The Association of Subordinate Perceptions of Supervisor Recovery with Subordinate Recovery Outcomes

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Abstract

Recent literature surrounding the process of recovery from work and work-related demands has included the supervisor as a key variable influencing how and if employees recover from work. Recovery represents the return of personal resources to their pre-work levels and is typically conceptualized as taking place during non-work time (e.g., at night after work, weekends, holidays). It is theorized to take place through four main recovery experiences: psychological detachment from work, relaxation, mastery experiences, and control over leisure time. This study extends the literature surrounding recovery experiences to include subordinate perceptions of supervisor recovery as a potential predictor of subordinate recovery and well-being. Participants (N=252) completed three time-lagged surveys and reported their perceptions of their supervisor's recovery (Time 1), their own recovery (Time 2), and their feelings of vigor and fatigue (Time 3). Perceived supervisor recovery was empirically distinguishable from supervisor support for recovery and provided incremental validity in predicting subordinate recovery beyond this support perception. These results bolster the conclusion that supervisor recovery can spillover to directly influence subordinate recovery.

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General Audience Abstract

Recent research has focused on how the supervisor may influence how and if subordinates are able to rest and recover from the demands they face at work. The process of recovery from work is usually thought to take place during time away from work (e.g., at night after work, weekends, holidays) and is thought to occur through four experiences: psychological detachment from work (cutting mental and physical ties with work), relaxation (positive mood and low effort), mastery experiences (building skills or hobbies), and control over leisure time (being able to decide how to spend one's time). This thesis extends previous work to include subordinate perceptions of how his / her supervisor is recovering from work as a potential predictor of subordinate recovery and recovery related outcomes. Participants (*N*=252) completed three surveys over the course of four weeks and reported their perceptions of their supervisor's recovery (Survey 1), their own recovery (Survey 2), and their feelings of vigor and fatigue (Survey 4). Subordinate perceptions of the mastery and control of their supervisor was related to subordinate mastery and control above and beyond existing measures of how the supervisor may influence subordinate recovery. These results suggest that the supervisor may be an important role model in how subordinates recover.

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1 Introduction

The widespread exploration of stress and its outcomes indicates that stress is a defining feature of people's lives, affecting both their physical and mental health (Hobfoll, 1989). Employees burdened with high levels of stress may be unable to fulfill daily tasks and thus may experience increased job demands and strain over time (Bakker & Demerouti, 2017). The notion that employees tend to expend effort to meet and overcome their job demands serves as a foundational assumption of the Effort-Recovery Model (ERM), a widely-cited model of the relationships between job demands and strain outcomes (Meijman & Mulder, 1998). This model states that while effort is necessary for the accomplishment of work tasks, it can tire out an individual by straining, taxing, or otherwise changing the state of his or her psychological and biological resources and energy (Bennett, Bakker & Field, 2018). The ERM postulates that after a certain period of time during which the taxed systems are not used, these systems may recuperate and return to their pre-stressor levels (Meijman & Mulder, 1998), a process referred to as *recovery*. Recovery serves to mitigate the influence of job demands on strain outcomes (Kinnunen, Feldt, Siltaloppi & Sonnentag, 2011), such as fatigue, decreased engagement, and somatic complaints (Lanaj, Johnson & Barnes, 2014; Nicholson & Griffin, 2015; Karatepe & Kilic, 2007; Geurts & Sonnentag, 2006). In the contemporary study of occupational health, recovery tends to be conceptualized as taking place away from work, usually during post-work time or during weekends (Bennet et al., 2018; cf. Lilius, 2012). However, questions still remain as to why some employees attain sufficient recovery from work and corresponding reductions in strain criteria while other employees do not. In this study, I explore how supervisors' actions surrounding their own recovery may associate with the recovery experiences of their subordinates.

1.1 Supervisor and Recovery

1.1.1 Importance of Supervisor Behavior. Researchers have previously explored the spillover effects of supervisors' more general actions in the workplace to subordinate recovery experiences. For example, workers tend to report lower sleep quality when they are belittled, insulted, or otherwise undermined by their supervisor at work (Barber, Taylor, Burton & Bailey, 2017). Subordinate somatic complaints, general health complaints commonly used as indicators of insufficient recovery (Geurts & Sonnentag, 2006), are less likely to translate into absence from work when perceived supervisor support is high (Biron, 2013). Koch and Binnewies (2015) have investigated the ability of the supervisor to role-model segmentation between work and home life, finding that supervisors' role-modeling of segmentation can affect the boundaries that subordinates maintain between work and home life. Boundary management and work / non-work segmentation have been found to increase employee perceptions of several post-work recovery experiences (Kinnunen et al., 2016; Park, Fritz, & Jex, 2011). Thus, the actions of supervisors may influence outcomes relevant to subordinate recovery.

1.1.2 Perceived Supervisor Recovery. However, researchers have not yet investigated whether a supervisor's engagement in actions that facilitate their *own* recovery during time away from work relates to the recovery experiences of their subordinates. I suggest and empirically evaluate *perceived supervisor recovery (PSR)* as a new construct that explains how subordinates' perceptions of their supervisor's recovery experiences are associated with their own recovery experiences. I conceptualize PSR as a subordinate's perception of their supervisor's engagement in recovery experiences. These perceptions may be formed both by directly observing supervisor actions relevant to recovery or by drawing inferences and making assumptions from indirect

evidence relevant to their supervisor's recovery (e.g., perceptions formed from social media, office gossip, lack of communication during off-job time).

1.2 Aims

I intend to make three major contributions to the work recovery and occupational health literatures by introducing and testing the PSR construct in this study. First, I aim to demonstrate a distinction between a supervisor's more general beliefs about recovery (supervisor support for recovery; SSR; Bennett, Gabriel, Calderwood, Dahling, & Trougakos, 2016) and PSR, a subordinate's perception of their supervisor's engagement in recovery experiences. While supervisors' more general beliefs about recovery have been found to influence subordinate recovery experiences (Bennettet al., 2016), a gap remains in understanding how a supervisor's own personal pursuit of recovery may interface with their subordinates' recovery experiences (Sonnentag & Fritz, 2015). My second aim is to establish the incremental validity of PSR in predicting subordinate recovery experiences beyond SSR. This is intended to demonstrate the importance of the subordinate's construal of his/her supervisor's recovery actions above and beyond the more general recovery support that a supervisor may be providing. My third aim is to demonstrate that PSR is associated with recovery-relevant outcomes (e.g., vigor, fatigue) through subordinate recovery experiences. Empirical support for PSR as a relevant covariate of subordinate recovery experiences and outcomes will add to the growing literature exploring a possible trickle-down relationship between supervisor recovery processes and subordinate outcomes (e.g., Bennett et al., 2016; Koch & Binnewies, 2015; Barnes, Gaurana, Nauman, & Kong, 2016).

2 Theoretical Background and Literature Review

2.1 Work Recovery

Recovery during non-work time can be thought of as preparation to take on new demands in the future (Cropley & Zijlstra, 2011). This recovery is theorized to be attained through four main processes, referred to as *recovery experiences*: (1) psychological detachment (cutting mental and physical connections with work); (2) relaxation (high positive affect combined with low activation); (3) mastery experiences (developing skills in a non-work domain); and (4) control (autonomy in choosing how to spend non-work time) (Sonnentag & Fritz, 2007). Psychological detachment and relaxation both entail a cessation of effort expended on work-related tasks and are derived from the tenets of the ERM (Kinnunen, Mauno & Siltaloppi, 2010; Meijman & Mulder, 1998), which states that recovery can only occur after responses to work demands have terminated. The latter two recovery experiences, mastery experiences and control, are both derived from Conservation of Resources theory (COR) (Kinnunen et al, 2010). COR states that people seek to retain, protect, and build their personal resources (e.g., energy, time, money, knowledge) and that they find the loss, or perceived loss, of resources threatening, uncomfortable, and stressful (Hobfoll, 1989). Although the pursuit of mastery activities does require further effort to be spent, Sonnentag and Fritz (2007) argue that the opportunity to build resources through mastery experiences can itself be replenishing and lead to increases in self-efficacy and positive affect. In a similar manner, experiencing control over non-work time can be conceptualized as a personal resource (Kinnunen et al., 2011), and thus can be understood as desirable and beneficial under COR.

Only one study to date has directly tested how supervisors may influence their subordinates' recovery experiences. Bennett et al. (2016) measured supervisors' ratings of their

own SSR, which the authors defined as "supervisors expressed attitudes and policies that were supportive of employee recovery during time outside of work" (p. 1653). Supervisor ratings of SSR were related to a higher likelihood of subordinate membership in a recovery profile (i.e., combination of recovery experiences) that prioritized psychological detachment, suggesting that subordinate recovery was affected by SSR (Bennett et al., 2016). These observed relationships serve as the foundation for this thesis by providing initial empirical evidence that supervisors may influence their subordinates' recovery experiences, but I seek to go beyond these findings to suggest that supervisors' own recovery experiences may spillover and associate with their subordinates' recovery incrementally beyond more general supervisor support for the recovery process. In other words, I aim to expand beyond Bennett et al.'s (2016) findings to investigate whether PSR may be associated with subordinate recovery experiences over and above the influence of SSR.

2.2 PSR and SSR: Similarities and Differences

I expect PSR and SSR to be related but distinct constructs. PSR and SSR both capture elements of a supervisor's attitude towards recovery that are expected to be associated with subordinate recovery (Bennet et el., 2016). The constructs are both likely influenced by the supervisor's belief in the value of recovery and by how much the occupational context allows for off-job recovery experiences to be pursued. Finally, both constructs likely relate to the recovery climate (the perceived norms of recovery and/or detachment) within an organizational unit (Koch & Binnewies, 2015; Sonnentag, Mojza, Binnewies & Scholl, 2008; Sonnentag & Fritz, 2015).

