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Intended responses to romantic partners' annoying behaviours vary with willpower beliefs

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When a romantic partner behaves in an annoying way – for example, by leaving a mess – we might respond with frustration or understanding. Responses may vary with contextual factors, including whether the partner could be mentally fatigued or depleted. We hypothesized that limited willpower theorists – who believe self-control diminishes with use – might be especially likely to consider their partner's preceding mental exertion. Two preregistered studies (combined $N = 428$) examined participants' responses to four hypothetical scenarios. Limited theorists responded more compassionately to infractions performed after fatiguing days than to those performed after relaxing days; non-limited theorists responded more consistently, regardless of context. Beliefs about one's own willpower, rather than beliefs about one's partner's willpower, can affect how people respond to their partner's undesirable behaviors.

Everyone occasionally acts inconsiderately: we make messes, procrastinate on our chores, splurge on unplanned purchases, and act impatiently. If you have cohabitated with a spouse or romantic partner, you have likely observed them exhibit some of these common – but undesirable and often annoying – behaviors. Approximately 44% of people are annoyed by close others on any given day (Miller, 1997). But when do people respond to these undesirable behaviors with compassion and understanding, rather than with frustration and annoyance? Responding with compassion to these minor infractions may be beneficial for our relationships – empathetic and forgiving responses have been associated with lower rates of relationship dissolution (Kato, 2016) and higher marital quality (Fincham et al., 2002). On the other hand, minor annoyances, if not forgiven, can feed into ongoing relationship conflicts (Canary et al., 1995; Testa et al., 2020). While prior research has established that people's responses to minor irritations vary based on characteristics of the behaviors themselves (Boon & Suisky, 1997; Davis & Gold, 2011), people may also consider contextual factors. We

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wondered whether people may consider the previous demands of their partner's prior day, specifically, and adjust their responses accordingly. If someone knows that their partner has had a demanding and exhausting day, perhaps they might excuse their partner's undesirable actions as due to unintentional, temporary, and ultimately forgivable contextual factors (Furman et al., 2017; Snyder & Higgins, 1988).

Perceptions of undesirable behaviors, and subsequent responses, depend on the attributions that the perceiver makes about the sources of the behavior (Davis & Gold, 2011; Kelley & Michela, 1980; Kimmes & Durtschi, 2016). According to attribution theories, if someone believes that their partner forgot to do the dishes due to benign, temporary causes – like being exhausted from an unusually demanding day at work – then they are more likely to respond with empathy and compassion, and ultimately more likely to forgive the negative transgressions (Davis & Gold, 2011; Fincham et al., 2002; Kimmes & Durtschi, 2016). If someone instead attributes their partner's action to stable, unchanging reasons – like that their partner is a lazy or forgetful person – they are less likely to forgive (Davis & Gold, 2011; Furman et al., 2017) and may ultimately have lower relationship satisfaction (Kimmes et al., 2015). Little research has examined the degree to which people consider contextual factors when responding to minor daily annoyances, despite their frequent occurrence in close relationships. While we know that partners' can adapt to contextual factors – for example, providing more support on their days when their partner is experiencing more stress (Iida et al., 2008) – we do not know whether people also react with more understanding to their partner's potentially annoying or inconsiderate behaviors when their partner has experienced high mental demands and is potentially mentally fatigued.

Individual Differences in Willpower Beliefs

People may not all be equally likely to consider their partner's experienced demands when responding to their partner's undesirable behaviors. An important factor may be the degree to which people believe that one's self-regulatory ability is negatively affected by prior demands (Job et al., 2010; Mukhopadhyay & Johar, 2005). *Limited willpower theorists* believe that experiencing demands and exerting mental effort impairs people's later self-regulation, while *non-limited willpower theorists* instead believe that experiencing prior demands has no effect, or even has a beneficial effect, on people's later self-regulation (Job et al., 2010; Savani & Job, 2017). Limited willpower theorists may be thus more likely to attribute their partner's undesirable behaviors to their partner being in a fatigued or depleted state, and may thus be more understanding of their partner's undesirable behaviors when their partner had previously experienced high levels of demand, relative to more non-limited willpower theorists.

These theories of willpower, measured on a continuum, have been a useful individual difference measure in self-regulation research. Unfortunately, holding a more limited willpower theory has nearly always been associated with poorer outcomes for the individual (review in Francis & Job, 2018), including lower well-being (Bernecker et al., 2017), less effective goal pursuit (Bernecker & Job, 2015b), and worse health outcomes (Bernecker & Job, 2015a). However, while a more limited willpower theory is generally associated with negative personal outcomes, we here expect that holding a more limited willpower theory might be associated with more compassionate responses – a positive relational outcome – due to limited theorists having an increased tendency to perceive mental fatigue (Francis et al., 2020) and perhaps an increased tendency to attribute undesirable behaviours to that mental fatigue (Davis & Gold, 2011).

