THEORETICAL DEVELOPMENT AND EMPIRICAL EXAMINATION OF THE NOMOLOGICAL NETWORK OF OFF-JOB REACTIVITY TO DAILY OCCUPATIONAL STRESSORS

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Charles Calderwood

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Theoretical Development and Empirical Examination of the Nomological Network of Off-Job Reactivity to Daily Occupational Stressors

Approved by:

Dr. Phillip L. Ackerman, Advisor
School of Psychology
Georgia Institute of Technology

Dr. Davood Tofighi
School of Psychology
Georgia Institute of Technology

Dr. Ruth Kanfer
School of Psychology
Georgia Institute of Technology

Dr. Cindy Zapata
Department of Management
Georgia Institute of Technology

Dr. Rustin Meyer
School of Psychology
Georgia Institute of Technology

Date Approved: September 11, 2012

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LIST OF SYMBOLS AND ABBREVIATIONS

1 – β ..... Estimated Statistical Power

AHQ ..... At-Home Questionnaire

AIC ..... Akaike Information Criterion

α ..... Estimated Type I Error Rate

BIC ..... Bayesian Information Criterion

BED ..... Delayed Post-Work Time Point

β ..... Sample Standardized Regression Weight

$\hat{\beta}$ ..... Parameter Estimate for Standardized Regression Weight

C.I. ..... Confidence Interval

Coefficient ..... Unstandardized Multilevel Regression Coefficient

Cronbach's α ..... Estimated Internal Consistency Reliability

d ..... Estimate of Effect Size for Dependent *t* Test

d.f. ..... Degrees of Freedom

F ..... Test Statistic for Analysis of Variance

f ..... Estimate of Effect Size for Analysis of Variance

HLM ..... Hierarchical Linear Modeling

ICC(1) ..... Unconditional Between-Group Criterion Variance

M ..... Estimated Sample Mean

MAR ..... Missing at Random

MCAR ..... Missing Completely at Random

McDonald's ω ..... Estimated Scale Homogeneity

MSEM ..... Multilevel Structural Equation Modeling

N ..... Total Sample Size

NA ..... Negative Affectivity

NI ..... Non-Ignorable Missing Data Pattern

NWW ..... Non-Work – Work Conflict

p ..... Probability Obtained Statistical Result Occurred by Chance

PA ..... Positive Affectivity

PW ..... Immediate Post-Work Time Point

r ..... Sample Correlation Coefficient

R_1^2 ..... Estimated Intra-Individual Variance Accounted for

R_2^2 ..... Estimated Inter-Individual Variance Accounted for

RMSEA ..... Root Mean Square Error of Approximation

$\hat{\rho}$ ..... Estimated Population True Score Correlation Coefficient

SD ..... Standard Deviation

SE. ..... Standard Error

SOM ..... Somatic Complaints

WNW ..... Work – Non-Work Conflict

ABSTRACT

A theory of off-job reactivity to daily work stress which encompasses the prediction of levels of reactivity from specific daily occupational stressors and personality traits, and outcomes of state and trait off-job reactivity, is presented and empirically tested. Despite decades of research linking negative spillover to maladaptive work and non-work outcomes, multidimensional studies of manifestations of spillover are rare. While investigators have increasingly recognized that spillover correlates tend to be associated with greater off-job physiological stress responses (Meijman, Mulder, Van Dormolen, & Cremer, 1992), no attempt has been made to incorporate off-job reactivity to daily stress within a multidimensional framework of negative work to non-work spillover. The overarching goal of this dissertation is to develop a model of off-job reactivity to daily occupational stress, comprising cognitive, affective, and behavioral indicators of negative work to non-work spillover. An empirical study is presented in which 75 nurses (N = 75) reported their exposure to different categories of daily work stress and provided measurements of off-job reactivity and anticipated outcomes during their off-job time for four work days. Select personality traits, work characteristics, and trait-level outcome variables were measured via an at-home questionnaire prior to the daily survey period. Empirical validation was obtained for a three-facet, higher-order factor model of off-job reactivity. Negative interpersonal interactions and situational constraints were supported as daily stressor predictors of state off-job reactivity, while trait negative affect and abusive supervision were supported as predictors of this state-level outcome. Elevated off-job reactivity was associated with several maladaptive outcomes, including diminished subjective well-being, elevated work to non-work conflict, greater somatic complaint frequency, and reduced off-job recovery activity pursuit. Implications of these findings for theoretical models of work – non-work

relationships, the relative contribution of predictors and outcomes of off-job reactivity, and practical applications of the results of this dissertation are discussed.