However, there is also reason to suspect that PSR and SSR are empirically distinct. Social learning theory suggests that attitudes toward a behavior, social pressure to act a certain way, and behavioral control can largely predict expressed behavior (Ajzen, 1991). PSR is intended to

capture two of these contributors to behavior: subordinate perceptions of social pressure and behavioral control created by supervisors through their own pursuit of recovery experiences. In contrast, SSR does not capture any of these contributors to expressed behavior at *the level of the subordinate*. In other words, SSR only captures the attitude of the supervisor about recovery, implicitly assuming that these attitudes transmit to the subordinate and then influence the subordinate's expressed behavior. Accordingly, because PSR and SSR tap into different contributors to expressed behavior and PSR does so more directly, I expect that these constructs will be empirically distinct and that PSR will provide incremental validity over SSR in predicting subordinate recovery experiences. Based on this analysis of the similarities, differences, and contributors to expressed behavior for the PSR and SSR constructs, I hypothesize that PSR and SSR will be approximately moderately correlated yet empirically distinct. I also anticipate that PSR will have incremental validity over SSR in predicting subordinate recovery experiences.

H1: PSR and SSR are approximately moderately and positively correlated ($\sim r = .30$).

H2: PSR and SSR are empirically distinct constructs.

H3: PSR provides incremental validity in predicting subordinate recovery experiences over SSR.

2.3 From PSR to Recovery-Relevant Outcomes

Recovery experiences have consistently been found to correlate with various well-being indicators, such as vigor and fatigue (Geurts & Sonnentag, 2006; Kinnunen et al., 2011; Bennett et al., 2016). Vigor at work, an indicator of sufficient recovery, is characterized by high energy, effort, and persistence at work and has been shown to correlate positively with recovery experiences (Kinnunen et al., 2011; Kinnunen et al., 2016). Fatigue, an indicator of insufficient recovery, is characterized by decreased motivation and exhaustion and has been shown to correlate negatively with recovery experiences (Geurts & Sonnentag, 2006; Kinnunen et al.,

2011). Vigor and fatigue have been chosen in this study to provide initial evidence for an indirect effect linking PSR to subordinate recovery through subordinate recovery experiences because they are the most widely researched indicators of sufficient and insufficient recovery, respectively (Bennet et al., 2018). PSR is expected to relate to subordinate perceptions of behavioral control and social pressure surrounding recovery norms, which will manifest as a relationship with subordinate recovery experiences (Ajzen, 1991; Barber & Santuzzi, 2015). These recovery experiences, which are theorized to rejuvenate depleted resources or contribute to the cultivation of new resources, are then expected to directly affect fatigue and vigor (Sonnentag & Fritz, 2007; Meijman & Mulder, 1998; Hobfoll, 1989). Accordingly, I hypothesize that PSR will be indirectly related to the recovery outcomes of fatigue and vigor through the mediator of subordinate recovery experiences. In addition, it is conceivable that some supervisor recovery experiences will be more easily perceived by the subordinate than others. For example, it may be easier for subordinates to develop perceptions of their supervisor's psychological detachment via the amount of emails the supervisor sends out during non-work time. In contrast, it may be difficult for subordinates to develop perceptions of how much control the supervisor has over his / her time during non-working hours. Because it may be more difficult to develop PSR for some recovery experiences than others, I will test the hypothesized indirect effect separately for each of the four recovery experiences derived from theory.

H4a and 4b: Subordinate experiences of psychological detachment will mediate the relationships between PSR for psychological detachment and (a) subordinate vigor and (b) subordinate fatigue.

H5a and 5b: Subordinate experiences of relaxation will mediate the relationships between PSR for relaxation and (a) subordinate vigor and (b) subordinate fatigue.

H6a and 6b: Subordinate mastery experiences will mediate the relationships between PSR for mastery experiences and (a) subordinate vigor and (b) subordinate fatigue.

H7a and 7b: Subordinate experiences of control will mediate the relationships between PSR for control and (a) subordinate vigor and (b) subordinate fatigue.

3 Method

3.1 Sample

Participants were recruited using online research platforms (Amazon Mechanical Turk [Mturk] and Prolific), direct email invitations, flyers and recruitment blurbs posted on social media and public bulletin boards, word of mouth, and snowball sampling for a time-lagged, three survey study of work-related perceptions. In order to participate, participants were required to (1) be at least 18 years old, (2) be living and working in the United States, (3) be native or fluent English speakers, (4) be working in a full-time job (i.e., at least 32 hours per week), (5) be working in only one job, (6) have a single direct supervisor, and (7) not be self-employed. The rationale underlying each of these inclusion criteria is presented in Table 1.

To determine the target sample size for the study, I conducted a statistical power analysis for each hypothesis and determined that testing Hypothesis 3 would require the largest sample size. To test Hypothesis 3 using hierarchical linear multiple regression with a hypothesized small to medium effect size ($f^2 = 0.07$), a Type I error rate of $\alpha = .05$, and a target statistical power of .80, the results of this power analysis indicated a required sample size of $N = 141$ (Faul, Erdfelder, Lang, & Buchner, 2007).

A total of 439 participants accessed an eligibility survey and indicated that they met the inclusion criteria. Of those participants, 110 did not complete a Time 1 survey and thus could not be included in subsequent analyses. An additional 77 participants were screened out based on the following criteria: 1) IP address outside the United States ($n = 35$); 2) attempting to complete the eligibility survey multiple times ($n = 16$); 3) suspicions of fraudulent responding (e.g. providing identical contact information for the supervisor and the subordinate ($n = 14$); 4) providing inconsistent identifying information among the surveys ($n = 3$); 5) identification as a multivariate

outlier on focal variables, as evaluated using Mahalanobis Distance (n = 4; Mahalanobis, 1936); or 6) completing one or more surveys at a speed of less than 1 second per item (n = 5; see Huang, Curran, Keeney, Poposki, & DeShon, 2012). No participants were removed for failing multiple attention check items that were embedded within a Time 1 survey (e.g., "Please select 'Strongly Agree' for this item"; see Bennett et al., 2016).

A total of 252 participants completed a Time 1 survey and were included in the final sample (N = 252), of whom 237 completed a subsequent Time 2 survey (94.0%) and 225 completed a subsequent Time 3 survey (89.3%). There were 219 participants (86.9%) who completed all 3 surveys. Missing data were accounted for using Maximum Likelihood Estimation (Fisher, 1934; Myung, 2003), which handles missing data by iteratively estimating missing values from observed values using the expectation maximization algorithm. This method of missing data information is robust to changes in missing data patterns (Raykov, 2005; Enders & Bandalos, 2001). At this sample size, post-hoc power to detect the smallest hypothesized effect was estimated at 0.91, meaning the power was not high enough to allow for the substantive interpretation of non-statistically significant effects, but did exceed my original a priori power estimate (Aberson, 2002).

A little over half of participants were Male (51.2%). A majority of participants were White (87.3%), with the largest percentage of remaining participants reporting that they were Black/African American (6.0%) or Asian (3.6%). In addition, 7.9% of participants were Hispanic or Latinx. Participants were on average 37.84 years old (SD = 10.34) and worked an average of 41.30 hours per week (SD = 4.41). Participants had been in the workforce for 17.77 years (SD = 10.98) on average, with a mean job tenure of 5.30 years (SD = 4.66), a mean organizational tenure of 7.22 years (SD = 6.23), and a mean tenure with their current supervisor of 4.54 years

(*SD* = 4.07). Almost one-third of participants reported having at least one dependent minor living in their home (32.9%), and just over 10 percent of participants (10.3%) reported having at least one dependent adult living in their home. Of the participants with a dependent relative in their home, participants reported having an average of just under 2 dependent minors (*M* = 1.82; *SD* = 0.91) and just over one dependent adults (*M* = 1.15; *SD* = 0.37) living in their home.

To evaluate potential biases from non-compliance and attrition, I conducted a series of independent sample *t*-tests with all variable composites and continuous demographic variables. For both sets of tests, equal variance was not assumed between groups[1], as violations of this assumption are common and more problematic when group sample sizes are more unequal (Cohen, 2013).[2] For the non-compliance analyses, participants who were screened out during data cleaning ($n = 77$; coded as 1) were compared with participants who were retained in the final sample ($n = 252$; coded as 0). Of the variable composites and numeric demographic variables compared, these two groups exhibited statistically significant differences on 6 variables, which were (1) perceived supervisor psychological detachment at Time 1 ($t_{(7.68)} = -3.11$, $p < .05$, $g = -1.12$); (2) perceived supervisor relaxation at Time 1 ($t_{(7.34)} = -2.35$, $p < .05$, $g = -0.84$); (3) subordinate relaxation at Time 2 ($t_{(8.21)} = -2.42$, $p < .05$, $g = -0.82$); (4) age ($t_{(158.78)} = -8.81$, $p < .01$, $g = -1.16$); (5) race ($t_{(251.00)} = -4.88$, $p < .01$, $g = -1.87$); and (6) Hispanic/Latin-x classification ($t_{(251.00)} = 4.65$, $p < .01$, $g = 1.78$). These differences are taken as evidence that participants screened out for fraudulent or non-compliant behavior were systematically different

[1] The equal variances not assumed *t*-test is calculated using unpooled variances and applies a correction to the degrees of freedom. This explains the inconsistent degrees of freedom listed for the non-compliance and attrition analyses.
[2] Hedge's *g* was used as the effect size indicator because of the drastically unequal sample sizes in these tests (Cohen, 2013).

from participants retained in the final sample, which bolsters their exclusion from further analyses.

