of second-person pronouns in the social regulation texts that they received, and (b) the average number of second-person pronouns in the social regulation texts that they composed and sent to others. Considering messages received, we did not find a significant relationship between the average number of second-person pronouns in texts *received* and subsequent change in reappraisal, $b = .08$, 95% CI = [−.22, .36], $p = .63$. Thus, we did not see evidence that receiving other-focused texts (i.e., texts that more fully adopt your perspective) is predictive of increased reappraisal for message recipients.

However, we found a strong positive relationship for texts composed, such that having used more second-person pronouns in messages composed and sent to others was predictive of increased use of reappraisal, $b = .20$, 95% CI = [.06, .34], $p = .007$ (see Figure 7). This relationship held when controlling for average number of first-person pronouns and average total word count of texts sent, $b = .19$, 95% CI = [.03, .35], $p = .02$. It also held when additionally controlling for helping behavior, $b = .17$, 95% CI = [.03, .31], $p = .02$. Finally, we saw no evidence for a difference in this effect when comparing second-person pronouns sent in reappraisal messages with acceptance messages, $b_{reapp} - b_{acceptance} = -0.00$, 95% CI = [−.22, .22], $p = .99$. These results suggest that engaging in second-person perspective taking when helping to regulate the emotions of others (as indexed by greater use of second-person pronouns) predicts an increase over time in use of reappraisal in one's daily life.

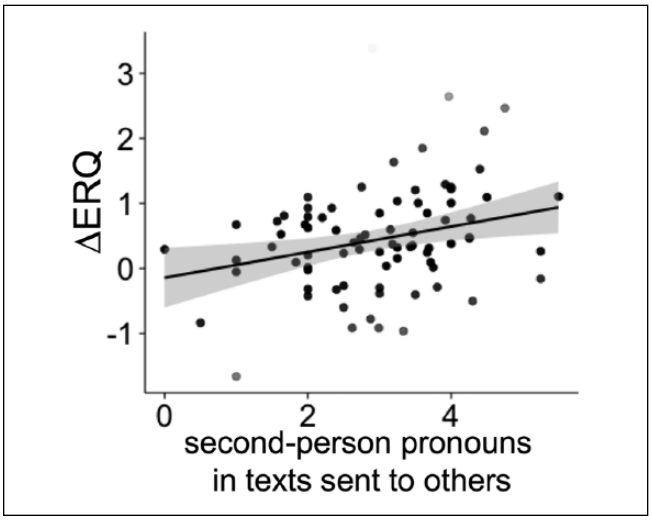

Figure 7. Average number of second-person pronouns in texts sent to others was predictive of increased use of reappraisal over the 3-week course of the study.
Note. Datapoint opacity reflects robust regression weights; model adjusted for baseline scores.

Discussion

We began this investigation by asking whether helping other people manage their emotions was prospectively predictive of cognitive and emotional benefits for the provider of help. To address this question, we conducted a 3-week study of an online application that facilitated the social regulation of emotion. Consistent with the hypothesis that socially oriented forms of emotion regulation are a powerful means for building regulatory skills and enhancing well-being, we found that users who tended to engage with the social regulation application more by helping other people (vs. sharing and receiving support for their own problems) were those who derived the greatest psychological benefits: More helping behavior predicted greater drops in depression, mediated by increased use of reappraisal in daily life. In follow-up analyses, we found that the predictive effect of helping and mediating effects of reappraisal change were apparent not just for change in depressive symptoms but when pooling across multiple outcomes—depressive symptoms, mood, subjective happiness, and perseverative thinking. We also found that social regulation messages that contained more other-focused language (i.e., second-person pronouns) were rated as more helpful and were more likely to elicit behavioral expressions of gratitude. Finally, people who composed messages with more other-focused language tended to show the greatest increases in reappraisal, suggesting that more fully adopting the perspective of others when you are helping them to regulate their emotional responses is especially predictive of greater use of reappraisal in one's own life.

Helping Others, Building Skills, and Helping Oneself

These results are consistent with the idea that in helping others manage their emotional reactions to stressful situations, even in an online (not face-to-face) way, we can practice and hone our regulation skills, which we can then apply to improve our own emotional lives. These results are not easily accounted for by theories that posit direct hedonic impacts of helping others (e.g., Cialdini, Darby, & Vincent, 1973) and are particularly striking given that emotional support was provided through text-only interactions anonymously to strangers, with little to no possibility of a face-to-face or online personal relationship. Although previous research has found that individuals who are more motivated to improve show greater benefits from mood-enhancing interventions (Lyubomirsky & Layous, 2013), our study extends these findings: we showed that psychological benefits accrued most for users who devoted more time to helping others (and who more fully adopted the perspective of others) but not those who devoted more time to sharing (and thus receiving support for) their own stressful experiences. However, although sharing behavior was not clearly predictive of psychological benefits, it may be that there are subtler or different benefits associated with this behavior, or unmeasured factors that moderate these effects.