SUMMARY

Negative work to non-work spillover, conceptualized as the carryover of negative work states into off-job time (Edwards & Rothbard, 2000), is arguably the most consistently supported work – non-work linking mechanism. Despite positive inter-correlations among different spillover indicators (e.g., Hecht & Boies, 2009), researchers have rarely conducted multidimensional studies of spillover processes. In addition, although it has been recognized that daily stressors represent a more salient source of strain in daily life than global sources of stress (Almeida, 2005), comprehensive theoretical models encompassing predictors and outcomes of off-job reactivity to daily work stress have not been developed. To fill these gaps in the extant work – non-work relationship literature, I present and empirically test a theoretical model of the dimensionality, predictor space, and criterion space of off-job reactivity to daily work stress.

The proposed theoretical model of off-job reactivity is tested in an empirical study of registered nurses recording their exposure to daily stressors and off-job reactivity over the course of four work days.

- Seventy-five nurses provided daily stressor frequency, state off-job reactivity, and anticipated state outcome estimates during their off-job time for four work days.
- During the daily survey period, participants completed a survey within 30 minutes of arriving at home after work and within 30 minutes of going to sleep each day. Participants completed an at-home questionnaire measuring trait-level characteristics prior to the daily survey period.
- Cognitive, affective, and behavioral manifestations of spillover were supported as components of off-job reactivity.

- Daily stressors were frequently occurring work events, with exposure to negative interpersonal interaction, situational constraint, and low job control stressors reported on 33%, 61%, and 84% of study days, respectively.
- Between 29% – 34% of the criterion variance in state off-job reactivity was within-participants, while between 66% – 71% of this criterion variance was between-participants.
- Daily negative interpersonal interactions and situational constraints respectively accounted for 6% and 7% of the within-participant variance in immediate post-work off-job reactivity, reflecting small effects.
- Trait negative affect and abusive supervision accounted for between 15% - 19% of the between-participant variance in immediate and delayed post-work off-job reactivity, representing moderate effects.
- State off-job reactivity made a large contribution to the prediction of within-participant variance in immediate and delayed post-work subjective well being (41% - 59%), while trait off-job reactivity made moderate contributions to between-participant variance in these outcomes (24% - 27%).
- Approximately one-third of the within- and between-participant variance in work to non-work conflict was accounted for by state and trait off-job reactivity (33 – 34%), representing moderate effects.
- State and trait off-job reactivity made moderate contributions to the prediction of within- and between-participant variation in daily somatic complaint frequency (13% - 17%).

Implications of the results of this dissertation for theories of work – non-work relationships, the relative contributions of daily stressor and trait predictors to off-job reactivity, and practical applications of the empirical study results are discussed.

CHAPTER 1

INTRODUCTION

Theorists as early as Aristotle have been interested in the relationship between work and non-work spheres of life (de Grazia, 1964). At the heart of the work — non-work relationship debate are arguments concerning mechanisms linking these domains. Originating with the theoretical work of Bogardus (1934), social scientists have long recognized the potential for spillover processes between work and non-work life. *Spillover* refers to the generation of similarities between work and non-work domains, or the carryover of work states, such as fatigue or mood, into non-work time (Edwards & Rothbard, 2000). While the former conceptualization fueled early debates regarding work — non-work linkages (see Super, 1940), contemporary researchers typically adopt a work state spillover approach (e.g., Chen, Powell, & Greenhaus, 2009; Judge & Ilies, 2004). Using indicators of spillover as diverse as work-based rumination (Cropley, Dijk, & Stanley, 2006), negative affective mood states (Williams & Alliger, 1994), and angry marital interactions (Repetti, 1989), investigators have demonstrated the potential negative health (Rystedt, Cropley, Devereux, & Michalianou, 2008), diminished well-being (Sonnentag, Binnewies, & Mojza, 2010), and negative work performance (Fritz, Yankelevich, Zarubin, & Barger, 2010) implications of elevated negative work to non-work spillover.