For the attrition analyses, participants who did the Time 1 survey but had at least one other survey missing (n = 33; coded as 0) were compared to participants who completed all three surveys (n = 219; coded as 1). Of the variable composites and numeric demographic variables compared, these two groups exhibited statistically significant differences on 4 variables, which were (1) perceived supervisor psychological detachment at Time 1 ($t_{(42.04)} = -2.36$, $p < .05$, $g = -0.44$); (2) level of education ($t_{(44.72)} = 2.29$, $p < .05$, $g = 0.43$); (3) job tenure ($t_{(53.50)} = -2.61$, $p < .01$, $g = -0.49$); and (4) tenure with supervisor ($t_{(46.20)} = -2.20$, $p < .05$, $g = -0.41$). To account for these observed differences, the 3 of these variables (level of education, job tenure, and tenure with supervisor) not already included in the hypothesized models were added as control variables. In addition, because Maximum Likelihood Estimation (Fisher, 1934; Myung, 2003) does not assume data to be missing at random, the use of this method to account for missing data is not expected to introduce biases in the estimates involving variables that differed between these groups in the model (Little & Rubin, 1989).

To assess the potential presence of systematic differences among participants recruited using different methods, I conducted a series of one-way ANOVAs, with recruitment method (Mturk, n = 14; Prolific, n = 202; non-crowdsourced methods, n = 36) as the independent variable and each variable composite and numeric demographic variable as a dependent variable. Statistically significant between-group differences were observed for 6 variables, which were (1) subordinate psychological detachment at Time 2 ($F_{(2, 234)} = 4.35$, $p < .01$, $\eta^2 = 0.04$); (2) fatigue at Time 2 ($F_{(2, 234)} = 3.38$, $p < .05$, $\eta^2 = 0.03$); (3) vigor at Time 3 ($F_{(2, 222)} = 3.39$, $p < .05$, $\eta^2 = 0.03$); (4) age ($F_{(2, 249)} = 4.26$, $p < .05$, $\eta^2 = 0.03$); (5) gender ($F_{(2, 249} = 3.48$, $p < .05$, $\eta^2 = 0.03$);

and (6) level of education ($F_{(2, 249)} = 3.52$, $p < .05$, $\eta^2 = 0.03$). To account for these observed group differences, recruitment method (dummy coded) was included as a statistical control variable.

3.2 Procedure

Because PSR is theorized as a perception of the subordinate, rather than the supervisor, subordinates were recruited as the focal participants for this study. Subordinates who completed an eligibility survey used to obtain informed consent and screen for inclusion criteria completed an initial online survey (Time 1), followed by additional online surveys two (Time 2) and four weeks (Time 3) later. These time points were selected to temporally separate the surveys to reduce biases stemming from conducting mediation analyses with cross-sectional data (Maxwell & Cole, 2007) without unnecessarily lengthening the study period to the point that it would pose a major risk to participant attrition[3]. Precedent for use of these time points is provided in past stress and recovery research (e.g., Calderwood, Bennett, Gabriel, Trougakos, & Dahling, 2018; Paustian-Underdahl & Halbesleben, 2014). A single survey was also sent to the supervisor of each focal participant, who was asked to provide the contact information for their supervisor, when the Time 1 survey was distributed[4]. The supervisor survey remained available across the four-week study period, and was intended to be used for exploratory analyses. Unfortunately, only 33 supervisor responses were collected (13.1% response rate), which precluded conducting these planned exploratory analyses. The limited information obtained from the supervisor surveys is discussed in the Appendix.

[3] This step appears effective as only 33 participants who completed the Time 1 survey had missing data on any subsequent surveys.

[4] Due to restrictions on the collection of personally identifiable data, participants recruited via Prolific were not ask to provide contact information for their supervisor prior to participating. Thus, their supervisors were not sent a survey.

The eligibility survey contained only an online informed consent and questions pertaining to meeting inclusion criteria. The Time 1 survey contained measures of PSR, SSR, and statistical control variables (described in the Measures section). The Time 2 survey contained measures of subordinate recovery experiences. The Time 3 survey contained measures of subordinate vigor and fatigue. Both the T2 and T3 surveys also contained additional exploratory measures (described in Measures section).

Focal participants recruited via mTurk, direct email, and snowball sampling could earn up to $5.00 for participating in this study[5]. This compensation was structured so that participants received $2.00 for completing the approximately 20-minute Time 1 survey, $1.00 for completing the approximately 15-minute Time 2 survey, and $1.00 for completing the approximately 15-minute Time 3 survey. These compensation rates were calculated to reflect normal rates for crowdsourced online surveys of similar length and content. Participants could earn an additional $1.00 bonus if they completed all three surveys and their supervisor completed his / her survey.

Prolific requires a minimum compensation amount of $6.50 per hour, which resulted in a different compensation structure for participants recruited via Prolific. These participants were compensated up to $7.50 for participation in this study, with this compensation structured so that participants received $3.50 for completing the Time 1 survey, $2.00 for completing the Time 2 survey, and $2.00 for completing the Time 3 survey. As noted previously, recruitment method was statistically controlled for in subsequent analyses, which should statistically account for potential differences engendered by this compensation structure variability.

3.3 Measures

[5] Due to the compensation structure on mTurk, participants recruited via mTurk were compensated an additional 10 cents for completing the Eligibility survey.

Focal variables used in hypothesis testing (e.g., PSR, recovery experiences, vigor, and fatigue) were administered in all three surveys to allow for the estimation of autocorrelations for statistical control purposes. Unless otherwise noted, all measures were rated on a 5-point Likert-type scale ranging from 1 (S*trongly disagree*) to 5 (S*trongly agree*). Means, standard deviations, internal consistency estimates, and correlations for all study measures can be found in Table 2.

3.3.1 Time 1 Survey.

PSR. PSR was measured using the Recovery Experiences Questionnaire (REQ; Sonnentag & Fritz, 2007). This measure contains subscales for the four theorized recovery experiences (*psychological detachment*, *relaxation*, *mastery*, *control*), each measured with four items. The four-factor structure of this scale has been shown to exhibit better fit than alternative one, two, and three-factor models in both initial and cross-validation studies (Sonnentag & Fritz, 2007), suggesting that this measure is best conceptualized as having four factors. The REQ was altered from its original form (which focuses on an employee's perception of their own recovery experiences) in this study to ask about a subordinate's perceptions of his / her supervisor's engagement in recovery experiences. For example, an item from the psychological detachment subscale that states "During time outside of work, I don't think about work at all" was altered to say "During time outside of work, my supervisor doesn't think about work at all" ($\alpha = .85$). Sample items for the relaxation, mastery, and control subscales are "During time outside of work, my supervisor uses time to relax" ($\alpha = .91$), "During time outside of work, my supervisor does things that challenge him / her" ($\alpha = .90$), and "During time outside of work, my supervisor feels he / she can decide what to do" ($\alpha = .81$), respectively.

SSR. SSR was measured with a scale developed and validated by Bennett et al. (2016). Participants responded to 6 items about their supervisor's behavior relevant to subordinate

recovery. The SSR scale was modified from its original form, which is administered to the supervisor, to ask about the subordinate's perceptions of their supervisor's support for recovery. For example, the item "I expect my subordinate to be willing to work around the clock, if necessary" was modified to say "My supervisor expects his / her subordinates to be willing to work around the clock, if necessary" (α = .91).

3.3.2 Time 2 Survey.

Subordinate Recovery Experiences. Subordinate recovery experiences were measured using the REQ in its original form to collect information about the recovery experiences subordinates personally perceive that they attain during post-work time (Sonnentag & Fritz, 2007). Sample items for the psychological detachment and relaxation subscales are "During time outside of work, I don't think about work at all" (α = .80) and "During time outside of work, I use the time to relax" (α = .90), respectively. Sample items for the mastery and control subscales are "During time outside of work, I do things that challenge myself" (α = .88) and "During time outside of work, I feel like I can decide what to do" (α = .82), respectively.

3.3.3 Time 3 Survey.

Sufficient and Insufficient Recovery. Vigor at work, a facet of work engagement that is indicative of sufficient recovery (Kinnunen et al., 2016), was measured with the three-item vigor subscale of the Utrecht Work Engagement Scale (UWES-9) developed and validated by Schaufeli, Bakker, and Salanova (2006). Participants responded in reference to the past two weeks using a 6-point Likert-type scale ranging from 1 (*Never*) to 6 (*Always*). This frame of reference was selected because I conceptualize perceived supervisor recovery (PSR), my key independent variable, as impacting state rather than trait fatigue and vigor (Querstret & Cropley, 2012). An example item is "At my work, I feel bursting with energy" (α = .92).

Fatigue, an indicator of insufficient recovery (Geurts & Sonnentag, 2006), was measured with the fatigue subscale of the Positive and Negative Affect Schedule – Expanded Form (PANAS-X; Watson & Clark, 1999). Participants were asked to report the extent to which they have felt four items intended to capture fatigue (e.g. sleepy, drowsy) during the past two weeks on a 5-point Likert-type scale ranging from 1 (*Not at all*) to 5 (*Extremely*). Cronbach's alpha for this four-item subscale was estimated at $\alpha = .92$. This scale has been found to correlate with the Profile of Mood States (POMS) Fatigue scale at $r = .89$, providing evidence for convergent validity (McNair, Lorr, & Droppleman, 1971; Watson & Clark, 1999).

