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You deplete me: Impacts of providing positive and negative event support on self-control

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Abstract

We examined how providing social support may reduce self-control. Participants who reported greater effectiveness concerns and emotion regulation while providing daily support showed greater behavioral and subjective depletion; moreover, supporting partners' negative events tended to involve greater concerns and emotion regulation than partners' positive events (Study 1). It was the act of providing support (and not just listening to events) that led to depletion (Study 2), and manipulating individuals to have greater concerns about support effectiveness caused them to show less self-control (Study 3). Overall, the results suggest that support provision can reduce self-control in a variety of ways (influencing persistence, focus, and feelings of exhaustion), particularly when there are concerns about effectiveness and the need to regulate emotions.

When people experience negative life events—major or minor—they often talk about them with other people, an exchange termed social support. Research has generally shown that although the perception that one can turn to others for support is consistently associated with positive outcomes for the recipient, the actual receipt of support may or may not be linked to positive outcomes for the person receiving the support (e.g., Gable, Gosnell, Maisel, & Strachman, 2012). Researchers have documented several reasons for this paradox (which we discuss in more detail below); the most straightforward summary of this work is that it is very difficult to provide high-quality support (Rafaeli & Gleason, 2009). Given that responding well to another's negative event disclosure presents a challenge, it seems important to examine the effect that providing social support has on the support provider. However, compared to the rich literature that has investigated the effects these interactions have on the discloser of these events (i.e., the support recipient), less work has focused on the responder in these interactions (i.e., the support provider). We were especially interested in the toll that provision may take on providers' self-control, particularly when they are concerned about providing effective support and regulating their own emotions. In addition, we were interested in examining support provision for positive events (also known as "capitalization" support) to see if this type of support might take less of a toll on self-control.

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Self-control and ego depletion

Self-control refers to the ability of an individual to alter his or her own responses, usually to bring behavior in line with rules, morals, or standards (imposed by self or society) to promote long-term goals (Baumeister, Vohs, & Tice, 2007). Past work has suggested that self-control or self-regulatory abilities are extremely important as they are associated with outcomes such as academic performance, impulse control, self-esteem, discrimination,

reasoning, and mental health (Baumeister et al., 2007; Tangney, Baumeister, & Boone, 2004). In addition, the ability to exercise self-control is important in close relationships, with self-regulatory abilities being linked to accommodation, appropriate conflict management, inhibition of violence, forgiveness, and more derogation of alternative partners (Finkel & Campbell, 2001; Finkel, DeWall, Slotter, Oaten, & Foshee, 2009; Hooker, Gyurak, Verosky, Miyakawa, & Ayduk, 2010; Pronk, Karremans, Overbeek, Vermulst, & Wigboldus, 2010; Ritter, Karremans, & van Schie, 2010).

Previous work has argued for a strength model of self-control, such that the ability to control or regulate one's behavior is dependent on limited resources (for review, see Baumeister et al., 2007). In this model, exercising self-control is thought to exhaust or "deplete" these inner resources, resulting in reduced capabilities of the self to regulate other behaviors (a state referred to as ego depletion). For instance, a series of studies by Muraven, Tice, and Baumeister (1998) found that regulating emotional responses and suppressing thoughts (exercises requiring self-control) resulted in a variety of outcomes reflecting reduced self-regulatory capabilities (e.g., poorer persistence on a handgrip task, reduced ability to control facial expressions). A meta-analysis reported that ego depletion manipulations have a medium to large effect size on self-regulatory outcomes (Hagger, Wood, Stiff, & Chatzisarantis, 2010). Being depleted not only affects subsequent effort put forth in a self-control task but is also associated with greater perceived difficulty of the task, negative affect, and subjective fatigue.

Although much of the previous work on ego depletion has centered on the strength model of self-control, more recent work has explored other explanations and important mediators of the depletion findings (e.g., Clarkson, Hirt, Jia, & Alexander, 2010; Job, Dweck, & Walton, 2010). In an attempt to bring together previous work in this area, Inzlicht and Schmeichel (2012) proposed a process model of ego depletion that argues that one act of self-control reduces performance on a secondary act by shifting motivation (with reduced motivation to exert control and greater motivation to act on impulse) and shifting attention (reduced attention toward cues signaling control and greater attention toward reward). Regardless of whether a strength model or a motivational shift model underlies ego depletion effects, our goal was to first investigate the basic question of whether support provision is depleting and to explore the psychological processes associated with this.

Social support

Although the literature has identified different types of social support, such as social integration and perceived availability of support, the present research focused on enacted support (support that is given in a particular instance in response to a problem or stressor; Vangelisti, 2009). The bulk of the research on enacted support has focused on the recipients' outcomes, and the *provision* of social support has been less widely studied. There is some work arguing that the provision of support is beneficial to the support provider. For instance, one study found that reporting that you provided more instrumental and emotional support to close others was associated with reduced mortality (Brown, Nesse, Vinokur, & Smith, 2003). However, this study focused on *perceptions* of support provision to others and did not examine specific enacted support provision exchanges, and, as stated, previous studies of enacted support often show different results than studies of support perceptions.

The caregiver burden literature also highlights some potential costs of support provision. For instance, in a study on Parkinson's disease, caregivers showed that caregiving was associated with poorer health, greater depression, and a suffering social life (Schrag, Hovris, Morley, Quinn, & Jahanshahi, 2006). In addition, that study found that caregivers showed even poorer outcomes when the patient had greater depression and poorer quality of life (providing some evidence that increased severity of caregiving may take a toll on providers). Still other studies of caregiver burden have found evidence for both positive and negative effects. For instance, a study by Beach, Schulz, Yee, and Jackson (2000) found that providing

more help over time (changes in helping behavior) predicted better mental health outcomes even though, at any given time point, greater helping was associated with poorer outcomes.

Social support provision and ego depletion

Why might social support provision be an ego-depleting process? A review article by Baumeister et al. (2007) notes a variety of responses that affect subsequent self-regulation, including controlling thoughts, managing emotions, overcoming unwanted impulses, fixing attention, and guiding behavior. They also note many interpersonal processes, including self-presentation, kindness in response to a partner's bad behavior, and dealing with difficult partners, that are related to self-regulation. Many of these processes may be evoked in the context of support provision and thus provide initial evidence that support provision may be a depleting process.

In addition, past laboratory work has demonstrated that effortful social interactions can be depleting. Richeson and Shelton (2003) proposed that more self-control is needed to discuss delicate or sensitive issues because energy is put forth to avoid saying the wrong thing. Additionally, previous work has found that high-maintenance interactions (ones requiring extra effort/energy beyond the task itself) were more depleting than low-maintenance interactions (Finkel et al., 2006). In one of these studies, a confederate shared a current stressor (hard time fitting in) and was pessimistic about the participant's advice (high-maintenance condition) or more receptive to suggestions (low-maintenance condition). They found that individuals in the high-maintenance condition were more depleted than those in the low-maintenance condition. Although this study focused on social coordination, it provides initial evidence that support interactions can be depleting for providers, especially when the support provided seems to be ineffective. Finally, work in the caregiver burden literature has found that individuals with greater self-control abilities show less burden from caregiving (Intrieri & Rapp, 1994). In their study, caregivers who reported greater dispositional self-control tended to report less distress and burden from spousal caregiving, providing further evidence that there may be links between self-control and support provision processes.

Potential pathways in the provision–depletion link

Although there may be several pathways linking support provision to depletion, in these studies, we narrow in on two likely and important links. Our primary interest was in examining how concerns about support effectiveness were linked to providers' self-regulation. We predicted that greater concerns about support effectiveness would lead to a greater need to regulate and monitor behavior to ensure that support is successfully provided (and thus would lead to greater depletion). We hypothesized that people are understandably concerned about providing effective support to others for a variety of reasons: to relieve the distress of the support seeker, to demonstrate caring for the seeker, to make the seeker feel good, to avoid further personal stress, or to simply feel like a helpful person.

We further reasoned that social support provision would be rife with concerns about effectiveness because providing social support is hard to do well and is often ineffective and not perceived as intended. This prediction is based on previous work that has found that social support can be associated with the following negative outcomes (even if support is well intended): challenging the recipient's competence, drawing further attention to the problem, challenging the recipient's autonomy, causing the recipient to feel indebted, increasing anxiety, and decreasing self-esteem (e.g., Amarel, 2001; Bolger, Zuckerman, & Kessler, 2000; Shrout, Herman, & Bolger, 2006). To avoid these pitfalls and provide support that will actually be effective, support must simultaneously match the recipients' needs, not be perceived as difficult to acquire, avoid hurting the recipient's self-esteem, and be provided in a skillful manner (Rini, Dunkel Schetter, Hobel, Glynn, & Sandman, 2006).

In addition, Gable et al. (2012) found that negative event support is often perceived as less responsive by the recipient than it was

intended by the provider, and when support is perceived as unresponsive, the recipient reports particularly negative personal and relationship outcomes (Gable et al., 2012). Finally, there is some evidence in the literature that chronic concerns about providing good support are distressing. For example, women who have low caregiving efficacy report more distress from caregiving (Hagedoorn, Sanderman, Buunk, & Wobbes, 2001). However, it remains to be seen whether situational concerns with effectiveness are associated with provider outcomes.