Initial evidence does suggest that holding a limited willpower theory might be associated with some positive interpersonal outcomes; one recent study found that limited willpower theorists were viewed more positively by peers and instructors (Smith et al., 2020) and a second study found that limited willpower theorists were more likely to perceive their romantic partner as fatigued in the evenings, which indirectly predicted more intended provision of support (Francis et al., 2020). It is possible that those who believe that willpower is limited may be better able to empathize and respond with understanding to those around them, particularly when those around them have experienced high levels of demand.

Theory of My Willpower vs. Theory of Your Willpower

While examining the interpersonal consequences of willpower theory, we also were interested in whether people do rely on their beliefs about their own personal willpower when making judgments of others. Willpower theories do not necessarily reflect someone's general belief about how willpower fluctuates for everyone; it may more closely reflect their belief about how *their own* willpower fluctuates and how susceptible they personally feel to depletion (self-theory of willpower) (Salmon et al., 2014). Just like people recognize that those around them have different personality traits, people might recognize that other people have different sensitivities to depletion. This may be especially true within romantic relationships, where people have the opportunity to develop quite accurate and detailed schemas of their partner's personality, and how their partner's personality differs from their own (Watson et al., 2000). Especially within romantic relationships, people may use their perceptions of *their partner's* willpower capacity (other-theory of willpower) to judge how their partner will be affected by demands, rather than relying on their beliefs about how limited *their own* willpower is. We thus formed one hypothesis, that people will ultimately adapt their responses to their partner's behaviors based on the interaction between the level of demand of their partner's day, and perceptions of *their partner's* susceptibility to depletion, that is, their partner-theory of willpower.

On the other hand, people's own experiences provide a strong reference for their expectations of others – people often project their own mental state onto their expectations of others, especially under conditions of ambiguity (Ames, 2004). Willpower theories relate to somewhat ambiguous and invisible feelings of fatigue and depletion; these internal states may not always be visible to others. Thus, just as affective scales are perceived less accurately than other traits (Watson et al., 2000), willpower fluctuations may be relatively hard to perceive. We thus formed an alternative hypothesis that people will adapt their responses to their partner's behaviors based on the interaction between the level of demand of their partner's day and their self-theories about willpower.

Overview

We here investigate whether people consider the prior demands experienced by their romantic partners when responding to their partner's later undesirable behaviors. We first hypothesized that participants with more limited willpower theories, specifically, would be more compassionate to their partners after their partner experienced a high-demand day, relative to when their partner experienced a low-demand day (Hypothesis 1). We also investigated whether people have and use partner-theories of willpower (e.g., using knowledge of their partner; Hypothesis 2), or whether people make use of self-theories of willpower (e.g., using self-referential knowledge; Hypothesis 3), when interpreting and responding to undesirable behaviors of their romantic partner.

To answer these questions, participants responded to four hypothetical scenarios, each describing their romantic partner having either a demanding or undemanding day, and then returning home and acting in an undesirable way (e.g., failing to do a chore, not listening when spoken to). Participants indicated how understanding or annoyed they thought that they would be. To distinguish whether people were using self-referential knowledge or knowledge of one's partner, participants filled out the willpower theory scale twice, once in reference to themselves, and once in reference to their romantic partner. Study 1 was preregistered at <https://osf.io/6kvw9/wiki/home/>. Study 2 was a preregistered direct replication (<https://osf.io/cyvjp/wiki/home/>). This research was approved by the institutional review board of the University of Toronto.

STUDY 1

Methods

Participants.

Participants ($N = 180$) who were cohabitating with their romantic partner were recruited online from Mechanical Turk and were monetarily compensated for their time¹. The sample size was pre-registered, based on previous studies, and only workers with a 98% approval rating and at least 100 completed HITS were eligible. Six individuals started but did not complete the study, and are not included in the total sample (Zhou & Fishbach, 2016)². The median survey completion time was 6.4 minutes, with interquartile range of 4.8 to 8.8 minutes.

The remaining sample was an average of 35.41 years old ($SD = 11.14$) and included 75 men and 105 women. Participants had been together with their romantic partner for a mean of 8.76 years ($SD = 8.89$), with a range from six months to 48 years. Most participants were married (52%) or exclusively dating (31%), with some participants engaged (9%), in common-law relationships (5%), or other (2%). In response to a demographics question asked at the end of the survey, five participants indicated that they were not cohabitating with their romantic partner – excluding these participants also did not affect the results, and these participants were left in the sample.