Implications for Empirical Studies of Self-Help: Examine the Benefits of Socially Interactive Practice

Recently, many researchers have called for more active dissemination of empirically supported well-being interventions via traditional channels, such as books and workshops, as well as novel technologies, such as web and mobile applications (e.g., Schueller & Parks, 2014; Seligman, 2012). Our findings suggest that scalable interventions giving opportunities for socially oriented practice should be tested as means for the transmission of core emotion regulation skills.

For depression in particular, socially oriented emotion regulation practice may be especially important to consider. Depressive states are characterized by abnormally high levels of self-focus (Ingram, 1990), and there is growing recognition of the role of interpersonal processes in the etiology and successful treatment of depression (Hames, Hagan, & Joiner, 2013). Because users high in depressive symptoms show high levels of engagement with this social regulation application and derive benefits in terms of symptom reduction and increased use of reappraisal (see Morris et al., 2015), it may be worthwhile for future work to test similar interventions as a mode of ancillary treatment for clinically diagnosed depressive disorders.

Implications for the Science of Emotion Regulation and Its Social Context

It is increasingly apparent that emotion regulation, though often studied in a solitary form, occurs within a social context (Beckes & Coan, 2011; Zaki & Williams, 2013). At present, scientists who seek to build statistical and experimental models of this social context face considerable conceptual and methodological challenges. In this article, we focused on one such contextual variable—whether emotion regulation is provided or received. By studying socially oriented application of strategies of interest, research in emotion regulation may identify previously unmeasured sources of regulatory motivation, ability, and long-term success.

Turning to our methods, we used a novel online application to ask questions about relationships between everyday behaviors and psychological change that may have been difficult or impossible with traditional methods (see Gosling & Mason, 2015; Yarkoni, 2012). Specifically, this study used automated tools to (a) implement an experimental manipulation that was sustained at length in a natural context, (b) collect real-time records of online social and linguistic behaviors, and (c) track cognitive and emotional change over time. In general, we believe that automated and scalable

online tools of this kind provide a promising extension to traditional lab- and field-based methods in psychology.

Limitations and Future Directions

Some limitations of this report are worth noting, in part because they may indicate directions for future research. A chief limitation comes from the observational nature of some of the relationships of interest. In the mediation model, we report, online behavior records were observed between baseline and Week 3 assessments, and changes in reappraisal use and depression symptom questionnaires were assessed concurrently from baseline to Week 3. Follow-up studies with experimental manipulation of opportunities for helping, sharing, and reappraisal training could provide direct evidence for the causal pathways that are suggested by our observational data, shedding further light on overlapping and distinct mechanisms of expressive writing versus social regulation practice. Moreover, future studies could take an even more fine-grained approach to understanding the active ingredients of these interventions. For example, measurement of online social interactions could shed light on the question of whether the impact of the standard expressive writing intervention relies on increased discussion of stressful life experience with other people (see Pennebaker & Ferrell, 2013).

The observational features of this study can be improved as well. More fine-grained longitudinal measures would help to better estimate time-courses of change in regulatory habits and fluctuations in mood, as would measures taken over timescales longer than 3 weeks. Measures of daily life behavior via peer-report or ambulatory assessment could be used to ask whether online interventions lead users to behave differently or even provide social support more effectively in face-to-face interactions. With respect to assessments of emotional change, we used a screening test (the CESD) that is sensitive to clinical and subclinical variation in depressive symptoms (Gotlib, Lewinsohn, & Seeley, 1995), but did not use methods (such as clinician interviews) that allowed for clinical diagnosis. Finally, future studies could also investigate, using larger sample sizes, whether benefits from social regulation training differ according to individual differences, such as personality, life history, or social cognitive traits, such as empathy or expressivity (see Doré, Silvers, & Ochsner, 2016).

Conclusion

When life takes a turn for the worse, it is natural to seek out others for emotional support. However, in the emotion regulation domain, as in many others, it may sometimes be better to give than to receive. Here, we suggest that in helping other people regulate their emotions and inhabiting their perspective, we can hone our own regulatory skills and ultimately enhance our well-being. We hope that future work will apply observational and experimental methods to uncover basic mechanisms of self-oriented and socially oriented emotion regulation, and better understand the interplay of these mechanisms in emerging online social environments.

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Supplemental Material

The supplemental material is available online.

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