In addition to examining the role of effectiveness concerns in provider outcomes, our secondary interest focused on the role of emotion regulation in the social support and depletion link. Similar to our predictions for concern, we predicted that feeling the need to regulate one's emotions in order to avoid displaying inappropriate positive or negative emotions during support provision would be associated with greater ego depletion. Past work solidly links emotion regulation to depletion; in fact, emotion suppression has often been used as a manipulation of ego depletion, providing evidence of its depleting properties (e.g., see Baumeister, Bratslavsky, Muraven, & Tice, 1998). However, no work (to our knowledge) has examined the extent to which providers engage in emotion regulation during support transactions.

However, there are good reasons to expect that the regulation of emotion expression is common in support provision. In a social support transaction, there are many feelings that could be evoked when a partner shares an important stressor, such as anger toward someone who harmed the support recipient, humor in the situation, disappointment in the recipient's failure, anxiety regarding potential adverse effects of the event, as well as not feeling any emotion or less intense emotions than expected by the recipient. These emotions may or may not be appropriate to display or helpful for the recipient, and thus, providers may suppress some of these emotions or express more or different emotions than they actually feel. For example, one may wish to hide anxiety or sadness so as not to further the recipient's distress or stifle a giggle when hearing an amusing detail of the problem. Therefore, we predicted that a greater need to regulate one's emotions during support provision would be associated with more depletion.

Positive event support as an ego-enhancing (or nondepleting) process

Although most research in the social support literature has focused on support during times of stress or hardship, more recent work has examined the role of support processes for positive events, known as capitalization (Langston, 1994). Responsive provisions of capitalization support have been linked to a variety of benefits, including greater recipient well-being and positive affect and the promotion of trust and prosocial orientation within relationships (Gable, Reis, Impett, & Asher, 2004; Reis et al., 2010). We chose to examine capitalization interactions in our study as a natural comparison—this is another context in which support is provided but one in which we may see reduced concerns about effectiveness and a reduced need to regulate one's emotions.

We predicted that the provision of positive event support would have less of an impact on self-regulation than negative event social support (i.e., be less ego depleting) because responding to positive event disclosures is not as difficult to do effectively. Specifically, we reasoned that concerns about support effectiveness and pressures to provide "successful" support are often substantially reduced (if not totally absent) when a partner is sharing good news. In a capitalization interaction, the partner is already feeling good, and although an appropriate response can bring them to an even better place, there is no similar pressure to "rescue" the recipient from a negative state. In previous work, although providing high-quality responses to positive event disclosures was beneficial to recipients, compared to negative event disclosure, lower quality positive event support (i.e., less responsive support) had a smaller detrimental impact on the recipient (Gable et al., 2012). This work also showed that recipients feel more supported by providers and thankful for support received in the capitalization context than the negative event context. Furthermore, the need to regulate one's emotions seems to be less critical in

positive event support provision. If the support recipient is feeling good, and the provider can join in on that, there are not likely to be many emotions that need regulating.

Aside from the reasoning that positive event support will involve less concern about support effectiveness and less emotion regulation than negative event support, there is past work suggesting that capitalization may be an ego-enhancing (or nondepleting) process. For instance, prior work suggests providers often get an added boost or excitement when partners have successes that they can share in (e.g., "basking in reflected glory"; Cialdini et al., 1976). In addition, Tice, Baumeister, Shmueli, and Muraven (2007) found that positive affect could improve self-regulation abilities following ego depletion. As capitalization involves sharing in and expanding on a partner's positive event, it is likely that positive affect plays a role in this process, suggesting one means by which capitalization may lead to ego enhancement (or at least a lack of ego depletion). Previous work has also suggested that positive emotions can lead to "upward spirals" of positive emotion and ultimately enhanced well-being in addition to broadening individual's perspectives (cognitions, attention, behavior) and building resources (social, physical, and intellectual) over time (Fredrickson, 1998; Fredrickson & Joiner, 2002).

To be clear, we do not expect that positive event support will always involve a lack of concern or emotion regulation and low depletion. Certainly, there may be times when providing support for a positive event may be threatening and may involve high concerns about effectiveness and the need to regulate emotions. Individuals may provide support to a partner who is accepting a dream job all the while knowing this job will separate them physically via relocation or emotionally due to increased time demands, or may congratulate a dear friend on news that he or she is having a baby while at the same time trying to suppress one's own sadness over not being able to get pregnant. Positive event support interactions can certainly be difficult and threatening. However, we suggest that, on average, these interactions will involve less concerns and threats (and thus be less depleting) than negative event support transactions and may even be able to boost self-regulation.

Overview of these studies

These studies were designed to examine the effect of support provision on self-regulation. We predicted that depletion would be highest when concerns about the effectiveness of support or the need to regulate emotion expression were strong. Moreover, we expected that these effectiveness concerns and emotion regulation demands would occur more often when providing support for negative compared to positive events, and thus, depletion would be more likely after the former context. Study 1 was a daily experience study assessing whether daily concerns about support effectiveness and emotion regulation contributed to depletion outcomes. In Study 2, we explored whether actually providing support was depleting versus just listening to someone share positive and negative events in an experimental study of support to a peer. Finally, in Study 3, we manipulated concerns about effectiveness in a negative event support context with a romantic partner to determine if these concerns actually lead to greater depletion from support provision.

Study 1

The purpose of Study 1 was to examine how the everyday provision of social support would affect daily self-regulation outcomes. First, we predicted that support provision (regardless of whether it was in response to a positive or negative event disclosure) that involved greater concerns about support effectiveness and the regulation of emotions would be associated with increased depletion. Next, we were interested in how these effects might vary as a function of whether support was provided for positive events or negative events. Specifically, we predicted that concerns about support effectiveness and a need to regulate emotions would be more prevalent in negative event support than in positive event support interactions. Because of this, we also predicted that individuals would show greater signs of depletion on days when they provided negative event

support (compared to no support provision days) and would show greater self-regulatory resource availability on positive event support provision days (compared to no support provision days).

Method

Participants

A total of 141 participants were recruited for the study from both a community sample and a student sample. Participants received either class credit or payment for participation. The mean age was 24.86 years ($SD = 13.13$, range = 18 to 84); 30% of the sample was male, and 70% was female. Owing to a technological error, demographic information concerning ethnicity and student status was only collected for 58 participants. Among that subset, 40 participants were Caucasian, 7 were Hispanic/Latino, 5 were Asian/Asian American, and 5 identified as other. Thirty-three participants identified as students, whereas 25 were nonstudents. Age is not necessarily reflective of student status, but given we had more participants' age data, it is worth noting that 82% of the sample was 22 or under, and this may better reflect that the majority of participants were students as opposed to community participants (although community participants could certainly fall into this age group).

Materials

Health and personal goal listing. In order to be able to assess daily regulatory behaviors toward participants' idiosyncratic goals, during the initial laboratory session, participants were asked to name an important personal goal and an important health goal that they were currently pursuing. They were asked to choose goals that they were currently working toward on a somewhat regular basis (daily or every couple of days). Examples included practicing yoga daily, losing weight, working hard in school, and finding a job. Participants copied their goal information onto a notecard that they took home with them and were also e-mailed a copy of their goals for reference. Participants were asked to refer to these goals when completing the daily questionnaire (see below).

Daily experience questionnaire. Each evening, participants were asked to complete the daily experience measures before going to bed. The questionnaire included the following components:

Provision of support. Participants were asked to report up to two interactions they had concerning another person's positive event and up to two for another person's negative event. They were instructed to only list positive or negative events that happened to another individual and that they were hearing about but were not involved in directly. If participants had more than two in any category, they were encouraged to pick the two most important interactions. Participants rated their interaction on several dimensions.

Concerns about support effectiveness. Concern about support effectiveness was measured with six items generated for the study: "I was concerned about responding in the 'right way' to my interaction partner," "I was concerned about ensuring my response helped or benefitted my interaction partner," "During the interaction, I was thinking about whether my response would positively impact my interaction partner," "I felt like I had to respond to my partner's event well," "During the interaction, I was thinking about whether my response would negatively impact my interaction partner," and "During this interaction, I was concerned about how I should respond." All items were measured on a scale of 1–7 (1 = *strongly disagree*, 7 = *strongly agree*). Reliabilities were computed separately for each event type (positive and negative), and they were both high (αs = .87–.90). For data analyses, we calculated a daily average of concerns about support effectiveness score for positive events ($M = 3.23$, $SD = 0.96$) and one for negative events ($M = 3.88$, $SD = 0.89$). In addition, these two were averaged to create a total average concerns about support effectiveness variable across support types ($M = 3.50$, $SD = 0.87$).