Extant research on negative spillover processes has been limited by tendencies of researchers to design studies that emphasize only a single manifestation of work to non-work spillover, such as off-job psychological engagement/detachment (e.g., Sonnentag & Bayer, 2005), daily work — non-work mood state correspondence (Ilies, Wilson, & Wagner, 2009), or work - family conflict (Greenhaus & Beutell, 1985). Although exceptions to this statement exist (e.g., Chen et al., 2009), multidimensional

investigations of spillover processes are rare. Similarly, while researchers have provided evidence to link predictors of spillover, such as higher workload, to elevated off-job physiological stress responses (e.g., Meijman et al., 1992), no attempt has been made to incorporate reactivity to occupational stressors during off-job time within a comprehensive theoretical framework of negative work to non-work spillover. The lack of a guiding theoretical framework in this research area has made integration of existing studies difficult, despite observed correlations between cognitive, affective, and behavioral manifestations of off-job reactivity to daily occupational stress (e.g., Mojza, Lorenz, Sonnentag, & Binnewies, 2010; Rystedt et al., 2009). To overcome this limitation, the overarching goal of this dissertation is to develop a model of off-job reactivity to daily work stress, comprising cognitive, affective, and behavioral indicators of work to non-work spillover. A theory of off-job reactivity which encompasses the prediction of levels of reactivity from specific daily occupational stressors, personality traits, and work characteristics, and outcomes of state and trait off-job reactivity, is presented and empirically tested.

I begin with a brief overview of the history of the spillover construct, tracing conceptualizations of the construct from the earliest theorizing in the social sciences to the present day. In the second section of this introduction, I provide justification for the use of off-job reactivity to daily occupational stress as a central component of work — non-work spillover. In the third section of this introduction, I develop the theoretical construct of off-job reactivity through an explication of potential facets of the construct. This section concludes with the presentation of a hypothesized three facet, higher-order factor off-job reactivity model to be empirically tested in this dissertation. In the fourth section of this introduction, I review extant research linking specific daily occupational stressors, personality variables, and occupational stressor - personality interactions to off-job reactivity. I provide specific hypotheses regarding the predictor space of the off-

job reactivity construct throughout this section. In the fifth section, I review research investigating outcomes associated with the off-job reactivity process to develop specific hypotheses regarding the construct criterion space. The introduction concludes with a presentation of the full proposed theoretical model of off-job reactivity to be empirically tested in this dissertation.

1.1 An Overview of the History of Work to Non-Work Spillover Theorizing and Research

The first detailed consideration of spillover between work and non-work time in the social sciences was the Theory of Balance proposed by Bogardus (1934). From this perspective, the degree of correspondence between vocational and avocational interest patterns was an important criterion of work—non-work balance, a primary predictor of mental health. When workers had a large overlap between their work and non-work interests (characteristic of spillover; Edwards & Rothbard, 2000), Bogardus argued that their work and non-work lives were out of balance, resulting in poor mental health. In contrast, when vocational interests were compensated with opposing avocational interests, work — non-work balance was achieved. This perspective to work – non-work relationships, in which an overabundance of work factors in life is posited to negatively impact mental health, is a precursor to a number of influential contemporary occupational health theories, such as the Effort – Recovery Model (Meijman & Mulder, 1998) and the Effort – Reward Imbalance Model (Siegrist, 1996). This theory represented a turning point in initiating interest in the study of work – non-work relationships, while also serving as a model for the development of future predictions regarding the relationships between work and non-work time.

Partially owing to this increased interest in non-work time, Super (1940) empirically tested the predictions of Balance Theory in a study of the avocational interests of adolescent and adult hobbyist organization members. In addition to being

the first large-scale attempt to investigate and validate the predictions specified in Bogardus' (1934) theory, this study was the first empirical exploration of spillover processes from a psychological perspective. Up to this point, non-work time had only been discussed by economic theorists (e.g., Veblen, 1899) and empirically investigated from a descriptive, sociological perspective (Lundberg, Komarovsky, & McInerney, 1934; Lynd & Lynd, 1929; 1937). Therefore, Super brought a perspective to off-job time not seen thus far in the spillover literature. Super contradicted the predictions of Balance Theory by finding a typically close correspondence between vocational and avocational interest patterns. However, Super did observe a greater degree of vocational to avocational interest spillover in individuals who evidenced a higher degree of suitability for their jobs, a precursor to the identification of person – job fit processes in the relationships between off-job time preferences, off-job time behaviors, and experienced work and non-work outcomes (see Edwards & Rothbard, 1999). This study was an early recognition of the complexities involved in studying work to non-work spillover processes.