3.3.4 Statistical control variables. I measured several demographic and situational variables for use as statistical controls. All variables included for statistical control purposes were measured in the Time 1 survey. Two single-item measures assessed subordinate job tenure ("How long have you been working in your current job?") and tenure with the current supervisor ("How long have you been working for your current supervisor?"). The influence of both kinds of tenure on the proposed function of PSR in predicting subordinate recovery experiences and downstream vigor and fatigue are unpredictable; subordinates with longer tenure may be more affected by PSR because they have had more time to develop perceptions or they may be less affected by PSR because they feel comfortable to pursue recovery experiences as they choose. Regardless, I elected to statistically control for these two forms of tenure when testing Hypotheses 3 – 7. Number of dependent minors, number of dependent minors under five, and number of dependent adults living at home were also measured to statistically control for non-work factors that may affect participant recovery when testing these hypotheses.

Properties of the supervisor relationship were also statistically controlled for when testing Hypotheses 3 – 7. The frequency with which subordinates communicate with their supervisor

was statistically controlled for because it could potentially influence the development and ongoing trajectory of PSR. This variable was measured using an 8-item communication frequency measure developed by Kacmar, Witt, Zivnuska, and Gully (2003). Participants responded to items about their frequency of communication with their supervisor through memos, face-to-face conversations, emails, and phone calls on an 5-point Likert-type scale ranging from 1 (*Less than once a month*) to 5 (*More than once a day*). A sample item is "How often do you initiate face-to-face conversations with your boss?" (α = .79). More general perceived supervisor support was measured using the 16-item Survey of Perceived Supervisor Support (SPSS; Kottke & Sharafinski, 1988) to allow for statistical control of supervisor support more broadly and beyond support restricted to recovery (α = .97). Leader-member exchange (LMX) is a way to quantify the give and take of demands and resources between a leader and his / her subordinate and has been found to influence subordinate work and recovery outcomes (Zhang, Wang, & Shi, 2012; Bennett et al., 2016). Thus, LMX may also serve as an important variable when examining the relationships between the supervisor and subordinate recovery outcomes and was measured using the 12-item scale validated by Liden and Maslyn (1998). A sample item from this scale is "I like my supervisor very much as a person" (α = .96). Liden and Maslyn (1998) suggest trust as an additional dimension of supervisor-subordinate relationship quality that may influence work-related outcomes. Thus, trust was measured with a 10-item scale developed by Mayer and Gavin (2005). A sample item from this scale is "I would be willing to let my supervisor have complete control over my future in this company" (α = .89). Finally, relationship quality was measured to assess the subordinate's general satisfaction with his / her relationship with the supervisor. Relationship quality was measured with a 6-item scale adapted from Hendrick (1988). Participants rated their agreement with each statement on a 5-point

Likert-type scale ranging from 1 (*Very Dissatisfied*) to 5 (*Very Satisfied*). A sample item from this scale is “In general, how satisfied are you with your relationship with your supervisor” (α = .80).

4 Results

To check the assumption of normally distributed data in the measured variables prior to hypothesis testing, skewness and kurtosis values for the focal variables and numeric demographics were calculated. Variables with a skewness or kurtosis estimate of ±2 were flagged for further inspection, per the recommendations of Tabachnick & Fidell (2007). All focal variables had a skew and kurtosis value within these bounds, except for relaxation at Time 2 (which had a kurtosis value of 2.36), meaning that the distribution of responses on this variable was narrow and tall. To account for this violation of the normality assumption, the maximum likelihood robust estimator was used when testing Hypothesis 3 and bootstrapping was used when testing Hypotheses 4a-7b. These methods are robust to violations of normality (Muthén & Muthén, 2019; Preacher & Hayes, 2008).

Hypothesis 1, measuring the correlation between PSR and SSR, was tested by calculating the bivariate correlation between these two variables at Time 1. SSR was reverse scored such that high values of SSR indicate greater support (see Bennett et al., 2016), just as high values in PSR indicate greater perceived recovery. The correlation between PSR and SSR was estimated at $r = 0.25$ ($p < .01$), supporting the moderate, positive correlation that was anticipated between PSR and SSR in Hypothesis 1. To further understand this relationship, the correlations between each of the four PSR recovery experiences and SSR were also calculated for exploratory purposes. The correlations between SSR and perceived supervisor psychological detachment ($r = 0.27$, $p < .01$) and SSR and perceived supervisor relaxation ($r = 0.22$, $p < .01$) were statistically significant. The correlations between SSR and perceived supervisor mastery ($r = 0.06$, *ns*) and perceived supervisor control ($r = 0.12$, *ns*) did not reach statistical significance. Thus, these

exploratory analyses suggest that only some perceived supervisor recovery experiences (i.e., detachment and relaxation) are related to perceived supervisor support for recovery.

To test whether PSR and SSR are empirically distinct (Hypothesis 2), I computed a series of confirmatory factor analyses in Mplus to assess the fit of 3 alternative models to the data. In Model 1, SSR and PSR were treated as a single factor, with all items measuring these constructs loading on this single common factor. In Model 2, SSR and PSR were treated as 2 separate factors, with all items measuring SSR loading on a single factor and the 16 items from the supervisor adaptation of the REQ loading on a single PSR factor. In Model 3, SSR was treated as a single factor and PSR was divided into the 4 theorized recovery experiences and thus treated as 4 separate factors. Thus, this model differed from Model 2 in that the four-items from the REQ used to measure each recovery experience were specified to load on different factors, rather than being collapsed into a broader PSR factor. Acceptable model fit was defined as $CFI \geq .95$, $RMSEA < .06$, and $SRMR < .08$ (West, Taylor, & Wu, 2012). *AIC* and *BIC* values for each model were also compared, with the lowest values indicating the best fit (West, Taylor, & Wu, 2012).

Table 3 provides the fit statistics for each of the 3 models compared when testing Hypothesis 2. Model 1, which specified that SSR and PSR loaded onto a single factor, yielded poor fit to the data ($CFI = 0.39$, $RMSEA = 0.20$, $SRMR = 0.19$, $AIC = 14887.18$, and $BIC = 15120.13$). Model 2, which specified that SSR and PSR were 2 distinct factors, also yielded poor fit to the data ($CFI = 0.66$, $RMSEA = 0.15$, $SRMR = 0.13$, $AIC = 13966.49$, and $BIC = 14202.97$). However, Model 3, which specified SSR and the factors of PSR as 5 distinct factors, yielded the best fit with the data ($CFI = 0.94$, $RMSEA = 0.06$, $SRMR = 0.06$, $AIC = 13002.41$, and $BIC = 13270.64$), thus supporting Hypothesis 2. Results of a nested model χ^2 difference test support the conclusion that Model 2 fit the data better than Model 1 ($\Delta\chi^2 = 922.69$, $df = 1$, $p <$

.01) and that Model 3 fit the data better than Model 2 ($\Delta\chi^2 = 109.12$, $df = 9$, $p < .01$). This pattern of results provides evidence that PSR and SSR are empirically distinguishable constructs. This result also informed my choice to treat PSR as 4 factors when testing the remaining hypotheses, as the evidence emerging from these CFA analyses did not support the aggregation of PSR into a single factor.

To assess whether PSR provides incremental validity in predicting subordinate recovery experiences over SSR (Hypothesis 3), I compared three models in Mplus, once again using maximum likelihood estimation, with this model comparison approach conducted for each of the four subordinate recovery experiences in separate analyses. In the first model, each of the four recovery experiences was predicted only by the statistical control variables (*level of education, job tenure, tenure with supervisor, number of dependent minors, number of dependent minors under 5, communication frequency, supervisor support for recovery, leader-member exchange, trust, relationship quality, recruitment method*). In the second model, PSR was predicted by SSR and the statistical control variables. In the third model, a given recovery experience was predicted by the associated perceived supervisor level of this given recovery experience, SSR, and the statistical control variables. For example, when predicting subordinate psychological detachment, the first model was run such that this criterion was predicted by the statistical control variables only. The second model was run such that this criterion was predicted by SSR and statistical control variables. In the third model, subordinate psychological detachment was predicted by perceived supervisor psychological detachment, SSR, and the statistical control variables. I then compared the R^2 values of these three models and calculated an F-statistic to determine if the change in explained variance by adding SSR, then PSR was statistically

significant relative to the model with the statistical control variables only and the model with SSR and controls only, respectively.

The standardized regression coefficients for all included variables in both models for each of the four recovery experiences can be found in Table 4. When predicting psychological detachment, the change in R^2 by adding perceived supervisor psychological detachment was not statistically significant ($\Delta R^2 = 0.01$, $F_{(1, 230)} = 1.55$, *ns*). When predicting relaxation, the change in R^2 by adding supervisor relaxation was not statistically significant ($\Delta R^2 = 0.01$, $F_{(1, 230)} = 2.04$, *ns*). When predicting mastery, the change in R^2 by adding perceived supervisor mastery was statistically significant ($\Delta R^2 = 0.03$, $F_{(1, 230)} = 7.15$ $p < .05$). Within the model including PSR, higher levels of perceived supervisor mastery predicted higher levels of subordinate mastery ($\beta = 0.20$, $p < .05$). When predicting control, the change in R^2 by adding perceived supervisor control was also statistically significant ($\Delta R^2 = 0.03$, $F_{(1, 230)} = 7.41$, $p < .05$). Within the model including PSR, higher levels of perceived supervisor control predicted higher levels of subordinate control ($\beta = 0.16$, $p < .05$). Thus, Hypothesis 3 was partially supported, with the caveat that support was limited to the recovery experiences of mastery and control. There was no evidence found to support Hypothesis 3 for the PSR experiences of psychological detachment and relaxation.