Procedure.

Participants first selected four out of twenty-one possible activities that they could most easily imagine their partner doing and that they would personally be bothered by. The most commonly selected activities included “doesn’t listen when you are trying to say something”; “doesn’t clean up after cooking”; “leaves clothes on the floor instead of putting in the laundry basket”; and “repeatedly interrupts you when you are watching a TV show”. Other options included spending too much money online shopping, being impatient, not doing an errand, drinking too much alcohol, not listening, or spending too much time playing video games (full list available on <https://osf.io/q83pf>). All choices were selected by some participants, with each option chosen between 11 and 76 times.

Participants were then presented with four hypothetical scenarios, in random order. The first part of each scenario stated what their partner had been doing earlier in the day (the situation), and the second part described their partner doing one of the four previously-selected irritating activities. Two of the four preceding situations described prior relaxing days: (i) sleeping in, lazing around the house, and then going to get a haircut, or (ii) having a day off work and going to visit a friend at the lake. The other two situations described tiring or stressful days: (iii) being on a jury and having to pay attention all day, or (iv) driving back from an out-of-town work meeting during rush hour in the rain (full scenarios are available at <https://osf.io/q83pf>). In response to each scenario, participants indicated how bothered they would be, how upset they would be, and how understanding they would be (for all, 1 = *Not at all*, 10 = *Extremely*).

Participants then filled out questions about their partner’s extraversion, conscientiousness, agreeableness, and self-control, and then completed the lay theories of willpower scale (Job et al., 2010; six items on 1-6 scale) in regards to how well the statements describe themselves (self-theory; $\alpha = .92$, 95% CI [.90, .94]), and a second time in regards to how well the statements describe their partner (partner-theory; $\alpha = .93$, 95% CI [.92, .95]).

Next, participants selected whether *their partner* would be energized or fatigued by each of the four preceding situations (very tired = -4 to very energized = $+4$) and then whether *they themselves* would be energized or fatigued by each of the situations. Finally, they indicated their degree of self-other overlap with their partner (Aron et al., 1992) and completed the following demographic questions: their relationship length (provided in months and years), relationship status (married, common-law, engaged, dating exclusively, dating non-exclusively, or other), whether or not they currently live in the same home as their partner (yes/no), age, gender, and level of formal education. They were then debriefed and compensated for their time.

Analysis.

¹ Note that Study 1 was conducted in July 2017 and the replication Study 2 was conducted in November 2017, both before the increase in non-native English speakers and “bots” observed on Mechanical Turk in the summer of 2018 (Chmielewski & Kucker, 2019).

² In a later review of participant IP addresses, we found two IP addresses that were each present in the data twice. Removing the two potential duplicates did not change the significance or effect sizes of the results. Because this exclusion criterion was not preregistered, the presented analyses include these two possibly repeated (or same household) participants.

Our preregistration indicated that we would analyze the three response variables – bothered, understanding, and upset – separately, with a specific focus on the “understanding” and “upset” items. However, we found that the three variables were highly correlated ($\alpha = .88$, 95% *CI* = .86, .89]. Because these items are too similar to allow for meaningful differentiation (Fiedler et al., 2011; Kline, 2015), we thus present analyses for an overall response variable, taking the average of how understanding, upset (reversed), and bothered participants indicated that they would be. Separate results for each response variable, as preregistered, are available in the Supplemental Materials (S1) and are consistent with the presented results of the aggregate measure.

We used multi-level models with random intercepts for both participant and irritating activity (the 21 options), using the *lmer* function in R (Bates et al., 2016). The dependent variable was the degree to which participants responded with understanding (the above three items, collapsed) to their partner’s annoying behavior. This composite dependent variable was partially explained by both the random factor of participant (29.8%) and the random factor of the behaviour (12.0%).

For all analyses, willpower theory (or willpower theory of one’s partner) was treated as a level 2 continuous variable, and was thus group-mean centered. As a level 1 predictor, subjective preceding fatigue from one’s own perspective (or from one’s partner’s perspective) was person-mean centered. The other level 1 predictor, categorical level of demand, was effect coded (high demand = 1; low demand = -1). Where significant interactions were found, we conducted simple effect analyses according to West, Aiken, and Krull (1996), by examining the simple effects at +1SD and -1SD. Effect sizes are estimated as semi-partial *r* (Edwards et al., 2008; calculated as in Kashdan & Steger, 2006). We tested whether participant’s responses were predicted by the three preregistered interactions, corresponding to our three hypotheses³:

- **Analysis 1.** The interaction between self-theory of willpower and categorical level of demand hypothetically experienced by the partner (high-demand = 1, low-demand = -1).
- **Analysis 2.** The interaction between partner-theory of willpower and the degree to which the preceding hypothetical situation would be fatiguing or energizing *to one’s partner* (on a 10-point scale), as judged by the participant. This interaction would suggest that participants are using their knowledge of their partner to predict how their partner would feel and to then respond appropriately.
- **Analysis 3.** The interaction between self-theory of willpower and the degree to which the preceding situation would be fatiguing or energizing *to one’s self* (on a 10-point scale). This interaction would suggest that participants are using their own experiences as a reference, and projecting those expectations onto their romantic partner.

Results

Analysis 1: Categorical Prior Demands.

Participants stated that they would be more understanding of – less bothered by – their partner’s irritating behaviors in response to scenarios where their partner had previously had a fatiguing day (jury duty or stressful driving) compared to a relaxing day (going to the beach or getting a haircut; main effect $B = 1.19$, $SE = 0.20$, $t(295) = 5.91$, $p < .001$, $r = .33$). This effect of the dichotomous prior situation variable was not significantly moderated by self-theory of willpower ($B = 0.11$, $SE = 0.11$, $t(523) = 1.01$, $p = .31$, $r = .04$), failing to support our first preregistered hypothesis.

While the preceding beach day and haircut days were seen as significantly less fatiguing on average than the jury duty and driving days (on 1 to 10 scale, $M = 2.91$ and 3.60, compared to $M = 6.65$ and

³ We have re-numbered these analyses from our original preregistration. Analysis 1 here corresponds to both “primary analysis 1” and “primary analysis 2” in our pre-registration (where we preregistered the same interaction for both the “understanding” and “upset” scale item, here averaged due to high convergence). Analysis 2 here corresponds to “primary analysis 3” in our pre-registration. Analysis 3 here corresponds to the “secondary analysis” in the preregistration. See the Supplemental Online materials (S1) for separate results for the “understanding” and “upset” scale items, as per the preregistration.

6.62), there was still substantial individual variation in how fatiguing these situations were seen (SDs from 1.78 to 2.18). These individual ratings of fatigue were used for the next two analyses.

Analysis 2: Using Knowledge of One's Partner

Participant's self-theories of willpower and their partner-theories of willpower were correlated at $r = .29$ ($t(178) = 4.02, p < .001$). The moderate size of this correlation also suggests that people perceive the availability of their partner's willpower as distinct from their own.

Did participants adjust their responses to their partner's unregulated behaviors based on whether they thought *their partner*, specifically, would be fatigued by a demanding day? This hypothesis was also not supported. Theory of partner's-willpower did not significantly affect the participant's response to their partner's hypothetical undesirable behaviour, not as a main effect ($B = -0.14, SE = 0.10, t(179) = 1.45, p = .148, r = .11$), nor as an interaction with the dichotomous prior-day variable ($B = -0.05, SE = 0.11, t(524) = 0.42, p = .671, r = .02$), nor as an interaction with the continuous variable of how fatiguing the participants thought that their partner would be by the day ($B = 0.003, SE = 0.02, t(524) = 0.15, p = .884, r = .006$).

Analysis 3: Using Self-Referential Knowledge.

We finally examined our third preregistered analysis. While participants did not adjust their responses based on their beliefs about their partner's depletion susceptibility, they might have adjusted their responses based on their self-theories of willpower, combined with their subjective beliefs about how fatiguing prior situations would have been for them personally. This would be the case if participants' attributions of the situation were based on self-referential knowledge, rather than on knowledge about their partner.