Although the empirical investigation of work — non-work spillover in psychology originated with Super's (1940) cross-sectional study of avocational interest patterns, researchers eventually began to consider the dynamic nature of work – non-work relationships. Perhaps the most important theoretical contribution to this movement was Kanter's (1977) proposition of the myth of separate worlds. Kanter argued that organizations maintain a fallacy that work and non-work worlds are only indirectly connected, based on an assumption that worker's family lives will have a negative impact on their work performance if domains of life overlap. In a scathing critique of the state of knowledge on work – non-work relationships at the time, Kanter argued that the myth of separate worlds had influenced researchers studying work-related variables, who had been biased to dramatically under-emphasize work – non-work linking

mechanisms. These arguments resonated with the subsequent generation of work – non-work relationship researchers, a point emphasized by the claim just over ten years later that "the myth has since been shattered, as evidenced by the flood of research produced in the last decade on the interrelationships between work and family" (Peterson, 1989, p. 3). In retrospect, this claim seems valid, as the next decade after Kanter's critique of the state of the field saw a proliferation of sophisticated theoretical models and empirical investigations of cross-domain linkages.

Arguably the most influential force in the increased prevalence of research investigating work – non-work relationships was the development of work – family conflict theory (Beutell & Greenhaus, 1982; 1983; Greenhaus & Beutell, 1985). Based on the assumption that employees have limited resources to divide between work and family domains, these authors argued that role conflict processes (Kahn, Wolfe, Quinn, Snoek, & Rosenthal, 1964), resulting from time, strain, and behavioral sources of interference, lead to elevated conflict between work and non-work roles. Just as conflicting, incompatible work roles had been demonstrated to have disruptive effects on work life (see Kahn et al., 1964), Greenhaus and Beutell suggested that conflicting demands imposed by roles in work and non-work domains of life could generate cross-domain interference. Largely supported in over two decades of empirical research (see meta-analyses by Byron, 2005; Ford, Heinen, & Langkamer, 2007), this dynamic theoretical perspective initiated a shift from the study of spillover in terms of interest patterns to the investigation of work state spillover to off-job time. Largely owing to the popularity of work – family conflict theory, spillover has been convincingly established as a prominent mechanism linking work and non-work spheres of life (see Edwards & Rothbard, 2000 for a review).

1.2 Off-Job Reactivity to Work Stress

At the same time that investigators were moving to dynamic within- and across-day considerations of work – non-work spillover, researchers began to consider the possibility that reactivity to work stress continues into off-job time. Although the foundations for this daily occupational stress research were established by investigators analyzing the impact of enduring job characteristics, such as job strain (Karasek, 1979), on off-job physiological responses (r = .32 - .56) (e.g., Laflamme et al., 1998; Rau, Georgiades, Fredrikson, Lemne, & de Fair, 2001), studies by Bolger and colleagues initiated the examination of daily off-job stress reactivity (Bolger, DeLongis, Kessler, & Schilling, 1989; Bolger, DeLongis, Kessler, & Wethington, 1989; Caspi, Bolger, & Eckenrode, 1987). Even in the early developmental stages of methodological paradigms to study daily stress, researchers posited that these sources of stress represent a more proximal and salient determinant of day-level outcomes than global stress indicators (Eckenrode, 1984). Developed in parallel with the proliferation of multilevel techniques for examining event-contingent designs (see Bolger & Zuckerman, 1995), the daily stressor paradigm continues to represent a sophisticated methodological approach which allows for the examination of both daily and chronic sources of stress in relation to stress reactivity.

The daily stressor paradigm refers to a particular application of multilevel statistical approaches to investigate event-contingent outcomes (see Nezlek, 2001) in which participants report their exposure to different categories of daily stress over periods of multiple days. Depending on the focus of the research, personality trait or work characteristic measures are also collected, typically prior to the daily stressor reporting period (see Marco & Suls, 1993 for a representative example of this paradigm). By taking both state and trait level measurements, utilization of the daily stressor paradigm allows for the investigation of within- and between-individual variation in exposure to different categories of stress, within- and between-individual variation in

responses to different categories of stress, and cross-level moderation of stressor – strain relationships. Researchers adopting the daily stressor paradigm have been at the forefront of studying negative spillover processes in terms of *exposure*, *reactivity*, and *coping* with daily sources of stress (e.g., Suls & Martin, 2005). As applied to the study of off-job reactivity to work stress, this paradigm allows for the investigation of the degree to which individuals encounter different types of work stressors (*exposure*), experience continued reactivity to work during their off-job time (*reactivity*), engage in off-job activities to recover from work (*coping*), and whether any of these processes are altered by trait-level variables (*cross-level effects*).