Emotion regulation. Emotion regulation during support provision was assessed with two items generated for the study: "I was trying

to regulate or control my emotions during this interaction" and "During this interaction, I had some emotions that I didn't want my partner to see or pick up on." Items were measured on a scale of 1–7 (1 = *strongly disagree*, 7 = *strongly agree*). The correlation between the two items was again computed separately for the two positive and two negative events (*r*s = .74–.79). For data analyses, we calculated an average emotion regulation score for positive events ($M = 2.68$, $SD = 1.06$) and one for negative events ($M = 3.17$, $SD = 1.13$) as well as an average emotion regulation variable across support types ($M = 2.86$, $SD = 1.01$).

Impact. The overall impact of the event was measured using a four-item composite that included items measuring how the event affected the discloser, support provider, and the relationship between the two individuals (e.g., "This event has an impact on my life," "This event is very important to my interaction partner," "This event has an impact on my interaction partner's life," "This event has an impact on our relationship"). All items were measured on a scale of 1–7 (1 = *strongly disagree*, 7 = *strongly agree*). Alphas were again computed separately for the two positive and two negative events (αs = .73–.78). For data analyses, we calculated an average daily positive event impact score and negative event impact score.

Daily depleted feelings. To measure feelings of depletion, participants completed a nine-item questionnaire based on the concurrent depletion scale utilized by Finkel and Campbell (2001), which asks participants to consider "To what extent do the following statements describe how you have felt TODAY?" and includes items such as "I felt overwhelmed with work/school" and "I felt tired" (α = .90). All items were rated on a scale of 1–7, and a mean score was calculated (1 = *I didn't feel at all this way*, 4 = *I felt somewhat this way*, 7 = *I felt very much this way*; $M = 3.76$, $SD = 1.08$). There was also an option to indicate the question as not applicable.

Daily depleted behaviors. We also included a checklist of potential behaviors that indicate a lack of self-regulatory resources, adapted from Finkel and Campbell (2001). This 13-item checklist included items such as "I snapped at a friend, family member, or romantic partner today" and "I ate more poorly than I wanted to today." Scores for depleted behaviors consisted of a count (or sum) of the number of depleted behaviors participants checked as having experienced that day. Participants reported anywhere from 0 to 12 depleted behaviors on a given day ($M = 2.48$, $SD = 1.94$).

Daily goal backsliding. To assess the extent to which individuals were backsliding versus making progress on their goals, participants were asked to indicate which of the following best described their behavior "TODAY" in relation to their goal. They responded to one question about their health goal and one about their personal goal, both designed for this study. Response options included "I made significant progress towards my goal today" (a), "I made some progress toward my goal today" (b), "I made no new progress towards my goal today (although I didn't fall behind)" (c), "I fell somewhat behind in my goal today" (d), and "I took a significant step back in working towards my goal today" (e). A mean score of backsliding was calculated from the two items. Higher scores on this measure indicated greater backsliding, and it was expected that individuals who were more depleted would show more goal backsliding (whereas nondepleted individuals would be more likely to make progress toward their goals; $M = 2.69$, $SD = .45$).

Online Stroop ego depletion measure. Participants were directed to complete a brief online Stroop task as an objective measure of ego depletion (the Online Stroop Test; www.onlinestrooptest.com/stroop_effect_test.php). This task has participants indicate the color of the ink of the word that appears, ignoring the actual content of the word (often the name of a different color). The website provides data to participants on performance on both "congruent" trials (trials where the ink color and color word name match) and "incongruent" trials (trials where the ink color differs from the colored word that appears). For each type of trial, participants are told how many questions

they answered correctly and are given an average response time. Participants who are more depleted should have a harder time particularly completing the incongruent trials (which require inhibition of the automatic response to read the color word instead of thinking of the color of the word ink) and thus show poorer performance and slower speed on incongruent trials compared to individuals who are not depleted. The Stroop task has been previously used as a measure of depletion (Richeson & Shelton, 2003; Webb & Sheeran, 2003). This task was only assigned on the 1st, 4th, 7th, 10th, and 13th days of the study to avoid learning effects. Overall, participants completed the Stroop anywhere from zero to five times ($M = 3.35$, $SD = 1.34$).

Procedure

Participants came into the laboratory for an initial session and completed the preliminary questionnaires and received diary training to ensure they understood when and how to complete the diary as well as the types of support provision events they were asked to report on. Participants completed the diaries online using an online questionnaire software program over the course of 2 weeks. The diary link was sent to participants by 5 p.m. each day. Participants had until 1 a.m. the following morning to complete the diary. Although participants could complete the online diaries anytime between 5 p.m. and 1 a.m. the following day, they were encouraged to fill them out shortly before going to bed if possible. Participants completed 10.29 days (out of a possible 14) on average ($SD = 3.27$), with completion rates ranging from 1 to 14 days. Participants reported an average of 6.33 positive event support provisions ($SD = 4.55$) and an average of 5.46 negative event support provisions ($SD = 4.40$).

Results

Support effectiveness and emotion regulation

For the primary data analyses examining how support provision (and specifically concerns about support effectiveness and emotion regulation in support provision) was associated with depletion, we took a two-strategy approach. First, we examined data at the aggregate level (looking at how average concerns and emotion regulation across the diary period predicted average levels of depletion across the diary period). We did this because many participants had days they did not provide support (participants completed about 10 out of 14 days of the diary on average but only reported on support provision for positive events and negative events on average about 6 days). This was especially important for the Stroop task depletion outcome. Because the Stroop task was only administered up to five times, it was not possible to examine how this measure related to daily predictors in a multilevel model. Thus, we took average Stroop measures and other depletion outcomes across the study and examined their correlation with average concerns about support effectiveness and emotion regulation. To rule out the possibility that the observed effects were due solely to between-person factors, we followed up these analyses with multilevel modeling to test within-person associations among concerns or greater emotion regulation and daily depletion.

Examining the aggregate data, we found that concerns about support effectiveness were significantly associated with greater feelings of depletion, $r(139) = .272$, $p = .001$, and greater depleted behaviors, $r(139) = .173$, $p = .04$, but were unrelated to goal backsliding. In addition, individuals with greater concerns about support effectiveness across the study got fewer incongruent Stroop trials correct, $r(137) = -.211$, $p = .012$, and were marginally slower to respond to incongruent Stroop trials, $r(137) = .158$, $p = .063$. This suggests that individuals who experienced high concerns during support provision across the 2-week study period also had higher levels of depletion (reflected in feelings, behavior, and objective performance).

Greater emotion regulation during support provision across the study was also associated with greater feelings of depletion, $r(139) = .308$, $p < .001$, but was not significantly correlated with depleted behaviors or goal backsliding. Emotion regulation was not associated with the number of incongruent

Table 1. *Results of multilevel models examining the impact of concerns about support effectiveness on depletion outcomes: Study 1*

	Depleted feelings			Depleted behaviors			Average goal backsliding		
	Coefficient	*t*	*p*	Coefficient	*t*	*p*	Coefficient	*t*	*p*
Intercept	1.16	3.92	<.001	1.01	2.63	.010	1.87	10.95	<.001
Gender	0.34	2.57	.012	0.35	1.78	.076	0.03	0.38	.701
Concerns about support effectiveness	0.11	2.27	.024	0.10	1.79	.073	−0.01	−0.18	.856
Yesterday's outcome	0.43	10.31	<.001	0.21	4.92	<.001	0.27	6.26	<.001

Notes. *df* for the intercept = 130; *df* for slopes = 891–910. "Yesterday's outcome" refers to the depletion outcome from the previous day (e.g., for depleted feelings analyses [where depleted feelings is the dependent variable] "yesterday's outcome" refers to the previous day's level of depleted feelings).

Stroop trials answered correctly, but it was associated with being slower to respond to both congruent, $r(137) = .196$, $p = .021$, and incongruent, $r(137) = .203$, $p = .016$, trials. Overall, it seems that reporting greater emotion regulation during support provision over the 2-week period was associated with general feelings of depletion (and slower reaction times) but did not seem to affect depletion behaviors or Stroop performance.

Next, we tested whether concerns about support effectiveness and emotion regulation were associated with depletion outcomes within individuals, echoing the aggregate analyses. We utilized two-level hierarchical linear modeling with days (Level 1) nested within persons (Level 2) and controlled for yesterday's depletion outcomes[1] (so that these analyses reflect a change in depletion as a function of that day's support provision activities) and for gender on the intercept.[2] The random component was free to vary on the intercept and slope. However, when the random component was not significant on the slope, it was dropped from the final analyses (Bryk & Raudenbush, 1992). In general, we found that women showed more depletion than men across a variety of depletion measures (see Tables 1–3 for full results). We found that concerns about support effectiveness significantly predicted greater feelings of depletion and were marginally associated with a greater number of depleted behaviors (see results in Table 1). Emotion regulation significantly predicted greater feelings of depletion but was not associated with depleted behaviors (see results in Table 2). Neither concerns about support effectiveness nor about emotion regulation were associated with average goal backsliding (as shown in Tables 1 and 2).