To test my indirect effect hypotheses (Hypothesis 4a – Hypothesis 7b), I evaluated the presence of the indirect effect linking a given perceived supervisor recovery experience to vigor and fatigue via a given subordinate recovery experience using the multiple mediation method detailed by Preacher and Hayes (2008). The full model tested, with obtained estimates, can be seen in Figure 1. Per the recommendations of these authors, I used bootstrapping with $k = 5{,}000$ samples to generate bias-corrected confidence intervals to assess the statistical significance of each indirect effect. I included all statistical control variables used in testing Hypothesis 3 in this

model, as well as the Time 1 and Time 2 measures of vigor and fatigue to account for autocorrelations relevant to the criterion variables. I interpreted each 95% confidence interval that did not include 0 as evidence of the presence of an indirect effect (Preacher & Hayes, 2004; Preacher & Hayes, 2008). The 95% confidence intervals and standardized direct and indirect coefficient estimates for these analyses for fatigue and vigor can be found in Table 5 and Table 6, respectively[6].

In testing the indirect effects specified in Hypotheses 4a-7b, the confidence interval for the indirect effect of perceived supervisor control on subordinate fatigue via subordinate control did not include zero (95% C.I. = [-0.071, -0.001]). All other bias-corrected confidence intervals contained 0, thus providing no support for the indirect effect of perceived supervisor psychological detachment, relaxation, and mastery on subordinate fatigue or the indirect effect of all four perceived supervisor recovery experiences on employee vigor through subordinate recovery experiences.

4.1 Supplementary Analyses

In order to further explore the PSR construct, correlations between each perceived supervisor recovery experience, subordinate recovery experiences, and recovery effectiveness indicators (vigor, fatigue) were considered. Perceived supervisor mastery experiences were correlated with 9 of 10 recovery experiences and effectiveness indicators (subordinate relaxation, mastery, control, and vigor and fatigue at all 3 time points; r = -.18 - .46, all ps < .01), as can be seen in Table 2. Perceived supervisor relaxation was correlated with subordinate mastery (r = 0.18, p < .01) and perceived supervisor control was correlated with subordinate control (r = 0.20, p < .01). In contrast, perceived supervisor psychological detachment was not statistically

[6]Analyses for fatigue and vigor were conducted simultaneously in a single model, but results pertaining to these criteria are presented in separate tables for ease of interpretation only.

significantly correlated with any subordinate recovery experiences or well-being indicators (*r* = -.13 - .11, all *ns*). This interesting pattern of results provides additional support to my decision to treat PSR as four separate recovery experiences and is explored further in the Discussion section.

To further investigate the empirical distinction of PSR from existing and theoretically similar constructs, a series of additional confirmatory factor analyses were conducted in which the empirical distinguishability of PSR from other commonly measured supervisory and leadership constructs was evaluated. More specifically, the empirical distinguishability of PSR from perceived general supervisor support (i.e., support not specific to recovery), supervisor relationship quality, trust in the supervisor, and leader-member exchange were individually assessed alongside PSR using the same model testing structure as described for assessing the factor structure PSR and SSR in Hypothesis 2. As can be seen in Table 7, the model in which PSR was treated as four separate factors and the alternative measure was treated as a separate, single factor fit the data best in all cases. However, the five-factor structure did not reach acceptable fit for each of these four additional variables. These results provide additional evidence for the conceptualization of PSR as a four-factor construct.

5 Discussion

Despite a wealth of research on work recovery, relatively little is understood about how supervisors influence the recovery process of their subordinates. This thesis was aimed at addressing this research gap by suggesting the construct of PSR as a potential explanation for how supervisors can influence the recovery experiences of their subordinates. Perceived supervisor recovery and supervisor support for recovery were found to be moderately positively correlated, but empirically distinct constructs. The results of a series of confirmatory factor analyses demonstrated that PSR is empirically distinguishable from SSR and that PSR is more accurately conceptualized with a four-factor structure rather than as a single construct. Additionally, PSR experiences of mastery and control provide incremental validity in predicting subordinate experiences of mastery and control over and above SSR. Thus, the perception of supervisor recovery captures different variance in employee recovery than does supervisor support for recovery. Finally, evidence was found to suggest an indirect effect of perceived supervisor control on employee fatigue through subordinate control, however no evidence was found for the indirect effect of other PSR experiences on vigor or fatigue through employee recovery experiences.

5.1 Theoretical Implications

Establishing PSR as an additional, distinct construct of interest in the work recovery literature opens additional pathways to explore why some employees are able to achieve sufficient recovery, while others are not. While SSR has been the main point of integration of the supervisor into recovery research and recovery-relevant literatures (Hammer, Kossek, Anger, Bodner, & Zimmerman, 2011; Bennett et al., 2016), subordinate perceptions about their supervisor's recovery has received almost no attention. By demonstrating that PSR is empirically

distinct from SSR, the results of this study suggest that perceptions of supervisor recovery experiences are not simply a translation of SSR into subordinate perceptions, but a unique element in the subordinate's work recovery process. This finding could point to the power of the supervisor as a role model, leading employees to engage in similar off-job recovery and well-being related experiences (Hammer, Kossek, Yragui, Bodner, & Hanson, 2009; Koch & Binnewies, 2015). Crucially, supervisors may be particularly important recovery role models for their subordinates because of their position of power and ability to shape the recovery climate as a whole (Ajzen, 1991; Sonnentag & Fritz, 2015), which arguably enhances the perceived value of conducting future research on the PSR topic.

Extending this logic further, previous research on how the supervisor can affect the well-being of their subordinate has explored the impact of supervisor behaviors at work (e.g., Barber et al., 2017; Biron, 2013). Research into how supervisor behavior away from work may relate to subordinate outcomes has received considerably less attention. In one key study examining the influence of off-job role-modeling, Koch and Binnewies (2015) found that subordinate perceptions of their supervisor as a role-model for work-life balance was predictive of subordinate work-life segmentation behaviors. The results of this thesis expand upon this limited research stream by suggesting that subordinate perceptions of supervisor recovery experiences may also spillover to predict subordinate recovery experiences outside of work.

The lack of support for seven of the eight indirect effect hypotheses coupled with the incremental validity of PSR over SSR in predicting employee recovery experiences suggests that more research is needed to understand the effects of PSR on subordinate well-being. The overwhelming evidence of relationships between recovery experiences and indicators of sufficient and insufficient recovery (e.g. Geurts & Sonnentag, 2006; Kinnunen et al., 2011)

suggests that it is unlikely that the subordinate recovery experiences predicted by PSR are not relevant to well-being indicators, but instead that other factors may prevent the transmission of PSR into fatigue and vigor via subordinate recovery. Thus, because PSR demonstrated incremental validity in predicting recovery, it may also relate indirectly to other recovery outcomes, such as burnout, somatic complains, or emotional exhaustion (Sonnentag & Fritz, 2015), that were not directly evaluated in this study. In addition, some PSR experiences may more easily be perceived by the subordinate or transmit to recovery than others. Because psychological detachment and relaxation are considered passive recovery experiences and have more to do with a cessation of work than an engagement in another activity (Meijman & Mulder, 1998; Sonnentag & Fritz, 2007), they may be more difficult to perceive than mastery and control experiences, which involve engagement in more active behaviors that could be observable (Kinnunen et al, 2010; Hobfoll, 1989). Thus, future research should explore why some PSR experiences may be more influential than others and why those influences might not spillover into subordinate recovery indicators.

Additionally, an interesting pattern of results emerged around the PSR experience of perceived supervisor mastery experiences, which not only yielded incremental validity in predicting subordinate mastery but also was correlated with almost all other recovery experiences and sufficient and insufficient recovery indicators that were measured in this study. In contrast, the other perceived supervisor recovery experiences did not consistently relate to recovery experiences or indicators of effective recovery. This clear difference in the pattern of relationships between perceived supervisor mastery and subordinate outcomes versus the other 3 factors of PSR and subordinate outcomes suggests that there may be something inherently different about how either a) subordinates perceive supervisor mastery experiences or b)

supervisors who engage in mastery experiences interact with their employees. Recovery literature often focuses on the importance of psychological detachment and relaxation experiences (Kinnunen et al., 2010; Sonnentag & Fritz, 2015) at the expense of more active forms of recovery such as mastery, but results from this study suggest that mastery experiences may be particularly important in the context of supervisor influences on recovery.

5.2 Methodological Implications

The evidence from this study suggests additional pathways to explore regarding the role of the supervisor on employee recovery using only the subordinate's perceptions. Recovery research often includes an effort to collect data from the supervisor (e.g. Bennett et al., 2016), which can be costly and time consuming to both researchers and organizations. For example, in this study, only 25 of 97 supervisors who received an invitation completed the corresponding survey and were retained in the data cleaning process (see the Appendix). Additionally, distributing supervisor surveys may be logistically difficult in online studies as it often requires the collection of personally identifiable contact information about the supervisor (which subordinates may or may not be willing to provide). My findings suggest the employee's construal of supervisor recovery as an additional relevant data point in predicting employee recovery. Thus, future research exploring how the supervisor influences subordinate recovery may not always necessitate collecting data from the supervisor, as subordinate perceptions of supervisor recovery were found to have relevance to predicting downstream recovery-relevant criteria.