Despite progress in analyzing stress at the daily level, perhaps owing to the potentially high participant demands imposed by daily stress studies, cross-sectional investigations linking global stress to negative spillover remain more common than applications of the daily stressor paradigm. While valuable research has accrued from this approach, cross-sectional studies fail to account for: (1) day-to-day variation in negative work stress spillover; (2) daily within-participant variation in stress reactivity at home; and (3) state and trait variables impacting daily stressor exposure and reactivity. To develop a nuanced picture of off-job reactivity to work stress which accounts for both intra- and inter-individual sources of criterion variance, it is necessary to implement the daily stressor paradigm so that both state and trait level predictors of off-job reactivity can be modeled.

Adoption of the daily stressor paradigm in the context of off-job reactivity allows for the formulation of testable predictions regarding the impact of daily events, work characteristics, and individual differences on experienced reactivity at a more nuanced level of analysis than cross-sectional studies can provide. In a similar manner, outcomes associated with both state and trait-level off-job reactivity can be investigated using the daily stressor paradigm. Such an approach allows for an exploration of

potential differences in stress-related outcomes when off-job reactivity to work occurs during a given post-work period or typically tends to occur. In this dissertation, applying the daily stressor paradigm, I investigate state and trait level predictors of within- and between-participant variance in off-job reactivity, while also exploring the extent to which state and trait level off-job reactivity are predictive of stress-related outcomes.

1.3 Goals of this Dissertation

The overarching goals of this dissertation are to develop and empirically test a theoretical model of off-job reactivity to daily work stress. There are three primary goals of this dissertation. First, I propose a multi-facet, higher-order factor model of the off-job reactivity construct, which I empirically validate using structural equation modeling. Second, I develop and empirically examine the nomological network of the off-job reactivity construct by evaluating specific daily occupational stressors, personality variables, and work characteristics which are predictive of off-job reactivity, using hierarchical linear modeling (HLM). Third, I outline and empirically examine the underexplored criterion space of the off-job reactivity construct to identify outcomes stemming from state and trait off-job reactivity, using a series of HLM models. Use of multilevel modeling techniques to analyze the predictor and criterion spaces of the construct allows for an evaluation of both intra- and inter-individual variation in off-job reactivity and associated outcomes. The three goals of this dissertation are summarized below. I present the justifications for specific hypotheses to accomplish these goals in the following sections.

Goal 1: To evaluate the dimensionality of the off-job reactivity construct.

Goal 2: To investigate the contribution of specific daily occupational stressors, work characteristics, personality traits, and their interaction to off-job reactivity.

Goal 3: To investigate outcomes of state and trait off-job reactivity.

1.4 The Multifaceted Nature of Off-Job Reactivity

While there have been numerous attempts to model stressor exposure and reactivity at a daily level (e.g., Bolger & Schilling, 1991), investigators have not typically focused on off-job time specifically, often including off-job time as just one of several measured time points (e.g., Rau, 2001). Therefore, in theoretically developing the dimensionality of the off-job reactivity construct, it is necessary to integrate several related lines of research. Investigators have empirically examined off-job reactivity using *cognitive*, *affective*, and *behavioral* operationalizations. *Cognitive reactivity* reflects tendencies to ruminate (Cropley & Millward Purvis, 2003), negatively reflect about the work day (Binnewies, Sonnentag, & Mojza, 2009), and fail to psychologically detach from work (see Sonnentag, 2012). Investigators have associated various manifestations of cognitive reactivity with a variety of important outcomes, including health complaints (r = .35 - .39) and exhaustion (r = .25 - .31) (Fritz & Sonnentag, 2006). A*ffective reactivity* refers to the spillover of negative moods generated in the workplace to off-job time (Williams & Alliger, 1994). In a study of spillover processes by Judge, Ilies, & Scott (2006), negative affect generated at work was associated with both higher work - family conflict (r = .40 - .49) and decreased marital satisfaction (r = -.50), demonstrating the practical relevance of this manifestation of spillover. *Behavioral reactivity*, representing an alteration of off-job behaviors in response to work factors, has been thoroughly investigated by Repetti and her colleagues (see Repetti, Wang, & Saxbe, 2009 for a review). These authors have consistently demonstrated that workload and stress encountered at-work can influence post-work behaviors, engendering processes such as social withdrawal (r = .22 - .28) and angry interpersonal interactions (r = .16) (e.g., Repetti, 1989). Considering these lines of evidence together, off-job reactivity is best defined as a post-work stress response syndrome consisting of continued thoughts directed towards work (*cognitive*), continued negative mood stemming from work

(*affective*), and alteration of post-work behaviors in response to work factors (*behavioral*).