In general, these results are consistent with the results from aggregate data analyses. Concerns about support effectiveness were associated with greater feelings of depletion, depleted behaviors, and poorer performance on the challenging aspect of the Stroop task (as incongruent trials rely more on self-regulatory resources to inhibit the automatic response). Emotion regulation also was related to depletion—however, this was only regarding feelings of depletion and

1. We also ran these analyses without controlling for the previous day's depletion outcomes. In these analyses, the effects are even stronger. Concerns about support effectiveness are associated with greater feelings of depletion and depleted behaviors ($p < .05$ in both cases), and emotion regulation is significantly associated with greater feelings of depletion ($p < .05$) and marginally associated with a greater number of depleted behaviors ($p = .059$).

2. We also ran these analyses controlling for gender on the slopes. However, gender did not significantly moderate any of the slopes in the analyses, so in the final analysis, gender is only modeled as a moderator of the intercept.

Table 2. *Results of multilevel models examining the impact of emotion regulation during support provision on depletion outcomes: Study 1*

	Depleted feelings			Depleted behaviors			Average goal backsliding		
	Coefficient	*t*	*p*	Coefficient	*t*	*p*	Coefficient	*t*	*p*
Intercept	1.32	5.02	<.001	1.21	3.21	.002	1.85	11.29	<.001
Gender	0.32	2.45	.016	0.35	1.73	.086	0.03	0.38	.704
Emotion regulation	0.09	1.96	.050	0.05	1.01	.311	0.00	−0.02	.982
Yesterday's outcome	0.44	10.18	<.001	0.21	4.99	<.001	0.27	6.29	<.001

Notes. *df* for the intercept = 130; *df* for slopes = 891–910. "Yesterday's outcome" refers to the depletion outcome from the previous day (e.g., for depleted feelings analyses [where depleted feelings is the dependent variable] "yesterday's outcome" refers to the previous day's level of depleted feelings). Females were more often depleted than males.

Table 3. *Results of multilevel models for providing positive versus negative event support (compared to the intercept, no support provision) on depletion outcomes: Study 1*

Predictor	Outcome variable								
	Depleted feelings			Depleted behaviors			Average goal backsliding		
	Coefficient	*t*	*p*	Coefficient	*t*	*p*	Coefficient	*t*	*p*
Intercept	1.57			1.39	3.95	<.001	1.91	12.34	<.001
Gender	0.35	2.68	.009	0.29	1.47	.144	0.07	1.02	.309
Positive event support provision	−0.04	−0.46	.648	−0.09	−0.82	.411	−0.09	−2.04	.042
Negative event support provision	0.11	1.27	.207	0.22	2.13	.033	0.01	.027	.787
Yesterday's outcome	0.40	10.39	<.001	0.21	5.14	<.001	0.25	6.56	<.001

Notes. *df* for the intercept = 132–133; *df* for slopes = 1,071–1,096. "Yesterday's outcome" refers to the depletion outcome from the previous day (e.g., for depleted feelings analyses [where depleted feelings is the dependent variable] "yesterday's outcome" refers to the previous day's level of depleted feelings). The gender data reflect the finding that females were more depleted than males.

general slowness on the Stroop task (and not in the number of depleted behaviors or performance on incongruent Stroop trials). Neither emotion regulation nor concerns about support effectiveness predicted average goal backsliding.

Examining positive versus negative support

Next, we were interested in examining how support provision may differ across the positive and negative event social support context. First, we examined whether individuals tended to show more concern about support effectiveness and more emotion regulation when providing support for negative events as opposed to positive events as we predicted. To do this, we aggregated the data to examine how positive event concerns and positive event emotion regulation across the diary period compared to negative event concerns and negative event emotion regulation across the diary period. A paired-samples *t* test revealed that individuals' average concerns about negative event support effectiveness ($M = 3.88$, $SD = .89$) were significantly greater than average concerns about positive event support effectiveness ($M = 3.23$, $SD = .96$), $t(132) = -10.33$, $p < .001$, $d = .70$ (see Figure 1). Similarly, individuals showed

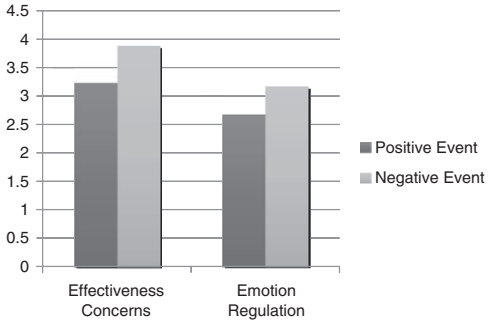

Figure 1. Study 1: Results of paired-samples *t* test showing greater effectiveness concerns and emotion regulation when providing negative compared to positive event support, $t(132) = 10.336$, $p < .001$, $t(132) = 7.144$, $p < .001$, respectively.

greater emotion regulation during negative event support provision ($M = 3.17$, $SD = 1.13$) than during positive event support provision ($M = 2.68$, $SD = 1.06$), $t(132) = -7.14$, $p < .00$, $d = .45$ (see Figure 1).

Although not central to our hypotheses, we also examined whether positive and negative events differed in their overall impact. One could argue that perhaps negative events were just "bigger" events and thus may be more likely to evoke concerns. However, the data indicate that this is not a likely alternative explanation. The average impact of positive events ($M = 4.17$, $SD = 0.85$) was actually slightly higher than the average impact of negative events ($M = 4.09$, $SD = 0.85$), and a paired-samples *t* test revealed that impact ratings were not significantly different in the two contexts, $t(132) = -1.498$, $p = .137$, $d = .09$.

The findings that greater concerns about support effectiveness and greater emotion regulation are associated with greater depletion across the diary period, coupled with the finding that effectiveness concerns and emotion regulation demands are more often reported in negative event support than in positive event support contexts, suggest that negative event social support provision may be more depleting than capitalization support. To examine this, we again used a two-level hierarchical model that also controlled for the previous day's depletion outcome[3] and gender. In addition, we added two dummy variables: one for positive events and one for negative events using the same structure.[4]

We found no significant associations between daily presence and absence of positive or negative event support provision on depleted feelings but did find that individuals reported a significant increase in depleted behaviors on days when they provided support for negative events (see results in Table 3). In contrast, we found that on days when individuals provided support for positive events, they actually showed less goal backsliding (i.e., greater progress to their goals) using the personal and health goal composite (see results in Table 3). Overall, these data suggest that depletion was higher on days when individuals provide negative event social support and that, in contrast, days when individuals provide capitalization support were associated with increased progress toward one's personal and health goals.

Discussion

Study 1 provided support for our primary hypotheses. First, we saw that negative event social support provisions were associated with more concerns about effectiveness and emotion regulation than capitalization responding. In addition, individuals who reported greater concerns about support effectiveness and emotional expression also reported greater evidence of depletion. We also found some support for the hypothesis that emotion regulation is associated with depletion in the context of support provision. However, the associations between emotion regulation and outcomes were not as strong or consistent across our

3. We also conducted these analyses without controlling for the previous day's depletion. The general trends are the same; however, the significant association between negative event social support provision days and feelings of depletion became nonsignificant ($p = .15$).
4. We also conducted an additional analysis that separately examined days when only capitalization support was provided versus no provision and an analysis that examined days when only traditional support was provided versus no provision. These analyses produced similar effects (i.e., all effects remained significant or marginally significant).

depletion measures as they were for concerns about support effectiveness. This was surprising given that past work has often used emotion regulation as a method for manipulating depletion (e.g., Baumeister et al., 1998). We return to this finding in the General Discussion.

Overall, however, Study 1 provided support for our general hypotheses. However, one limitation of Study 1 was that we could not distinguish the impact of provision of support from the impact of listening to another person share positive or negative events. It could be that simply hearing another's problems or successes may be associated with depletion, and our measures of effectiveness concerns and emotion regulation were tapping a more general construct of empathy or identification. Therefore, we designed a study to directly compare situations of responding to another's event disclosure to simply hearing about another's event.

Study 2

The primary goal of Study 2 was to compare the provision of support to just listening to a discloser's positive or negative event. In this study, participants either provided support to a previously unacquainted peer who shared a positive or negative event or just listened to the peer share a positive or negative event. We predicted that individuals would show greater depletion when providing support than when just listening to another's event because concerns about support effectiveness and emotion regulation would surface only in the former. We also predicted that individuals would show greater depletion when providing support for a negative event compared to the positive event because effectiveness concerns and emotion regulation would be greater in the negative event context.

Method

Participants

Participants included 72 undergraduate female students recruited through the psychology department subject pool who participated in exchange for course credit. Because the stimulus peer actor was female, only female participants were recruited for the study. This was conducted to avoid any opposite-sex attraction issues and because we were trying to increase the perception of similarity between participants and the female peer actor who shared her event. The sample had an ethnicity distribution as follows: 47.8% Hispanic or Latina, 34.8% Caucasian, 11.6% Asian or Asian American, and 5.8% other. The average age was 18.85 years ($SD = 1.03$). Three participants reported that they did not believe the cover story during debriefing and were dropped from final data analyses. This left 69 participants in our final sample.

Design

This study utilized a 2 (listening vs. providing support) $\times$ 2 (positive event [capitalization] vs. negative event support) between-subjects design.