5.3 Practical Implications

This thesis indicates the potential for spillover of supervisor recovery into subordinate recovery. Sufficient recovery has been shown to relate to higher job creativity and extra-role

behaviors (Eschleman, Madsen, Alarcon, & Barelka, 2014) while insufficient recovery has been shown to relate to chronic health impairments (Geurts & Sonnentag, 2006). Thus, recovery is valuable to organizations. In a study exploring how supervisors can support subordinates during time away from work, Hammer et al (2011) applied an intervention aimed at increasing supervisor's Family Supportive Supervisor Behaviors (FSSB; emotional support, instrumental support, role modeling behaviors, and creative work-family management) in an effort to decrease negative outcomes associated with family-to-work conflict. After the intervention, subordinates with high family-to-work conflict reported improvements in job satisfaction and physical health while employees with low family-to-work satisfaction reported decreases in these outcomes (Hammer et al., 2011; Hammer et al., 2009). These results provide initial evidence that interventions aimed at changing supervisor behavior may help improve subordinate outcomes in some situations. The concept of PSR expands on this finding in two ways. First, asking supervisors to perform FSSB's places an additional demand on and may relate to negative outcomes for the supervisor, while interventions aimed at increasing supervisor recovery may be beneficial to both the supervisor and the subordinate. Second, while the intervention to increase FSSB's had positive outcomes for subordinates with high family-to-work conflict, subordinates with low family-to-work outcomes actually saw negative outcomes. Because recovery is a desirable experience for all employees, interventions aimed at increasing recovery in general may be more widely beneficial to subordinates and the organization.

5.4 Limitations and Future Directions

Due to concerns about insufficient effort (as seen by the number of participants screened out for fraudulent responding), the originally planned recruitment methods for this study were scaled out from mTurk and snowball sampling to include direct email survey invitations and

Prolific postings. Because this study utilized multiple different recruitment strategies, participants had slightly different experiences when signing up for and engaging in the study. This limitation was particularly acute in terms of the differing rate of pay for Prolific participants, relative to other participants. While the groups of participants did differ on a few variables (subordinate psychological detachment at Time 2 , fatigue at Time 2, vigor at Time 3, age, gender, and level of education), statistically controlling for recruitment method in all models ameliorates this issue to a degree. In addition, these unintendedly diverse recruitment methods likely allowed for a more diverse sample of participants than may have been obtained using fewer recruitment methods. For example, Alessi and Martin (2010) applied a similar method of recruiting participants via multiple convenience and online sources to reduce bias stemming from using only one source, so there are likely strengths of my implemented recruitment method from the perspective of generalizability.

Additionally, recruitment of supervisors to report on their own recovery and support for recovery proved logistically difficult. Because sufficient supervisor data was not collected, the correspondence of PSR ratings by the subordinate with supervisor self-reports of their recovery experiences could not be investigated for exploratory purposes. While it remains noteworthy that hypothesized relationships were supported between supervisor and subordinate recovery variables using only data from the subordinate, dyadic data would open up multiple interesting research pathways around the concept of PSR. For example, dyadic data would allow for investigation of whether a supervisor's actual recovery or a subordinate's perception of that recovery is more important for subordinate recovery and well-being (Koch & Binnewies, 2015). In addition, researchers could examine differences between the SSR the supervisor thinks he /

she is providing and the support for recovery the employee things he / she is receiving, which may have further implications for the intersection of the supervisor in the recovery process.

Beyond dyadic data, if future research could collect data from groups of subordinates nested within supervisors over time, individual differences in how PSR is developed and how it influences recovery-relevant outcomes could be explored. Because leader-member exchange theories suggest that supervisors develop different leadership styles with different subordinates (Liden & Maslyn, 1998), collecting PSR and LMX ratings for different group members nested under a single supervisor over time would allow for investigation into LMX as a moderator for how PSR predicts subordinate recovery or an antecedent to the development of PSR. Group level data would also allow for exploration of individual differences that may relate to the accuracy of PSR ratings. For example, perhaps subordinates that are more conscientious or extraverted are more likely to notice or discuss the off-job behaviors of their supervisor, thus resulting in more accurate PSR ratings. Understanding individual differences in the development and outcomes of PSR would help expand the conceptual development of this construct.

Subsequent studies might also explore other recovery indicators and general work perceptions that have been found to be influenced by the supervisor as outcomes of PSR. Because PSR is based in subordinate perceptions of the supervisor, it may be the case that other outcomes sensitive to supervisory influence would be more likely to alter as a function of PSR than recovery indicators more generally. These studies could explore sleep quality (Barber et al., 2017) and absences from work (Biron, 2013) as potential starting points, as these are off-job behaviors that supervisor behavior may influence. While the lack of support for the indirect effects hypothesized in this study are not evidence of the absence of those relationships, vigor and fatigue are not traditional included as subordinate experiences that are influenced by the

supervisor. Future research exploring the downstream effects of PSR might consider focusing on subordinate outcomes that have previously been found to be influenced by supervisor behavior.

5.5 Conclusions

PSR was found to be distinct from SSR and incrementally important for predicting subordinate recovery beyond SSR. Subordinates thus appear able to build perceptions of how their supervisor is recovering and those perceptions do appear to relate to how the subordinate recovers for some recovery experiences (e.g., mastery, control). This thesis represents an ideal starting point for broader investigations of the supervisor as a role-model for recovery and other employee behaviors away from work. Additionally, perceived supervisor mastery experiences were related to a large number of subordinate recovery experiences and well-being indicators, meaning recovery research involving the supervisor should consider emphasize supervisor mastery experiences as a potentially highly relevant perception of supervisor recovery. My results suggest that subordinates do develop perceptions about how their supervisor recovers and that those perceptions may spillover into the subordinate's recovery experiences.

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Table 1

Inclusion criteria for participation in the study and rationale for each inclusion criteria

Inclusion Criteria	Rationale
1. Be at least 18 years old	Ensure participants' ability to consent to participate
2. Be living and working in the United States	Ensure that participants can be compensated in their country of residence
3. Be native or fluent English Speakers	Reduce the likelihood that participants misunderstand instructions or items within the study
4. Be working a full time job (i.e., at least 32 hours per week)	Employees in part-time jobs have less frequent contact with their supervisor and are more likely to have either non-work commitments (i.e. education) or more than one job that interferes with recovery experiences (Feldman, 1990), which could lessen the relevance of PSR for their recovery experiences and outcomes.
5. Be working in only one job	Reduce the likelihood that a participants will have additional jobs interfering with recovery processes
6. Have a single direct supervisor	Ensure that participants do not have multiple supervisors from which they attempt to rate PSR
7. Not be self-employed	Reduce the likelihood that participants have a job that does not allow for the development of PSR

Table 2

Means, standard deviations, inter-correlations, and internal consistency estimates for all variables

Variable	*M*	*SD*	1	2	3	4	5
1. Perceived Supervisor Psychological Detachment T1	2.84	0.94	(.85)				
2. Perceived Supervisor Relaxation T1	3.69	0.87	.62**	(.91)			
3. Perceived Supervisor Mastery T1	3.50	0.87	-.09	.04	(.90)		
4. Perceived Supervisor Control T1	4.01	0.68	.39**	.51**	.16*	(.81)	
5. Psychological Detachment T2	3.45	0.88	.11	.03	.03	.09	(.80)
6. Relaxation T2	4.07	0.72	-0.6	.09	.17**	.12	.63**
7. Mastery T2	3.39	0.90	.08	.18**	.30**	.05	.01
8. Control T2	4.04	0.68	.03	.12	.18**	.20**	.51**
9. Fatigue T1	2.11	0.94	-.06	-.04	-.26**	-.07	-.15*
10. Fatigue T2	2.33	9.6	-.10	-.06	-.18**	-.09	-.21**
11. Fatigue T3	2.27	0.98	.03	.06	-.28**	-.07	-.20**
12. Vigor T1	4.19	1.32	-.04	.05	.46**	.08	.10
13. Vigor T2	4.02	1.38	-.06	.06	.39**	.02	.09
14. Vigor T3	4.04	1.44	-.13	-.03	.46**	.02	.15*
15. Supervisor Support for Recovery T1 (R)	3.48	1.02	.27**	.22**	.06	.12	.30**
16. Job Tenure (months)	63.33	55.89	.02	-.04	-.08	-.04	-.05
17. Tenure with Supervisor (months)	54.44	48.83	-.00	.03	-.06	.03	-.04
18. Number Dependent Minors	1.82	0.91	.09	.09	.00	-.04	.14
19. Number Dependent Minors Under 5	0.60	0.70	.15	.15	.01	.04	.25*
20. Number Dependent Adults	1.15	0.37	.12	.12	-.232	-.12	-.48*
21. Communication Frequency	2.84	0.80	-.09	-.07	.08	.07	-.07
22. Perceived Supervisor Support	3.75	0.95	-.17**	.05	.50**	.08	.11
23. Leader-Member Exchange	3.81	0.91	-.16*	.05	.54**	.05	.11
24. Trust	3.72	0.79	-.08	.14	.46**	.13*	.03
25. Relationship Quality	3.66	0.82	-.13*	.07	.46**	.08	.12
26. Level of Education	3.79	1.07	-.03	.05	.18**	-.01	-.25**