Unfortunately, while investigators have conducted studies in which multiple indicators of off-job reactivity are examined (e.g., Chen et al., 2009), inter-relations among these constructs have not yet been the primary targets of a research study. However, there is indirect evidence to suggest that cognitive, affective, and behavioral manifestations of off-job reactivity represent correlated facets of a higher-order construct. Primary support for this inference comes from reported positive intercorrelations among these potential facets in studies which have included multiple indicators of the off-job reactivity construct. For example, Sonnentag, Binnewies, and Mojza (2008) found higher off-job psychological detachment to be associated with higher next day positive mood (r = .06 - .33) and lower negative mood (r = -.09 - -.28), suggesting a link between cognitive and affective reactivity. Reversing the temporal order, Mojza, Sonnentag, and Bornemann (2011) found higher at-work negative affect to be predictive of reduced daily psychological detachment from work (r = -.19), once again suggesting a modest relationship between cognitive and affective reactivity. Cognitive reactivity has also been associated with off-job behavioral criteria, as evidenced by the pursuit of more mastery (r = .22) and community-based experiences (r = .41) when greater off-job detachment is achieved (Mojza et al., 2010). Finally, perhaps the most well-investigated linkage among potential facets of the construct is the association between affective and behavioral manifestations of spillover (r = .12 - .48) (e.g., Chen et al., 2009; Heller & Watson, 2005; Repetti, 1989; 1993; Schulz, Cowan, Pape Cowan, & Brennan, 2004), with researchers consistently observing a correspondence between the experience of greater affective reactivity to work during off-job time and the alteration of post-work behaviors in response to work stress. When viewing past observed linkages among cognitive, affective, and behavioral indicators of reactivity together, the pattern of

findings is consistent with a theoretical model in which these facets of reactivity to work represent modestly correlated facets of a higher-order off-job reactivity construct.

Hypothesis 1: Off-job reactivity represents a higher-order factor comprising the correlated facets of cognitive, affective, and behavioral reactivity to daily occupational stress (anticipated average facet intercorrelation $r = .25$).

1.5 Daily Occupational Stressors Predictive of Off-Job Reactivity

While much of the work on job stress has emphasized the contribution of enduring strain-inducing job characteristics to long-term satisfaction and health outcomes (see Ganster & Perrewé, 2011 for a review), interest in daily sources of job stress has increased dramatically in the last twenty-five years. Eckenrode (1984) was one of the first researchers to identify the existence of a more direct relationship between daily stressors and mood, in comparison to more global sources of stress. Subsequent studies have largely supported this observation, as exposure to daily stressors has been associated with a number of maladaptive outcomes, including daily negative affect ($r = .35$) (Mroczek & Almeida, 2004), arguments with family members (Bolger et al., 1989), at-home distress ($r = .54$) (Almeida & Kessler, 1998), and daily health complaints ($r = .63$ - $.66$) (Repetti, 1993). However, in past studies, emphasis has typically been placed on the impact of daily stress encountered in different domains of life, such as family, work, and friend groups, on daily outcomes (see Almeida, Stawski, & Cichy, 2011 for a review). Substantially less research has been aimed at the within-domain contribution of different categories of work stress to daily off-job time outcomes (cf. Sonnentag & Zijlstra, 2006). In the following sections, I will review extant research to develop specific hypotheses regarding the role of categories of daily occupational stress in the prediction of intra-individual variance in off-job reactivity. To increase the generality of the developed theoretical model of off-job reactivity, daily stressors have

been selected which have been shown to be relevant to the off-job stress process across multiple occupational groups.