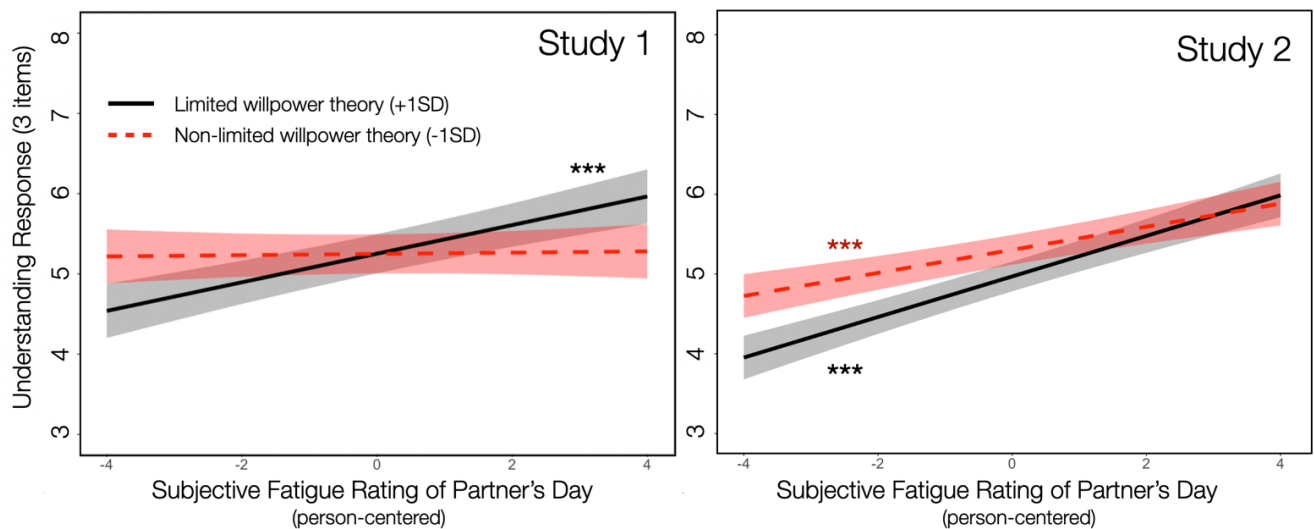


Figure 1. Responses to hypothetical situations where one's partner experienced more or fewer prior demands, depending on the perceiver's self-theory of willpower. Ribbons indicate the standard errors for willpower theory, so non-overlapping ribbons indicate that the effect of willpower theory is significant. Simple effects of subjective fatigue ratings on understanding response are shown, *** = $p < .001$.

Just as the categorical variable of the prior scenario as more fatiguing (jury duty, driving) or more relaxing (beach, haircut) predicted participants' responses to the subsequent annoying behaviour as a main effect, so did participants' *personal perceptions* of the preceding day as more or less fatiguing, when measured as a continuous variable. When participants believed that they, themselves, would be more fatigued by the preceding day described in the vignette, they responded with more

understanding to their partner's subsequent annoying behaviour ($B = 0.09$, $SE = 0.04$, $t(548) = 2.52$, $p = .012$, $r = .11$). This effect of subjective preceding fatigue (participants ratings of how fatiguing they would find the preceding activity) was moderated by participant's self-theories of willpower ($B = 0.07$, $SE = 0.02$, $t(524) = 2.86$, $p = .004$, $r = .12$; Figure 1), such that limited willpower theorists adjusted their intended responses more according to how fatiguing they perceived their partner's preceding day to have been. The interaction was such that limited willpower theorists significantly varied their intended responses based on their perceptions of how fatiguing the preceding activities would have been (at $+1SD$, $B = 0.18$, $SE = 0.05$, $t(552) = 3.64$, $p < .001$, $r = .15$), while non-limited willpower theorists intended to respond more consistently, regardless of how fatiguing they would find the preceding day (at $-1SD$, $B = 0.008$, $SE = 0.05$, $t(547) = 0.17$, $p = .864$, $r = .007$). The main effect of willpower theory on participants' hypothetical response was not significant ($B = 0.001$, $SE = 0.10$, $t(179) = 0.01$, $p = .991$, $r = .0008$).

Discussion

Participants did generally expect to respond more compassionately to their partner's negative behaviors if their partner had previously had a more demanding day. Those with more limited willpower theories adjusted their expected responses more substantially based on the hypothetical prior day of their partner, while those with more non-limited theories adjusted their responses significantly less. Although participants did report that their partner's willpower was different from their own willpower, participants did not seem to significantly use their schemas of their partner's willpower when deciding how to respond to their partner.

Although we had preregistered the test for the significant self-referential interaction, it had not been our only hypothesis – we had also tested whether the interaction between the categorical variable of preceding day and self-theory of willpower would be also significant, and predicted that there may be an interaction with how fatiguing participants believed their partners would find the preceding activities. As such, we preregistered and ran a direct replication, Study 2, to confirm that it is indeed the subjective perception of one's partner's day that is subsequently interpreted or responded to differently by limited and non-limited willpower theorists (according to their self-theory rather than their theory of partner willpower).

STUDY 2 (DIRECT REPLICATION)

Methods

Participants

The second sample ($N = 248$) was also collected from Mechanical Turk (age $M = 37.90$, $SD = 10.49$; 56% women; relationship length $M = 11.46$ years, $SD = 9.54$). MTurk workers who had participated in Study 1 were excluded, and the same MTurk qualifications were used (98% approval, minimum 100 HITS). Based on effect sizes from Study 1, with a within-subject correlation for the repeated dependent variable of $r = .30$, and an interaction effect of $d = .25$, this study would have over 98% power to detect an effect at $\alpha < .05$ with 250 participants. This sample size was also pre-registered. Most participants (65%) were married, with 23% exclusively dating, 5% engaged, 5% in common-law relationships, and 2% selecting 'other'. The median survey completion time was 7.3 minutes, with an interquartile range of 5.9 to 9.4 minutes.