Table 2 continued

Variable	6	7	8	9	10	11	12	13
1. Perceived Supervisor Psychological Detachment T1								
2. Perceived Supervisor Relaxation T1								
3. Perceived Supervisor Mastery T1								
4. Perceived Supervisor Control T1								
5. Psychological Detachment T2								
6. Relaxation T2	(.90)							
7. Mastery T2	.16*	(.88)						
8. Control T2	.69**	.19**	(.82)					
9. Fatigue T1	-.19**	-.26**	-.22**	(.89)				
10. Fatigue T2	-.18**	-.26**	-.22**	.69**	(.89)			
11. Fatigue T3	-.27**	-.27**	-.33**	.70**	.71**	(.92)		
12. Vigor T1	.27**	.42**	.22**	-.48**	-.40**	-.49**	(.90)	
13. Vigor T2	.27**	.43**	.27**	-.37**	-.35**	-.43**	.81**	(.88)
14. Vigor T3	.29**	.40**	.29**	-.42**	-.36**	-.50**	.85**	.82**
15. Supervisor Support for Recovery T1 (R)	.25**	.03	.29**	-.17**	-.09	-.09	.08	.09
16. Job Tenure (months)	-.12	-.14*	-.03	-.04	.05	.07	.02	.01
17. Tenure with Supervisor (months)	-.06	-.10	.02	-.05	.05	.02	.01	.04
18. Number Dependent Minors	.22	.15	.06	.10	-.00	-.12	.06	.09
19. Number Dependent Minors Under 5	-.03	.16	.02	.01	.01	-.01	.03	-.09
20. Number Dependent Adults	-.71**	-.07	-.66**	.38	.15	.39	-.22	-.25
21. Communication Frequency	-.01	.14*	.08	-.09	-.09	-.06	.07	.10
22. Perceived Supervisor Support	.34**	.29*	.32**	-.20**	-.19**	-.26**	.48**	.47**
23. Leader-Member Exchange	.33**	.28*	.31**	-.18**	-.13*	-.21**	.50**	.48**
24. Trust	.30**	.22*	.27**	-.20**	-.16*	-.23**	.42**	.37**
25. Relationship Quality	.31**	.19**	.28**	-.20**	-.21**	-.24**	.42**	.41**
26. Level of Education	-.12	.17**	-.12	.07	.08	.12	-.04	.02

Table 2 continued

Variable	14	15	16	17	18	19	20	21
1. Perceived Supervisor Psychological Detachment T1								
2. Perceived Supervisor Relaxation T1								
3. Perceived Supervisor Mastery T1								
4. Perceived Supervisor Control T1								
5. Psychological Detachment T2								
6. Relaxation T2								
7. Mastery T2								
8. Control T2								
9. Fatigue T1								
10. Fatigue T2								
11. Fatigue T3								
12. Vigor T1								
13. Vigor T2								
14. Vigor T3	(.92)							
15. Supervisor Support for Recovery T1 (R)	.12	(.91)						
16. Job Tenure (months)	.03	.07	(-)					
17. Tenure with Supervisor (months)	.04	.06	.71**	(-)				
18. Number Dependent Minors	.19	.14	.12	.04	(-)			
19. Number Dependent Minors Under 5	-.04	-.08	-.10	-.12	.25*	(-)		
20. Number Dependent Adults	-.51	-.22	.19	.18	-.49	-.37	(-)	
21. Communication Frequency	.15*	-.17**	.06	-.00	.14	.17	-.27	(.79)
22. Perceived Supervisor Support	.55**	.32**	-.06	-.01	.24*	.03	-.58**	.20**
23. Leader-Member Exchange	.55**	.28**	-.08	-.01	.18	-.02	-.52**	.19**
24. Trust	.46**	.32**	.02	.09	.29**	-.04	-.49**	.13*
25. Relationship Quality	.49**	.31**	-.01	.03	.18	-.08	-.52**	.14*
26. Level of Education	-.07	-.08	-.24**	-.21**	-.16	-.16	-.04	.13*

Table 2 continued

Variable	22	23	24	25	26
1. Perceived Supervisor Psychological Detachment T1					
2. Perceived Supervisor Relaxation T1					
3. Perceived Supervisor Mastery T1					
4. Perceived Supervisor Control T1					
5. Psychological Detachment T2					
6. Relaxation T2					
7. Mastery T2					
8. Control T2					
9. Fatigue T1					
10. Fatigue T2					
11. Fatigue T3					
12. Vigor T1					
13. Vigor T2					
14. Vigor T3					
15. Supervisor Support for Recovery T1 (R)					
16. Job Tenure (months)					
17. Tenure with Supervisor (months)					
18. Number Dependent Minors					
19. Number Dependent Minors Under 5					
20. Number Dependent Adults					
21. Communication Frequency					
22. Perceived Supervisor Support	(.97)				
23. Leader-Member Exchange	.91**	(.96)			
24. Trust	.85**	.84**	(.89)		
25. Relationship Quality	.85**	.85**	.79**	(.80)	
26. Level of Education	.16**	.10	.03	-.02	(-)

Note. Time 1 $N = 252$. Time 2 $N = 237$. Time 3 $N = 225$. * $p < .05$. ** $p < .01$.

Table 3

Model fit results for the three models tested in Hypothesis 2

	CFI	RMSEA	SRMR	AIC	BIC	χ^2	$\Delta\chi^2$
Model 1 (Single Factor)	0.39	0.20	0.18	14887.18	15120.13	2310.35	
Model 2 (2 Factors)	0.66	0.15	0.13	13966.49	14202.97	1387.66	922.69**
Model 3 (5 Factors)	0.94	0.06	0.06	13002.41	13270.64	405.57	109.12**

Note. * $p < .05$. ** $p < .01$.

Table 4

Standardized regression coefficient estimates, R^2 statistics, and F-Change statistics used to test Hypothesis 3

	Psychological Detachment			Relaxation			Mastery			Control		
	Model 1	Model 2	Model 3	Model 1	Model 2	Model 3	Model 1	Model 2	Model 3	Model 1	Model 2	Model 3
Intercept	4.26	5.08	4.83	3.49	3.81	3.60	1.87	1.85	1.68	3.46	3.94	3.26
Statistical Control Variables												
Level of Education	-0.22**	-0.21**	-0.20**	-0.13*	-0.12*	-0.12*	0.10	0.10	0.07	-0.12**	-0.10*	-0.10*
Job Tenure	0.00	-0.00	-0.00	-0.00	-0.00	-0.00	-0.00	-0.00	-0.00	-0.00	-0.00	-0.00
Tenure with Supervisor	-0.00	-0.00	-0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Number Dependent Minors	-0.01	-0.03	-0.01	0.03	0.02	0.03	-0.04	-0.04	-0.05	-0.04	-0.05	-0.03
Number Dependent Minors Under 5	0.29*	0.30*	0.30**	-0.03	-0.03	-0.02	0.08	0.08	0.06	0.03	0.03	0.03
Number Dependent Adults	-0.16	-0.10	-0.11	-0.18	-0.15	-0.16	0.20	0.20	0.19	-0.15	-0.11	-0.12
Communication Frequency	-0.14	-0.06	-0.07	-0.07	-0.04	-0.04	0.06	0.06	0.08	0.01	0.06	0.04
Perceived Supervisor Support	0.16	0.08	0.10	0.19	0.15	0.16	0.23	0.24	0.24	0.21	0.16	0.16
Leader-Member Exchange	0.25	0.29	0.29	0.12	0.14	0.14	0.23	0.23	0.16	0.12	0.14	0.18
Trust	-0.30*	-0.34**	-0.35**	0.00	-0.02	-0.03	-0.08	-0.08	-0.10	-0.02	-0.05	-0.09
Relationship Quality	-0.01	-0.05	-0.03	-0.00	-0.02	-0.01	-0.18	-0.18	-0.22	-0.07	-0.10	-0.08
Recruitment (Dummy code 1)	-0.27	0.08	-0.21	-0.01	0.15	0.28	0.16	0.16	0.11	0.01	0.00	0.08
Recruitment (Dummy code 2)	0.12	-0.28	0.18	0.24	0.23	0.33	0.31	0.31	0.31	0.17	0.20	0.24
Supervisor Support for Recovery		-0.27**	-0.26**		-0.11*	-0.10		0.01	-0.01		-0.16**	-0.15**
Perceived Supervisor Recovery												
Perceived Supervisor Psychological Detachment			0.04									
Perceived Supervisor Relaxation						0.04						
Perceived Supervisor Mastery									0.20*			
Perceived Supervisor Control												0.16*
R^2	0.17	0.25	0.26	0.19	0.21	0.21	0.14	0.14	0.16	0.15	0.20	0.22
ΔR^2		0.08	0.01		0.02	0.01		0.00	0.03		0.05	0.03
F		24.98**	1.55		5.50*	2.04		0.00	7.15**		13.78**	7.41**

Note. * $p < .05$. ** $p < .01$.

Table 5

Standardized Statistical control, direct effect, and indirect effect coefficients, with 95% bias-corrected confidence intervals for fatigue

Relationship	β	Lower Bound	Upper Bound
Statistical Control Variables			
Supervisor Support for Recovery	0.08		
Level of Education	0.08		
Job Tenure	0.06		
Tenure with Supervisor	-0.02		
Number Dependent Minors	-0.09		
Number Dependent Minors Under 5	0.03		
Number Dependent Adults	0.07		
Communication Frequency	0.06		
Perceived Supervisor Support	-0.07		
Leader-Member Exchange	0.01		
Trust	-0.06		
Relationship Quality	0.08		
Fatigue Time 1	0.39**		
Fatigue Time 2	0.40**		
Recruitment (Dummy code 1)	-0.10		
Recruitment (Dummy code 2)	-0.12		
Direct Effects			
Perceived Supervisor Psychological Detachment → Psychological Detachment	0.05		
Perceived Supervisor Psychological Detachment → Fatigue	-0.02		
Psychological Detachment → Fatigue	-0.00		
Perceived Supervisor Relaxation → Relaxation	0.05		
Perceived Supervisor Relaxation → Fatigue	0.10		
Relaxation → Fatigue	0.01		
Perceived Supervisor Mastery → Mastery	0.20*		
Perceived Supervisor Mastery → Fatigue	-0.06		
Mastery → Fatigue	-0.07		
Perceived Supervisor Control → Control	0.16*		
Perceived Supervisor Control → Fatigue	-0.06		
Control → Fatigue	-0.14		
Indirect Effects			
Perceived Supervisor Psychological Detachment → Psychological Detachment → Fatigue	0.000	-0.016	0.011
Perceived Supervisor Relaxation → Relaxation → Fatigue	0.000	-0.020	0.022
Perceived Supervisor Mastery → Mastery → Fatigue	-0.014	-0.057	0.001
Perceived Supervisor Control → Control → Fatigue	-0.022	-0.071	-0.001

Note. * $p < .05$. ** $p < .01$.