Procedure

Participants were told that they were participating in the pilot program of a University of California–wide peer-to-peer advice and discussion program. The following description was provided to participants: "UC-SPEACS (which stands for Student Peers Engaging, Asking, Caring, and Sharing) is an advice and discussion program seeking to determine if online discussion with similar peers helps students to deal with difficulties, share excitement over triumphs, and in general benefit from discussing topics with similar peers." All participants were told that they would be matched with a similar peer who would communicate with them via a prerecorded video exchange. They were told that the student would be a University of California student who participated in one of the previous week's sessions and who would be coming back in for a follow-up in the future. They were also told that they would have the opportunity to interact with the student again in the future if they chose.

Participants were informed that they would be hearing from a student who was asked to discuss either a recent stressor (if in the negative event social support condition) or a recent positive event (if in the capitalization condition)

in their life. In the listening conditions, participants were also told:

> You'll be given the opportunity to listen to the event; however, you will not be able to respond at this time. Eventually students will be able to engage in open-dialogue but for now we are just testing the system. We are interested in getting feedback on the program though.

After viewing the video, participants in the listening condition were then given the opportunity to record an audio message providing general feedback or thoughts on the value of the program. The recording of the feedback was performed to ensure that the task was similar to the providing support condition and to test the possibility that just having one's voice recorded is depleting.

In the providing support conditions, participants were told: "You'll be given the opportunity to listen to the event, and respond to that person's event via a recorded audio message that will be delivered to them during their next session." Participants in the providing support condition were able to record an audio support message for the peer after viewing her video. Both the positive and negative event videos were prerecorded by the same college-aged female actress and were based on a similar experience (moving to New York City for a new job). In the positive event condition, the peer shared the exciting news that her job will now be based in New York City and talked about her excitement over moving to the city and starting a new life there. In the negative event condition, the peer also shared the news that her job will now be based in New York City but, instead of excitement, shared her concern and anxiety about living in the city and starting a new life there (see the Appendix for copy of scripts).

After recording their audio responses, participants were told that they would be performing a few tasks that were being tested for other experiments while we waited for confirmation that their messages had been received and were functional. They then completed the online Stroop task (depletion measure) used in Study 1. Finally, participants completed a questionnaire asking them about the peer with whom they video-interacted, their concerns about support effectiveness and emotion regulation (for those in the support provision conditions), and their perception of the event shared.

Materials

Likes and dislikes questionnaire. To increase believability that students were being "matched" on similarity with another "peer," students completed a variety of questions on personal preferences (favorite type of movie, major, etc.). These questions were not actually used for matching or data analysis.

Initial questionnaire. Participants completed several individual difference measures as they were waiting to be "matched." These items were used to bolster the cover story and are not relevant to the present analyses and thus are not discussed further.

Online Stroop ego depletion measure. Participants completed the online Stroop task described in Study 1. From the task, the experimenter recorded information on how many incongruent Stroop trials participants answered correctly and the average reaction time to the incongruent trials as the primary measures of depletion.

Effectiveness concerns. Participants who provided support rated their concerns about support effectiveness using an item from Study 1: "I was concerned about how effective my support would be for my partner," rated on a scale of 1–5 (1 = *disagree*, 5 = *agree*; $M = 3.72$, $SD = 1.19$).

Emotion regulation. Participants who provided support also completed a one-item measure of emotion regulation: "I was trying to regulate my emotions," rated on a scale of 1–5 (1 = *disagree*, 5 = *agree*; $M = 2.57$, $SD = 1.22$).

Conversation partner ratings. All participants rated their interest in interacting with the "peer" again on a scale of 1–5 ("Please rate your interest in interacting with your conversation partner in the video again," 1 = *I*

do not want to do a task with my conversation partner at all, 5 = *I would strongly prefer to do a task with my conversation partner*; $M = 3.22$, $SD = 1.06$). They also rated how likable and competent the conversation partner was on a scale of 1–4 (1 = *not at all likeable*, competent, 4 = *very likeable*, competent; likability: $M = 3.05$, $SD = 0.73$, competence: $M = 3.06$, $SD = 0.80$). Finally, they rated how similar they felt they were to the partner on a scale of 1–6 (1 = *very dissimilar*, 6 = *very similar*; $M = 3.89$, $SD = 1.12$).

Event ratings. As a manipulation check, participants were also asked to rate the positivity of the event ("Rate whether the event shared with you was more of a positive or negative event") on a scale of 1–7 (1 = *extremely negative*, 7 = *extremely positive*).

Results

Event ratings

As a manipulation check, we also conducted a 2 (provision vs. listening) × 2 (positive vs. negative event) analysis of variance (ANOVA) to examine how individuals rated the positivity of the events. As one would expect, individuals did rate the disclosure in the positive event condition as significantly more positive ($M = 6.24$, $SD = 0.87$) than the disclosure in the negative event condition ($M = 4.74$, $SD = 1.25$), $F(1, 64) = 35.69$, $p < .001$. We also found that individuals rated events as significantly more positive when they provided support for them ($M = 5.77$, $SD = 1.19$) than when they just listened to the events ($M = 5.15$, $SD = 1.37$), $F(1, 64) = 5.87$, $p = .018$.

Stroop depletion outcomes

A two-way ANOVA examining the impact of provision versus listening and event type on average incongruent Stroop trial response time found no significant main effects of either provision/listening or event type on incongruent Stroop trial reaction time. However, there was a significant main effect of providing versus listening, $F(1, 65) = 5.66$, $p = .020$. Individuals in the providing support condition got significantly fewer incongruent trials correct ($M = 14.60$, $SD = 0.88$) than individuals in the listening condition ($M = 14.97$, $SD = 0.17$). This provides evidence that individuals who were providing support were more depleted. There was no significant impact of event type, $F(1, 65) = .41$, $p = .524$, and the interaction of the two variables, $F(1, 65) = .06$, $p = .811$, was not significant. Thus, unlike Study 1, participants displayed similar amounts of depletion regardless of whether they provided positive event support or negative event support (as measured via the number of incongruent Stroop responses correct).

Taken together, these findings suggest that individuals are showing more depletion (as reflected in poorer performance on a challenging task) when providing support (regardless of the type of event disclosure). However, neither provision/listening nor event type seemed to impact the speed with which individuals respond to challenging Stroop trials.

Concerns about support effectiveness and emotion regulation in positive versus negative event context

First, for those in the providing conditions, we examined whether there was a correlation between concerns about support effectiveness or emotion regulation and Stroop outcomes. Neither concerns about effectiveness nor emotion regulation were significantly associated with the number of correct incongruent trials, $r(54) = -.176$, $p = .203$ and $r(53) = -.223$, $p = .108$, respectively, although they were in the predicted direction. There was also no association between these predictors and incongruent Stroop reaction time, $r(54) = -.091$, $p = .511$ for concerns and $r(53) = -.095$, $p = .500$ for emotion regulation.

We also further examined whether concerns about support effectiveness and emotion regulation differed in these two contexts in this study as they had in Study 1. We conducted a one-way ANOVA examining the impact of positive versus negative event type on concerns about support effectiveness among only the participants who provided support. In contrast to Study 1, we found no significant difference between positive event support ($M = 3.82$, $SD = 1.13$) and negative event support ($M = 4.17$, $SD = 1.20$) in terms of concerns

about support effectiveness, $F(1, 33) = .76$, $p = .391$. We ran a similar analysis, this time examining the impact of event type on emotion regulation. We found no significant differences in emotion regulation between the positive event ($M = 2.71$, $SD = 1.26$) and negative event conditions ($M = 2.56$, $SD = 1.25$), $F(1, 33) = .84$, $p = .37$. Overall, participants in this study were not showing differences in concern or emotion regulation across support context (positive vs. negative event social support).

Discussion

Overall, this study provided some support for our hypothesis that the provision of support can be depleting, but listening to disclosures of positive or negative events is not depleting. Specifically, we found that individuals in the provision condition performed significantly more poorly on the difficult incongruent Stroop trials compared to individuals in the listening condition. The same pattern did not emerge for the incongruent reaction time. This study suggests that individuals who learn about positive and negative events in others' lives via text, e-mail, social networking sites, others (the "grapevine"), or other types of indirect communication are likely not to have the same depleted outcomes as those who must face the event directly and provide a response to the other individual. However, given our mixed results for reaction times on the incongruent trials, more research is needed.

The secondary purpose of this study was to test the hypothesis that providing positive event support is less depleting than providing negative event support. However, contrary to our predictions and the findings of Study 1, event type (positive vs. negative) had no impact on the depletion outcome. Upon further examination, we found that individuals in the positive and negative event conditions did not significantly differ from each other in terms of concerns about support effectiveness or emotion regulation as they did in Study 1. Given this, we would not expect to see differences in depletion outcomes across positive and negative conditions. However, we are left with the question of why participants were not more concerned and showed more emotion regulation in the negative event support context compared to the positive event context. We think there are several likely reasons. For one, given the nature of the task, individuals may have felt greater concern across conditions as all individuals knew their responses were likely to be evaluated by an experimenter and by the peer.