While 278 participants began the study, five people did not progress through the survey far enough to complete the willpower theory questionnaire and 25 people completed the study but were not cohabitating with their partner and were thus excluded, as per our preregistration (<https://osf.io/cyvjp/wiki/home/>). In a later review of participants' IP addresses, we found two IP addresses that overlapped with those from Study 1, and an additional two IP addresses that were appeared twice each among Study 2. Because this exclusion criterion was not preregistered, the presented analyses include these four possibly repeated (or same household) participants. Removing these suspected repeats slightly reduced the magnitude of effects reported below (see Supplemental Materials S2).

Procedure.

The same experimental design and procedures were used from Study 1, with the addition of four questions at the beginning of the survey that asked participants how they were currently feeling on four 11-point slider scales (unpleasant to pleasant; useless to successful; tired to energized; jittery to calm). No analyses were preregistered for these items.

In this sample, out of the 21 different options for annoying partner behaviors, each option was chosen between 12 and 97 times. The willpower theory questionnaire again had good internal reliability for one's self ($\alpha = .91$, 95% CI [.90, .93]), as did the questionnaire measuring perceptions of one's partner's willpower ($\alpha = .93$, 95% CI [.92, .95]). Four participants did not fully complete the measure of how fatiguing they personally would find the four scenarios (13 missing observations) and one participant did not rate how upset they would be for one of the four scenarios; all available data was used for each analysis, so degrees of freedom vary slightly.

Preregistered Analysis.

For this study, we preregistered the composite measure as our dependent variable ($\alpha = .86$, 95% CI = [.84, .88]). We also only preregistered the single interaction that was significant in Study 1: Does people's self-theory of willpower interact with their own subjective ratings of how fatiguing or energizing the previous day seemed, to predict hypothetical response? We expect to replicate our previous findings, such that those with more non-limited theories would respond consistently regardless of the prior-activity of the partner in the situation, while those with more limited theories would react more negatively when their partner had an "easy" day and be more understanding when their partner had a "demanding" day (according to the participant's own perceptions of the day). The random factor of 'participant' explained 25.2% of the variability in the composite dependent variable, while the irritating behaviour itself explained 6.9%.

Results

The results of this direct replication paralleled the findings in Study 1. As in Study 1, self-theories of willpower were correlated with partner-theories of willpower, but both theories were still distinct ($r(246) = .25$, $p < .001$).

Participants again responded with more understanding if they personally perceived their partner's day to be more fatiguing, from their own perspective (main effect $B = -0.20$, $SE = 0.03$, $t(709) = 7.43$, $p < .001$, $r = .27$). As predicted, this effect was significantly stronger for limited willpower theorists (interaction $B = 0.05$, $SE = 0.02$, $t(709) = 2.14$, $p = .033$, $r = .08$; Figure 1). When participants saw their partners' previous day as relatively more fatiguing (two scale points above person-mean), willpower theory did not significantly predict their response ($B = -0.05$, $SE = 0.09$, $t(709) = 0.54$, $p = .59$, $r = .03$), but when participants saw their partner's preceding day as more relaxing (two scale points below person-mean), a more limited willpower theory was associated with significantly less understanding or compassion ($B = -0.23$, $SE = 0.09$, $t(709) = 2.61$, $p = .009$, $r = .13$)⁴. The main effect of a more limited willpower theory on participant's understanding response was not statistically significant ($B = -0.14$, $SE = 0.08$, $t(709) = 1.79$, $p = .074$, $r = .11$).

Exploratory analyses (examining moderations by self-other overlap, gender, and relationship length) are available in the Supplemental Materials (S3). The above-discussed effects were not further moderated by any of these variables.

⁴ Like in the previous sample, the categorical variable of the preceding day scenario (fatiguing or relaxing) predicted participants' hypothetical response as a main effect ($B = -1.06$, $SE = 0.11$, $t(728) = -9.45$, $p < .001$, $r = .33$) and was not significantly moderated by willpower theory ($B = -0.01$, $SE = 0.02$, $t(727) = -0.71$, $p = .478$, $r = .03$). Similarly, partner-theory of willpower did not significantly interact with either the categorical demand variable ($B = 0.027$, $SE = 0.014$, $t(724) = 1.92$, $p = .055$, $r = .07$) or with ratings of how fatiguing the day would be to one's partner ($B = 0.004$, $SE = .003$, $t(720) = 1.18$, $p = .24$). These interactions were not preregistered or hypothesized for the replication sample.