Table 6

Standardized Statistical control, direct effect, and indirect effect coefficients, with 95% bias-corrected confidence intervals for vigor

Relationship	β	Lower Bound	Upper Bound
Statistical Control Variables			
Supervisor Support for Recovery	-0.02		
Level of Education	-0.09		
Job Tenure	-0.03		
Tenure with Supervisor	0.01		
Number Dependent Minors	0.07*		
Number Dependent Minors Under 5	-0.08		
Number Dependent Adults	-0.01		
Communication Frequency	0.06		
Perceived Supervisor Support	0.16		
Leader-Member Exchange	-0.05		
Trust	-0.05		
Relationship Quality	0.07		
Vigor Time 1	0.48**		
Vigor Time 2	0.33**		
Recruitment (Dummy code 1)	0.07		
Recruitment (Dummy code 2)	-0.03		
Direct Effects			
Perceived Supervisor Psychological Detachment → Psychological Detachment	0.05		
Perceived Supervisor Psychological Detachment → Vigor	-0.02		
Psychological Detachment → Vigor	0.10		
Perceived Supervisor Relaxation → Relaxation	0.05		
Perceived Supervisor Relaxation → Vigor	-0.03		
Relaxation → Vigor	-0.12*		
Perceived Supervisor Mastery → Mastery	0.20*		
Perceived Supervisor Mastery → Vigor	0.03		
Mastery → Vigor	0.06		
Perceived Supervisor Control → Control	0.16*		
Perceived Supervisor Control → Vigor	0.03		
Control → Vigor	0.04		
Indirect Effects			
Perceived Supervisor Psychological Detachment → Psychological Detachment → Vigor	0.005	-0.007	0.031
Perceived Supervisor Relaxation → Relaxation → Vigor	-0.006	-0.033	0.006
Perceived Supervisor Mastery → Mastery → Vigor	0.011	-0.001	0.041
Perceived Supervisor Control → Control → Vigor	0.007	-0.006	0.033

Note. * $p < .05$. ** $p < .01$.

Table 7

Model fit results for the supplementary confirmatory factor analyses

Outcome		CFI	RMSEA	SRMR	AIC	BIC	χ^2	$\Delta\chi^2$
Perceived Supervisor Support	Model 1 (Single Factor)	0.63	0.14	0.17	19687.59	20037.01	3025.13	
	Model 2 (2 Factors)	0.78	0.11	0.16	18644.35	18997.29	1979.89	1045.24**
	Model 3 (5 Factors)	0.94	0.06	0.05	17605.16	17989.87	922.70	117.37**
Relationship Quality	Model 1 (Single Factor)	0.32	0.22	0.23	15729.97	15973.50	2976.66	
	Model 2 (2 Factors)	0.68	0.15	0.17	14256.76	14503.82	1501.46	1475.21**
	Model 3 (5 Factors)	0.94	0.07	0.07	13230.46	13509.28	457.15	116.03**
Trust	Model 1 (Single Factor)	0.35	0.18	0.22	17775.86	18051.16	2685.58	
	Model 2 (2 Factors)	0.62	0.14	0.15	16783.40	17062.22	1691.11	994.47**
	Model 3 (5 Factors)	0.91	0.07	0.07	15750.66	16061.25	640.38	116.75**
Leader-Member Exchange	Model 1 (Single Factor)	0.52	0.17	0.19	17681.76	17978.23	3034.06	
	Model 2 (2 Factors)	0.70	0.14	0.17	16685.16	16985.16	2035.46	998.60**
	Model 3 (5 Factors)	0.89	0.09	0.06	15632.59	15964.36	964.89	118.95**

Note. * $p < .05$. ** $p < .01$.

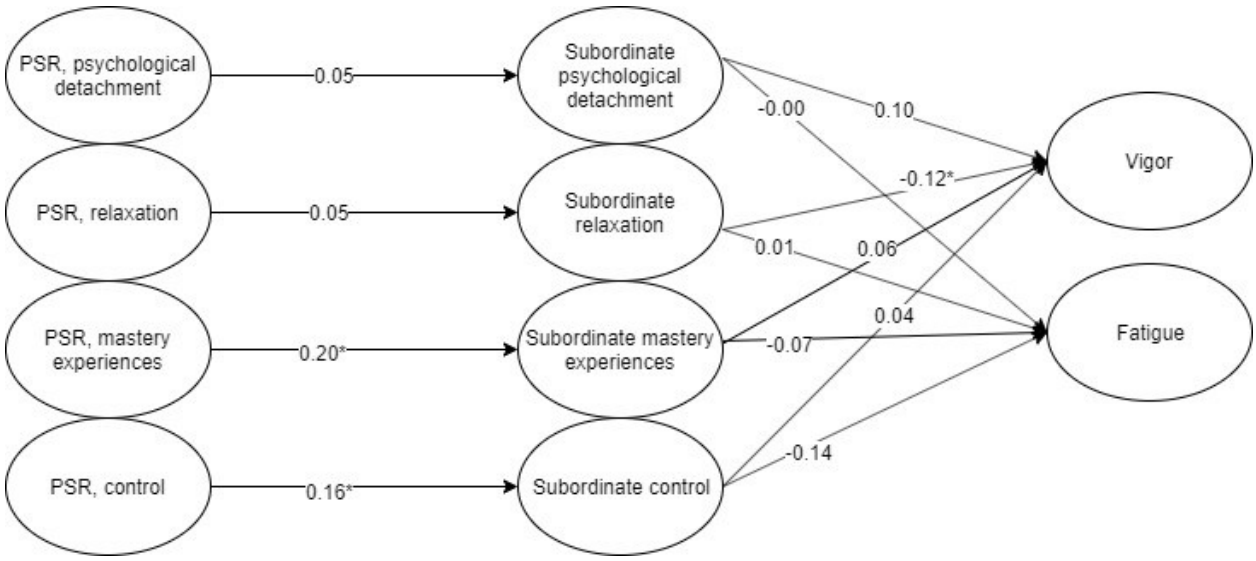

Figure 1. Supervisor support for recovery (SSR), level of education, job tenure, tenure with supervisor, number of dependent minors, number of dependent minors under 5, number of dependent adults, communication frequency, perceived supervisor support leader-member exchange, trust, relationship quality, and recruitment method were all included as statistical control variables. Standardized direct effects are reported. PSR = perceived supervisor recovery. $p < .05$. ** $p < .01$.

Appendix A

Details of the Supervisor Survey

Supervisor Sample. A total of 97 supervisor surveys were distributed and 34 supervisor surveys were completed, with supervisors receiving $5.00 for completing an approximately 10-minute survey. One supervisor survey was removed for an unrealistic response time, less than 1 second per item (n = 1) (see Huang, Curran, Keeney, Poposki, & DeShon, 2012). An additional 8 surveys (n = 8) were removed during the focal participant data cleaning process. In total, 25 supervisor surveys were included in the final sample (N = 25) that could be matched to a completed focal participant survey that was retained following data cleaning. Two supervisors completed surveys regarding two focal participants each and one supervisor completed surveys regarding three focal participants. Supervisors were on average 30.64 years old (SD = 11.06) and had been working in their current job for an average of 7.88 years (SD = 6.21). The majority of supervisors were White (80.0%), with the largest percentage of remaining supervisors reporting that they were Black/African American (16.0%) or Asian (4.0%). No supervisors were Hispanic or Latinx. A majority of supervisors were Female (56.0%), and a majority of supervisors reported having no dependent minors (68.0%) and no dependent adults (76.0%) living in their homes.

Supervisor Measures. The supervisor survey measured SSR and supervisor recovery experiences. SSR was collected from the supervisor in its original form (Bennett et al., 2016). This scale contains six items, all measured on a 5-point Likert-type scale ranging from 1 (*Strongly Disagree*) to 5 (*Strongly Agree*). This scale was reverse scored so that higher values indicated higher supervisor support for recovery. A sample item is “I expect my subordinates to be willing to work around the clock, if necessary” (α = 0.85). Supervisor recovery experiences

were measured using the REQ in its original form. Supervisors rated their agreement with each statement on a 5-point scale ranging from 1 (*Strongly Disagree*) to 5 (*Strongly Agree*). Sample items for the psychological detachment and relaxation subscales are "During time outside of work, I don't think about work at all" ($\alpha = .61$) and "During time outside of work, I use the time to relax" ($\alpha = .76$), respectively. Sample items for the mastery and control subscales are "During time outside of work, I do things that challenge myself" ($\alpha = .90$) and "During time outside of work, I feel like I can decide what to do" ($\alpha = .75$), respectively.