1.5.1 Interpersonal Stressors.

Using diverse sets of participants, methodologies, and measurement approaches, the encounter of daily interpersonal stressors has been linked to maladaptive at-work and off-job outcomes (see Bruk-Lee & Spector, 2012 for a review). With data from 166 married couples, Almeida and Kessler (1998) found interpersonal arguments to be a significant source of daily distress (r = .05 - .59). Analyzing affective spillover, Repetti (1993) found daily negative social interactions at work to be predictive of lower positive mood (r = -.53), higher negative mood (r = .45), and more frequent daily health complaints (r = .29). In a similar observational study, mothers who had encountered more daily interpersonal stressors were observed to be more socially withdrawn (r = -.16) and less affectionate (r = -.11) when interacting with their children after work (Repetti & Wood, 1997). Although Bolger et al. (1989) observed that arguments were more likely to occur at home than at work, these authors found workplace arguments to be significantly more predictive of emotional well-being than perceptions of role overloads (see Kahn et al., 1964), an impactful source of stress (see Örtqvist & Wincent, 2006 for a meta-analytic review). This observation has garnered support from other researchers, with repeated demonstrations that interpersonal problems are the most reactivity-inducing source of day-level stress (Birditt, Fingerman, & Almeida, 2005; Clark & Watson, 1988; Repetti, 1993). Based on this evidence, I predict that daily negative interpersonal interactions will be predictive of state off-job reactivity to a greater degree than other categories of daily stress.

Hypothesis 2: Daily negative interpersonal interactions are predictive of state off-job reactivity (anticipated r = .40).

Hypothesis 3: Daily negative interpersonal interactions account for more intra-individual variation in off-job reactivity than other sources of daily occupational stress (anticipated *within-participant variance accounted for = 16%*).

1.5.1.1 Abusive Interpersonal Interactions.

Abusive supervision is conceptualized as a subjective perception of the degree to which supervisors "engage in a sustained display of hostile verbal and non-verbal behaviors, excluding physical contact" (Tepper, 2000, p. 178). Common examples of abusive supervisory behaviors include public feedback of a negative nature, rudeness, inconsiderate actions, and coercive behaviors (Tepper, 2000). As is true of other chronic sources of stress (see Jex, Adams, Bachrach, & Sorenson, 2003), it appears that prolonged exposure to abusive supervision engenders a diffuse set of negative employee reactions and reduced well-being outcomes (see Tepper, 2007 for a review). Regarding the role of this work characteristic in off-job responses to stress, chronic exposure to abusive supervision is likely to increase the frequency with which an individual perceives negative interpersonal interactions, generating higher levels of off-job reactivity stemming from this source of daily stress.

Despite the influence of abusive supervision on work and non-work criterion variables, the impact of abusive supervision on off-job outcomes has rarely been investigated at a daily level. While investigators conducting cross-sectional studies have linked abusive supervision to outcomes relevant to non-work life, such as emotional exhaustion (r = .26) (Wu & Hu, 2009) and subordinate anxiety (r = .25) and depression (r = .23) (Tepper, Moss, Lockhart, & Carr, 2007), only five studies have been published that analyze the association between abusive supervision and correlates of the off-job reactivity process. Investigating behavioral spillover, Hoobler and Brass (2006) found chronic perceived abusive supervision (self-reported) to be predictive of more frequent family undermining behaviors at home (family-reported) (r = .19). Using a longitudinal

design, Rafferty, Restubog, & Jimmieson (2010) observed that higher perceptions of abusive supervision were associated with ratings of lower sleep quality (r = -.18), an outcome associated with work-based rumination (r = -.24) (Cropley et al., 2006). Collecting ratings from multiple sources, Restubog, Scott, and Zagenczyk (2011) suggested that that the abusive supervision - spousal undermining relationship (r = .27 - .42) is partially mediated by subordinate psychological distress (r = .33). In two separate survey-based studies, Carlson and her colleagues found abusive supervisory perceptions to be associated with elevated work – family conflict (r = .43 - .45) (Carlson, Ferguson, Hunter, & Whitten, in press; Carlson, Ferguson, Perrewé, & Whitten, 2011a). Although the frequent lack of off-job reactivity outcomes in abusive supervision research makes derived predictions tentative, based on these past positive associations linking this predictor to correlates of negative spillover, I anticipate that trait perceived abusive supervision will be predictive of tendencies towards greater state off-job reactivity.

Hypothesis 4: Trait abusive supervision is predictive of higher state off-job reactivity (anticipated r = .25).

Given that one of the primary characteristics of an abusive supervisor is the generation of more perceived abusive events (Keashly, Trott, & MacLean, 1994), it follows that the relationship between abusive supervision and off-job reactivity will be partially mediated by the presence of negative interpersonal interactions. In support of this prediction, researchers have observed a negative relationship between abusive supervision and interactional justice (r = -.20 - -.53) (Aryee, Chen, Sun, & Debrah, 2007; Tepper, 2000), a construct representing perceptions of respectful treatment (Bies & Moag, 1986). In addition, with data from matched pairs of supervisors and subordinates, Harris, Harvey, & Kacmar (2011) found that supervisors experiencing relationship conflict were more likely to direct abusive supervisory behaviors to their subordinates (r = .15 - .21), suggesting a link between abusive supervision and negative interpersonal

interaction frequency. Figure 1 displays the anticipated relationship among abusive supervision, negative interpersonal interactions, and off-job reactivity within a framework consistent with Weiss and Crompanzano's (1996) Affective Events Theory (AET).