GENERAL DISCUSSION

People did adjust their intended response to their romantic partner's annoying behaviors based on the content of their partners' earlier day – specifically, participants were more understanding when the participants thought that their partner's preceding day would be subjectively fatiguing (Figure 1). The degree to which participants adapted their intended response varied depending on their self-theory of willpower, with more limited theorists changing their responses somewhat more substantially based on the context of their partner's preceding day. This moderation by self-theory of willpower was quite modest ($r = .11$). Furthermore, unlike what we had expected, participants with more limited willpower theories were rarely *more* understanding compared to their counterparts with more non-limited theories. In Study 1, while limited theorists (at +1SD) intended on being slightly more understanding on high-fatigue days, they intended on being slightly *less* understanding on low-fatigue/relaxing days, resulting in limited theorists being similarly compassionate to non-limited theorists overall. In Study 2, limited and non-limited willpower theorists (at +1SD and -1SD) intended to be similarly understanding in the context of high-fatigue days, but limited willpower theorists again responded with less compassion in the context of low-fatigue/relaxing days. Thus, more limited willpower theories were not associated with more understanding overall, and were not even reliably associated with more understanding towards one's partner when the partner had experienced a difficult, fatiguing day.

Unlike what we might expect, willpower theories mattered most in scenarios where the participant's romantic partner had just experienced a relaxing day. In both samples, when the target had hypothetically experienced a relaxing, low-demand day, limited willpower theorists were especially annoyed, perhaps thinking that their partner had no excuse for such a self-regulation failure. While beliefs about willpower have been often discussed as most applicable to highly demanding contexts (e.g., Bernecker & Job, 2015; Smith et al., 2020), these findings suggest that willpower theories may influence the perceptions of highly relaxing activities.

Participant's self-theory of their own willpower did differ from their theory of their partner's willpower – participants recognized that their partner might be more or less susceptible to depletion than they themselves are. Conceivably, since participants had an impression about their romantic partner's willpower theories, this knowledge could be more useful than one's own willpower theories. Their partner was the one who would experience fatigue, or not, from the demanding day. However, we consistently found that self-theories of willpower were more predictive than theories about a target's willpower – even when the target was one's spouse. Furthermore, participants' own personal perception of whether their partners' days' activities were fatiguing or energizing more strongly interacted with their willpower theory than their assumptions of whether their partner would be fatigued or energized by the days' activities. This suggests that the original scale assessing people's self-theories of willpower, might, as it has been suggested by the authors (Job et al., 2010) be a valid indicator of how people perceive willpower capacity in general, even in other people. People's schema about willpower capacity is likely largely derived from their own personal experience, and so that is what they used to form predictions about other people, even people they know very well (Ames, 2004).

These findings could have modest ramifications for the general provision of social support or other relationship processes, given that less forgiveness and more irritation may lead to relationship conflict, lower relationship satisfaction, or relationship dissolution (Furman et al., 2017; Kato, 2016; Testa et al., 2020). Because limited willpower theorists tended to adjust their responses relatively more based on their partner's preceding demands, rather than defaulting to a more compassionate response, it may be especially important for their romantic partners to pre-emptively communicate their mental fatigue and seek support (Barbee & Cunningham, 1995; Iida et al., 2008). Individuals may also benefit from anticipating fluctuating responses from their partners in reaction to the same undesirable behaviour: you may have been quickly forgiven for leaving a mess one day, but that compassionate response may have been conditional on the demanding context of your day. Although understanding responses were more conditional among more limited willpower theorists, even

those with non-limited willpower theories (in Study 2) were more compassionate towards transgressions performed after a fatiguing day.

It is important to remember that people's responses to their partner's irritating behaviours are not only affected by perceptions of their partner's fatigue but are also affected by their own fatigue. In many cases, participants with more limited willpower theories may themselves have experienced demands alongside their partners, and may be more likely to experience fatigue than those with non-limited willpower theories (Clarkson et al., 2016) – potentially counteracting their increased tendency to be understanding towards their partner after a demanding day. Indeed, a recent daily diary study showed that even though people with more limited willpower theories were more likely to perceive their partner's fatigue, they intended to provide less support to their partner – compared to those with more nonlimited theories, they simply felt more fatigued themselves (Francis, et al., 2020).