It could also be that the nature of the audiotaped support message removed much of the need to regulate emotion. Moreover, the time delay (the video was described as being taped a week prior to the session) and the nondirect contact interaction may have also removed some of the positive features of a capitalization exchange (e.g., shared excitement) as well as some of the negative features of the social support exchange (e.g., dealing with someone's current distress). The net outcome may have been equalization of the concerns about effectiveness. Future work is needed to understand how these processes may differ in the context of close versus less close relationships (it may be that concerns and emotion regulation with close others vary significantly in positive vs. negative event contexts due to the implications for the self and relationship, whereas concerns and emotion regulation with less close others may vary less across contexts). With less close others, our concerns and emotion regulation in both cases may have more to do with attempts to respond in socially desirable ways.

Overall, this study provided some evidence that provision is the depleting aspect of support interactions. This is an important distinction theoretically because it further bolsters our thinking that concerns about the delivery and outcome of supportive responses are driving depletion. However, with regard to this point, we have only measured our proposed mediators; in Study 3, we manipulated effectiveness concerns and measured the effect on depletion.

Study 3

The purpose of Study 3 was to examine the hypothesis that concerns about support effectiveness lead to depletion in a negative

event social support situation. In order to examine this, we brought romantic couples into the lab and introduced a stressor for one member of the couple. We then gave the other member an opportunity to provide support via a video support message while manipulating concerns about support effectiveness. We predicted that individuals in the condition with high effectiveness concerns would show greater signs of depletion following the provision task, whereas individuals in the low effectiveness concerns condition would show fewer signs of depletion. Individuals in the no direction condition were expected to display intermediate levels of depletion.

Method

Participants

Participants included 82 undergraduate students who were currently in a relationship of at least 3 months and who were able to bring their current romantic partner with them into the lab. The participants (and their partners) received either class credit or a $15 payment for participation. One partner was randomly assigned to ostensibly do a stressful speech task, whereas the other participant was randomly assigned to do other tasks (and eventually served as a support provider). Only the providers completed the measures of interest described below and are thus the focus of data analyses. Six participants were excluded from data analyses because they did not follow the instructions for the handgrip measure (2 participants), did not follow the video message instructions (3 participants), or had a hand cramp that prevented their full participation (1 participant). This left 76 participants in the data set. The sample was 50.6% male and 48.1% female, with an ethnicity distribution as follows: 41.6% Caucasian, 32.5% Asian or Asian American, 18.2% Hispanic or Latino(a), and 6.5% other. The average age was 20.13 years ($SD = 2.87$). Couples had been together anywhere from 4 to 66 months. The breakdown of relationship status was as follows: 11.7% of the sample was "dating casually," 79.2% of the sample was "dating seriously," 3.9% of the sample was engaged, and 3.9% of the sample was married. The remainder of the sample (1.3%) chose not to specify their relationship status.

Procedure

Participants came into the lab with their romantic partner under the impression that they would be doing a series of several tasks with or without their partner. One member of the couple was randomly assigned to do a stressful speech task that would be given in front of an evaluator. The other member of the couple was told that he or she would participate in a variety of other tasks while his or her partner prepared the speech. Two experimenters ran the study, and there was one experimenter who worked with each member of the couple. Once in separate rooms, the speech task partners were informed that there was no speech task. They were given other activities to do unrelated to this study, which are not discussed further. The participant assigned as the provider was the focus of the study. The participant first completed the nondominant handgrip measures of strength and persistence (for details, see handgrip ego depletion measure below). Next, the participant completed basic demographic and individual difference questionnaires as filler tasks to allow time for the cover story to be believable. After completion of the questionnaires, the experimenter came into the room and said the following to the participant:

> Before we go on to the next task, I wanted to let you know that our other experimenter informed me that your partner seems particularly stressed by the speech task. To help in this type of situation, we have a monitor set up in our practice room so you can communicate with your partner on a live-feed. Let me grab some instructions on using the video equipment.

The experimenter left the room and returned with a video instructions sheet. The instruction sheet contained basic information on how participants could activate the video equipment and how to signal the experimenter when done. Participants were informed that their partner would see the message live, but they would not be able to see their partner, and their partner

would not be able to respond due to technological limitations in the speech practice room. Messages were not actually being delivered to partners and were recorded. After the session, participants were informed that their messages were recorded and had the option of deleting those videos if they did not consent to the use of their videos for research purposes. One participant chose to delete the video.

After 5 min were up (or once the participant alerted the experimenter that they were through providing support), participants completed the dependent measure: the dominant hand handgrip measure. After completion of these items, the experimenter asked participants to complete another brief questionnaire, which included the manipulation check item and emotion regulation items (see below). After this questionnaire, participants were told the study was over; they were fully debriefed, and suspicion for the cover story was assessed.

Materials

Handgrip ego depletion measure. Participants completed a handgrip persistence task, a commonly used measure of ego depletion (e.g., see Muraven et al., 1998), in which we measured persistence for maintaining a hold on a handgrip. Early in the session, participants did a baseline handgrip squeeze with their nondominant hand so we could get a measure of strength. They were next asked to squeeze for as long as they could, keeping the handgrip strength indicator above half of their maximum using the nondominant hand to gain familiarity with the task. The primary depletion handgrip measure had them squeeze the handgrip for as long as they could with their dominant hand, keeping the strength indicator above half of their nondominant maximum squeeze strength. Participant scores that were higher than 2.5 *SD* over the sample average were excluded from analyses (2 participants). The average handgrip time was 50.70 s ($SD = 26.99$).

Effectiveness concerns manipulation check. As a manipulation check, participants completed a brief postsupport provision survey, which included a concern about support effectiveness item: "I was concerned about how effective my support would be for my partner," rated on a scale of 1–7 (1 = *strongly disagree*, 7 = *strongly agree*; $M = 4.87$, $SD = 1.71$).

Emotion regulation. In keeping with our interests in emotion regulation, we also included a five-item measure of emotion regulation ($\alpha = .61$), which included items such as "I tried to regulate or control my emotions during my message to my partner" and "I tried to avoid showing negative emotions to my partner," which were rated on a scale of 1–7 (1 = *strongly disagree*, 7 = *strongly agree*; $M = 3.90$, $SD = 1.08$).

Design

The study consisted of three conditions: a high concern, a low concern, and a no direction condition. As stated above, all participants (regardless of condition) received a video message instruction sheet with basic instructions about how to record their video. However, what varied were the additional instructions that came after the video information. In the no direction condition, participants received no further directions. In the high concern condition, participants received additional instructions that said:

> It is important to know that for stressful tasks like this it can be very important that close others, such as a romantic partner, provide effective support. In the past, we have found that while support is very useful for tasks like this and can significantly affect performance, over 75% of support attempts are ineffective. So, you should try your best to provide effective support to your partner.

In the low concern condition, participants were told:

> It is important to know that for stressful tasks like this it can be very important for individuals to hear from a close other, such as a romantic partner. Even just seeing your face can make your partner feel good. In the past, we have found that over 75% of support attempts are effective (and positively impact partner performance). So, there is no large need to worry about the effectiveness of your support.

During the poststudy debriefing, participants were led through a detailed funneled debriefing, which assessed any suspicions about the study and at what point they became suspicious. Of the sample, 39% reported being suspicious either that the task was not real ($N = 26$) or they had trouble believing that their partners would be stressed by a speech task ($N = 4$) before the video recording component of the study; 59.7% of participants ($N = 46$) reported having no suspicion during the study. Because the number of subjects who expressed suspicion during the study was high, we created a dummy-coded suspicion variable that allowed us to examine the results for both suspicious and nonsuspicious individuals. Thus, the primary analyses utilize a 2 (suspicion: 0 = none, 1 = suspicion) × 3 (condition: low, high, no information) ANOVA. Among the nonsuspicious sample, 17 were in the high concern condition, 15 were in the low concern condition, and 14 were in the no information condition.

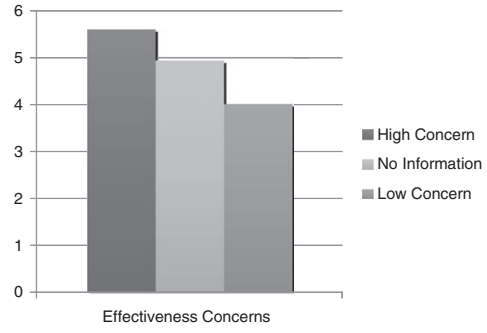

Figure 2. Study 3: The effects of condition on self-reported concerns about support effectiveness. Individuals in the high concern condition had significantly greater concerns than individuals in the low concern condition ($p = .003$). Individuals in the no information condition did not differ significantly from individuals in the high concern condition ($p = .218$) and showed marginally more concern than individuals in the low concern condition ($p = .094$).

Results

Concerns about support effectiveness and emotion regulation

As a manipulation check, we examined whether individuals did indeed report higher concerns about support effectiveness in our high concern condition and reduced concerns in our low concern condition. We utilized a two-way ANOVA to examine how condition and suspicion affected concerns about providing effective support. Both condition, $F(2, 70) = 5.849$, $p = .004$, and suspicion, $F(1, 70) = 4.424$, $p = .039$, significantly predicted effectiveness concerns. The interaction was not significant, $F(2, 70) = .400$, $p = .672$. Simple effects analysis showed that condition significantly predicted concerns in the nonsuspicious group, $F(2, 70) = 4.65$, $p = .013$, but not in the suspicious group, $F(2,70) = 2.044$, $p = .137$. Examining pairwise comparisons within the nonsuspicious group, we found that individuals in the high concern condition ($M = 5.59$, $SD = .618$) had significantly greater concerns than individuals in the low concern condition ($M = 4.00$, $SD = 1.77$), $p = .003$ (see Figure 2). Individuals in the no information condition ($M = 4.93$, $SD = 2.16$) did not differ significantly from individuals in the high concern condition ($p = .218$) and showed marginally more concern than individuals in the low concern condition ($p = .094$).

We also examined how emotion regulation might also vary as a function of condition. A two-way ANOVA examining condition and suspicion revealed no significant main effects or interaction of individuals' self-reports of general emotion regulation ("I tried to regulate or control my emotions during my message to my partner"). Simple effects analyses did show that there was no effect of condition among the suspicious individuals, but there was a marginal effect of condition among the nonsuspicious individuals, $F(2, 70) = 2.54$, $p = .086$. Pairwise comparisons revealed a significant difference between individuals in the high concern condition ($M = 4.59$, $SD = 1.62$) and the no information condition ($M = 3.36$, $SD = 1.73$), $p = .031$. There was no significant difference between the high concern and low concern conditions ($M = 3.80$, $SD = 1.37$), $p = .155$. Where we did see more interesting differences was in our question about

suppression of negative emotions ("I tried to avoid showing negative emotions to my partner"). A two-way ANOVA examining the impact of condition and suspicion on negative emotion suppression found a marginally significant main effect of condition, $F(2, 70) = 2.52$, $p = .088$, and a significant interaction of condition and suspicion, $F(2, 70) = 3.649$, $p = .031$. Simple effects analysis showed a significant impact of condition on negative emotion suppression among the nonsuspicious participants, $F(2, 70) = 4.915$, $p = .010$, but not among the suspicious participants, $F(2, 70) = 1.964$, $p = .147$. Pairwise comparisons revealed that individuals in the high concern condition showed significantly more negative emotion suppression ($M = 5.59$, $SD = 1.58$) than individuals in the no instruction condition ($M = 3.50$, $SD = 2.28$), $p = .003$. Individuals in the low concern condition ($M = 4.73$, $SD = 1.83$) did not differ significantly from the high concern condition ($p = .196$) but were marginally higher than individuals in the no direction condition ($p = .077$). Overall, individuals in the high concern condition showed greater emotion regulation than individuals in the no information condition. Somewhat surprisingly, individuals in the low concern condition fell somewhere in between. It may be that by drawing attention to the support process in our instructions, individuals were utilizing somewhat more emotion regulation than they would if given no further prompting.

Handgrip depletion

Our primary dependent variable was persistence on a handgrip task (with greater persistence evidencing more self-regulatory resources and reduced persistence showing signs of ego depletion). Because the manipulation check items (effectiveness and emotion regulation) only differed between groups among those who were not suspicious about the experimental paradigm, we conducted our primary analysis only on those who were not suspicious. Specifically, we conducted a one-way ANOVA that examined the effect of condition on dominant hand handgrip persistence after the support provision task among the nonsuspicious participants. We found a marginally significant main effect of condition, $F(2, 42) = 2.704$, $p = .079$; see Figure 3. Least significant difference (LSD) post hoc analyses revealed that there was a significant difference in handgrip persistence between those in the high concern condition ($M = 38.70$ s, $SD = 21.50$ s) and low concern condition, ($M = 58.95$ s, $SD = 31.41$ s), $p = .036$. There was also a marginally significant difference between those in the high concern condition and no information condition ($M = 55.57$ s, $SD = 24.25$ s), $p = .084$.[5] There were no differences between individuals in the low concern and no information conditions, $p = .728$.

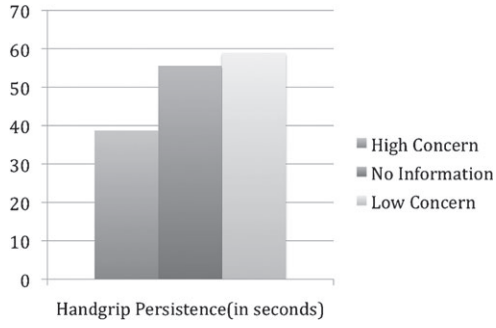

Figure 3. Study 3: The effects of condition on handgrip persistence among nonsuspicious individuals. There was a significant difference between individuals in the high concern versus low concern condition ($p = .036$) and a marginal difference between individuals in the high concern condition and the no information condition ($p = .084$).

5. We also ran these analyses using a 2 (suspicion: 0 = none, 1 = suspicion) × 3(condition: low, high, no information) ANOVA. Using this method, we found no significant main effect of condition or suspicion. However, there was a significant interaction between condition and suspicion, $F(2, 68) = 4.985$, $p = .01$. Simple main effects analysis showed that condition marginally predicted persistence on the handgrip, but only among participants who were not suspicious, $F(2,68) = 3.052$, $p = .054$. Condition was not predictive of handgrip persistence among individuals who were suspicious, $F(2, 68) = 2.382$, $p = .100$. Within the nonsuspicious participants, pairwise comparisons revealed a significant difference between individuals in the high concern versus low concern condition, $p = .024$. There was also a marginal difference between individuals in the high concern condition and the no information condition, $p = .064$. Individuals in the low concern and no information condition did not differ from each other, $p = .711$.

Overall, these findings are consistent with our hypotheses as individuals who were led to have high concerns about support effectiveness were the most depleted (as reflected in poorer persistence on the anagram task).

Discussion

Overall, Study 3 provided additional support for our hypotheses concerning the link between support provision and depletion. When individuals were led to believe they should be more concerned about support provision, they showed greater signs of depletion as measured by handgrip persistence. In contrast, when individuals were led to believe they should not be concerned about support provision, they showed less evidence of depletion (and were able to persist on the handgrip task for longer periods of time).

One limitation of this study was the subset of participants who showed suspicion (and thus failed the manipulation checks). Prior work has often used a stressful speech as an effective task both for inducing stress in the participant in the task and for providing an opportunity for the speech participant's partner to provide support (e.g., see Collins & Feeney, 2004), so it was surprising that so many participants did not believe the cover story. Participants either felt strongly that their partner would not be stressed by a speech task like this or they were already familiar with studies employing stressful tasks in the laboratory.

General Discussion

The goal of the current studies was to understand whether responding to another's disclosure of a personal event could be depleting and, if so, under what conditions this was likely to occur. Across all studies, we found evidence that provision of support could indeed be depleting. We hypothesized that concerns about effectiveness of support was a primary contributor to the support provision–depletion link. Study 1 provided support for the idea that individuals who reported greater concerns about support effectiveness on both a daily basis and on average across the 2-week period showed greater evidence of depletion in terms of feelings, behaviors, and performance. Study 3 provided experimental evidence for this link by manipulating concerns about support effectiveness and examining the relation to depletion outcomes. Individuals who were led to believe they should have high concerns about support effectiveness showed greater depletion following support provision than individuals in the low concern condition and marginally greater depletion than individuals who were given no additional information about how concerned they should be. We also explored the role of emotion regulation in depletion effects. In Study 1, we found that emotion regulation was linked to greater feelings of depletion and responding more slowly to the Stroop items. In Study 3, we saw that individuals in the high concern condition tended to report greater emotion regulation than individuals in the no direction condition. Thus, overall, there was some evidence that emotion regulation is linked to, at least, a greater feeling of depletion. However, it was surprising that these effects were not stronger given that emotion regulation is often used as a manipulation of depletion (Baumeister et al., 1998). Future work can further tease apart the role of emotion regulation in support provision and the types of emotion regulation that may be more likely to elicit depletion.

These studies also examined how the depleting nature of support provision may vary in the positive event context as compared to the negative event support context (examined in Studies 1 and 2). Consistent with our hypotheses, Study 1 revealed that the days on which individuals provided negative event social support were associated with somewhat more depleted behaviors. In contrast, days when individuals provided capitalization support were associated with greater progress toward one's goals (signaling a lack of depletion). We also found that individuals have greater concerns about support effectiveness and greater emotion regulation when providing negative event support compared to positive event support. Given that concerns about support effectiveness and emotion regulation were found to be linked to depletion, this suggests that negative event support will often be a more depleting context. However, concerns about support effectiveness

do seem to be the most important driver of depletion. There may be times when negative event support raises fewer concerns (perhaps when it is a common stressor that we know how to respond to or when the event or the implications of the event are less important) or when capitalization support raises more concerns (perhaps when the event has negative implications for the self even when it is good for the partner).