Limitations and Future Directions

This study examined the perceptions of others using hypothetical online scenarios. While we tried to immerse participants in the scenarios by having them customize the situations to their own relationship – and, according to feedback from participants in open-ended comments, some participants found the situations to be personally relatable – participants may have still responded differently if they were actually with their partners. While hypothetical vignettes can be highly informative (Hainmueller et al., 2015; Robinson & Clore, 2001), they do not replicate all aspects of real-world interactions. Future research can expand on how people perceive and respond to their partners depending on their partner's prior demands with access to more rich information, including during face-to-face interactions. Willpower theories may still affect how people respond to others if limited theorists are more attuned to fatigue signals or more likely to interpret ambiguous information as indicative of fatigue due to their general beliefs (Bublitzky et al., 2020), but these hypotheses are yet to be tested.

These studies sampled from Americans recruited through Mechanical Turk and are not representative, although MTurk findings generally approximate those from a general American population (Mullinix et al., 2015). We recommend caution in generalizing these results to other samples, especially given cultural differences in willpower theories (Savani & Job, 2017). Similarly, these studies examined only four preceding day activities: two relatively relaxing and two relatively effortful. These four scenarios are not necessarily representative of all types of activities, and future research should examine a broader variety of preceding day scenarios to further generalize these findings (Yarkoni, 2020).

Next, we focused on whether or not participants believed that prior demands would affect later feelings of fatigue and later behaviours. Neither our scenarios nor the willpower theory questionnaire focuses on a particular mechanism, unlike academic discussions of depletion. The four scenarios did not only vary in terms of demand; high demand activities were higher in self-regulatory requirements, but also may have been more stressful, emotional, or difficult in other ways. This is similar to other work on willpower theories that measures general levels of demand without specifying the particular mechanisms (e.g., Bernecker & Job, 2017). We did not examine whether participants believed that the targets were experiencing reductions in self-control capacity, reductions in motivation, increases in stress, or changes in mood; limited willpower theories could resemble resource models (Baumeister et al., 1998; Baumeister et al., 2018), motivational models (Inzlicht et al., 2014; Kurzban et al., 2013) or something else entirely. Future research could examine whether limited theorists believe that strenuous mental exertion depletes the *ability* to self-regulate, or the *motivation* to self-regulate.

Finally, other individual differences and relationship factors are also likely to affect responses to one's partners, and may even affect the degree to which people modulate their responses based on the preceding contextual factors. As correlational research, these studies cannot establish whether or not willpower theories themselves are the causal reason why those with theories of willpower as more or less limited responded differently to the same hypothetical situations. Those with more

limited willpower theories tend to be more neurotic, have lower trait-self-control, and lower subjective well-being (Bernecker et al., 2017; Francis et al., 2020; Jędrzejczyk & Zajenkowski, 2020), each of which may affect participants' patience with their partners. Furthermore, having a more limited willpower theory may itself result in less self-regulated behaviour (Job et al., 2015), which may increase relationship conflict and ultimately lead to one responding with less understanding or even more aggression (Crane et al., 2014; Testa et al., 2020). Future research should further examine how willpower theories affect relationship dynamics broadly, including examining causal processes.

Conclusion

An established line of research suggests that people typically fail to acknowledge the role of contextual factors when explaining other people's behavior (Ross, 1977). We here show that people's self-theories of willpower as limited attenuates this tendency; at least in the context of their romantic relationship, limited theorists were relatively more likely to consider their partner's preceding effortful situations when judging undesirable or annoying actions. However, while limited theorists adjusted their responses to their partners based on perceptions of their partners' preceding day's demands, limited theorists were not more compassionate overall. Instead, those with more limited willpower theories seem to be especially irritated by their partners' annoying behaviours when their partner seems to have "no excuse". Self-theories of willpower may have small to modest impacts on the dynamics of compassion and conflict in romantic relationships.

Declaration of Conflicting Interests

All authors declare no conflict of interest.

Author contributions

Zoë Francis (Conceptualization; Data curation; Formal analysis; Methodology; Visualization; Writing – original draft)
Veronika Job (Conceptualization; Methodology; Supervision; Writing – review & editing)

Supplemental Material

The following supporting information may be found in the online edition of the article:

Appendix S1 Study 1 pre-registered analyses for separate response items.

Appendix S2 Study 2 results excluding duplicate IP addresses.

Appendix S3 Exploratory moderation analyses.

Data availability statement

Preregistrations, data files, and materials are available at the following: Study 1 Preregistration: <https://osf.io/6kvw9/wiki/home/>; Study 2 Preregistration: <https://osf.io/cyvjp/wiki/home/>; Data and Materials: <https://osf.io/ktp87/>.

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