Related to that point, Study 2 found no significant differences in depletion outcomes as a result of responding to a positive versus negative event. However, an examination of the differences in concern and emotion regulation showed that individuals did not significantly differ in how concerned they were about providing effective support or how much they needed to regulate their emotions. This provided a good example of when we should not see a difference in support context (when individuals' concerns are the same in both). We suspect, however, that in real life, if individuals were providing support to a close other over moving, there may be more differences in concerns (and thus depletion). Future studies should continue to examine these processes in the context of real-life events with close others to understand the factors that influence whether individuals will have concerns in both the positive and negative event support context. Overall, we think these studies suggest that negative event support often (though not always) involves more concerns about support effectiveness, and this feature of support is what sets it up to be more depleting

Implications

Given that we found support provision can be a depleting process, what are the potential implications, and how is this likely to impact individuals and their relationships? Previous work suggests that the ability of the self to initiate and control its own behaviors is an extremely important skill in the context of close relationships. So, repeated provision of support leading an individual to have less self-regulatory abilities (often in the case of negative event social support or high-concern support) or perhaps greater self-regulatory abilities (in the case of capitalization support) could have a significant impact on his or her close relationships. Past work demonstrates that the ability to exercise self-control is associated with a variety of prorelationship behaviors, such as accommodation, appropriate conflict management, inhibition of violence, forgiveness, and more derogation of alternative partners (Finkel & Campbell, 2001; Finkel et al., 2009; Hooker et al., 2010; Pronk et al., 2010; Ritter et al., 2010). Individuals with greater concerns about support effectiveness or among those actively trying to regulate their emotions (who are trying to provide support to their partners and do something that is relationship enhancing) may ironically be depleting their own resources, leaving them less able (or less willing) to continue to pursue positive relationship outcomes and avoid negative relationship outcomes. Even outside of the relationship domain, reduced self-control abilities are likely to lead to other negative life outcomes. Previous work has linked higher levels of self-control with a variety of benefits, such as better grades, fewer impulse control issues (specifically, binge eating and high levels of alcohol consumption), and greater self-esteem as well as fewer symptoms of depression, anxiety, hostile anger, and psychoticism (Tangney et al., 2004). In addition, this work found no negative effects of high self-control. Other prior work has associated reduced self-regulatory abilities with increases in overeating, prejudicial discrimination, excessive alcohol consumption, and reductions in logical reasoning (Baumeister et al., 2007). Thus, if support provision that engenders greater concerns about support effectiveness is a recurring event in the context of a close relationship, it may eventually lead the provider of that support to show reduced self-control and poorer outcomes across a wide variety of domains, even outside of the relationship (e.g., job performance, mental and physical health, social outcomes).

The link between support provision and ego depletion also provides important insight into past work on caregiver burden, which is the case of one individual in a relationship primarily providing support (typically for someone with a chronic illness or health condition). The

caregiver literature has argued that the stress and burdens associated with providing care for individuals can have a variety of negative effects for the caregiver, including increases in depression and negative effects in other life domains (e.g., work, social life; Pearlin, Aneshensel, & Leblanc, 1997). It may be that part of the reason for these negative impacts of serving as a caregiver is chronic concern about providing effective support (or care), thus leading to more chronic levels of depletion, which could be contributing to the spillover effects. Future work can assess this more directly with a caregiver sample.

Limitations and future directions

There were several limitations throughout the studies; however, we attempted to address some limitations of single studies through another study when possible. Study 1 was a diary study, which is subject to typical diary study concerns (lack of control, potential memory biases). However, to balance this, Studies 2 and 3 allowed us to examine similar processes in a controlled laboratory setting. However, there were also unanticipated issues in these laboratory studies. Specifically, in Study 2, we found nonsignificant differences in reports of concern when we compared the positive and negative support contexts. In retrospect, it is likely that individuals perceived their response would be evaluated in some way, and this in and of itself created large effectiveness concerns. In addition, the benefits (or costs) of providing support and the level of concern may often depend on how close you are to the individual, and in Study 2, the support recipient was a stranger. Future work can continue to examine how these processes may differ in the context of a close versus less close relationship. We know from other work that processes adaptive in the context of a stranger or acquaintance interaction may differ from processes that are adaptive in the context of a close relationship (Gosnell, Britt, & McKibben, 2011). In addition, Study 3 suffered greatly from more than a third of our sample reporting feeling some degree of suspicion during the experimental procedure. We clearly did not anticipate this problem, and in the end, Study 3 was effectively underpowered.

In the current research, we focused on only two possible factors, both as experienced by the provider, effectiveness concerns and emotion regulation. However, it is likely that other personal factors, such as executive functioning capacity, matter as well. Relationship factors, such as intimacy and commitment, may also contribute to the degree of depletion associated with support provision. Future research is needed to examine these factors. In addition, we did not examine the long-term impact of support provision, and it is necessary to consider how these factors may unfold over time. For one, how long do these depletion effects usually last? If the amount of time is minimal, perhaps these are of minimal importance. However, if they deplete us for the day (as the diary study suggests) or potentially over longer periods of time, the impact is likely to be larger. Are individuals who are providing support often becoming more and more depleted (especially if their concerns about support effectiveness are high), and do we continue to see cumulative negative effects of self-regulatory depletion in a variety of contexts? Or might individuals "strengthen" their ability to provide support over time (such that concerns have less of a depleting effect or such that concerns are eventually reduced as one has more support experience and confidence to draw from)? Indeed, previous work in the depletion literature has shown that individuals can build self-regulatory strength. For instance, one study demonstrated that practicing self-control in even unrelated domains can lead to greater self-regulatory abilities in the long run (Muraven, Baumeister, & Tice, 1999). It may be that "strong" support providers exist who have learned to maintain self-regulatory resources even when providing lots of support and having high concerns about effectiveness.

The present results are also interesting to think about in terms of alternative models of ego depletion (e.g., Clarkson et al., 2010; Inzlicht & Schmeichel, 2012; Job et al., 2010). Although the present work does not directly assess individuals' perceptions of their willpower limitations or their perceptions of support provision as a depleting process, this

would be an interesting avenue for future work. Individuals may differ greatly in their beliefs about how tiring it is to provide support, and different support interactions may lead to very different subjective experiences of depletion within support interactions. In addition, future work can seek to determine how support provision may affect individuals' subsequent motivation and attentional processes to better understand how support provision leads to depletion.

Finally, this work helps set the stage for future work on the role of close relationship processes in shaping self-regulatory outcomes. Recent work has cited many ways in which self-regulatory abilities influence relationship behaviors (e.g., Finkel & Campbell, 2001; Luchies, Finkel, & Fitzsimons, 2011). However, very little work has instead asked how relationship processes may affect self-regulation. Given that close relationships are a vital part of most individuals' lives, it makes sense that the effort spent maintaining and interacting in these relationships may have quite a large impact on self-regulatory resource availability. Future work can explore both how relationship processes may promote greater self-regulatory resources and how they may lead to deficits in self-regulatory resources.

Concluding comments

Overall, our studies suggest that providing social support to a partner can be a depleting process, especially when individuals are concerned about providing effective support. However, we are not arguing that providing support is a bad thing. On the contrary, we know that providing support over time does seem to offer benefits such as reduced mortality, greater relationship quality, greater positive affect, and less depression (Beach et al., 2000; Brown et al., 2003; Deci, La Guardia, Moller, Scheiner, & Ryan, 2006; Poulin et al., 2010). In addition, it is important for individuals to respond to their partners so that their partner can develop positive perceptions of them. Past work has shown that perceiving close others as supportive and available in times of stress is vastly important and is predictive of health, well-being, and a variety of other outcomes (Beals, Peplau, & Gable, 2009; Finch, 1998; Lakey & Cronin, 2008). It may be that providing support with high effectiveness concerns leads to immediate reductions in self-control but still produces increases in positive affect or a greater sense of closeness over time. Future work is needed to continue to understand the short- and long-term impact of support provision (as much of the prior support literature has focused on the discloser and their outcomes). However, the present work contributes to our understanding of how support provision may have an impact on the provider as well as the role of close relationship processes in self-regulation more broadly.

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Appendix: Peer Event Scripts

Positive event (capitalization condition): "Well, I actually did get some really exciting news earlier today. So I was offered a job through an insurance company a couple of weeks ago and just found out today that they're wanting me to move to the New York City office. I'm so excited about the idea of living the city life. I'll have the opportunity to explore a whole new area and make new friends. I can get a downtown apartment and enjoy taking the subway system to visit unique neighborhoods. I'm even excited about getting snow and real winters. I think all of my friends from home and school will love to come and visit me. I just can't believe I'm moving so far away. I'm so excited."

Negative event support condition: "Well, I actually did get some news today that has me a little bit stressed out. So I was offered a job through an insurance company a couple of weeks ago and just found out today that they want me to work in the New York City office. So I'm a little bit stressed about working in a big city. It's going to be a totally new area that I'm not used to at all. I'm going to have to get a whole new set of friends, as I don't know anybody there. I'm also a little bit worried about getting an apartment on my own downtown. I'm going to have to learn how to take the subway system and that just makes me a little bit nervous. Plus, it's going to be really cold weather and I'm not used to that at all—with the snow and everything. I'm not going to be close to my family and it's going to make it really hard to see them. I just can't believe it. I'm moving so far away and I'm just feeling nervous and stressed about it."