Trait abusive supervision represents an enduring work characteristic predisposing individuals to experience more negative interpersonal interactions at work. In turn, the creation of these negative affective events generates higher state off-job reactivity. Chronic abusive supervision is also proposed to be associated with elevated off-job reactivity, irrespective of the frequency with which negative interpersonal events occur. In summary, I predict that negative interpersonal event frequency will partially mediate the relationship between perceived abusive supervision and state off-job reactivity.

Hypothesis 5: Daily negative interpersonal interactions partially mediate the relationship between trait abusive supervision and state off-job reactivity (anticipated $r = .20$).

1.5.2 Lack of Control.

One of the central features in many influential models of job stress (e.g., Demerouti, Bakker, Nachreiner, & Schaufeli, 2001) is perceived job control, representing perceptions of autonomy and decision latitude (Karasek, 1979). In several prominent formulations of work characteristic – stress relationships, job control is posited to serve as a strain-buffering resource, ameliorating feelings of job burnout and enhancing work engagement (see, for example, Bakker & Demerouti, 2007). While it is well-established that low job control can have a damaging impact on long term health and well-being outcomes (see Ganster & Perrewé, 2011), less research has been targeted at analyzing the impact of low job control at a daily level. This is unfortunate, given that it is possible to conceptualize daily fluctuations in job control depending on necessary work tasks and interactions with supervisory figures on a given day.

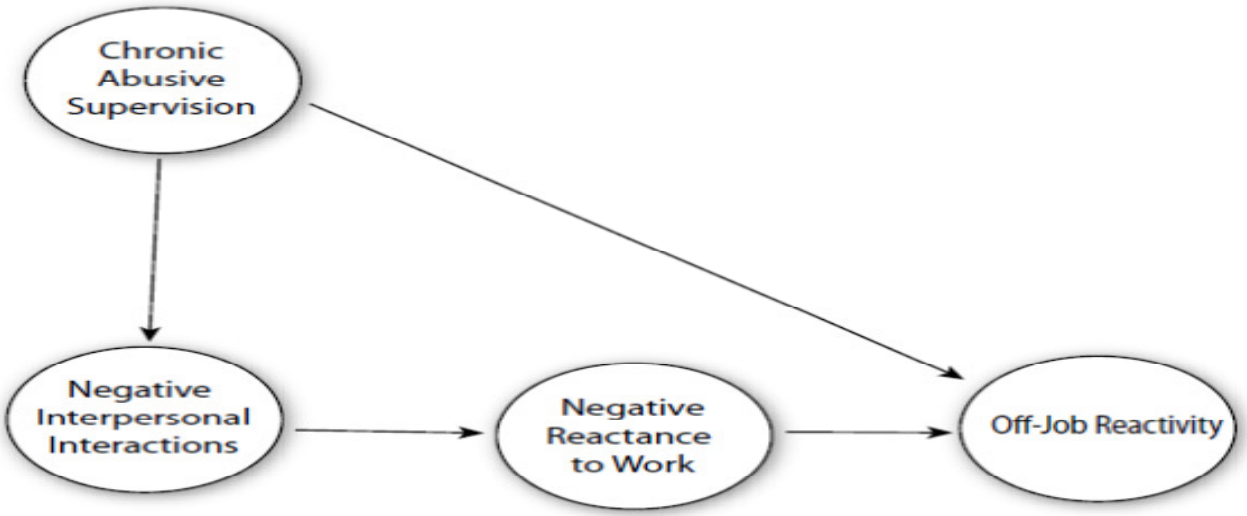

Figure 1. Hypothesized partial mediation of the chronic abusive supervision - off-job reactivity relationship by daily negative interpersonal interactions.

Although underexplored at a daily level, the results of several studies indirectly support a job control - off-job reactivity relationship. It should be noted that most studies including measures of daily job control have been focused on off-job recovery from work demands (see Zijlstra & Sonnentag, 2006), rather than experienced reactivity during off-job time. Also, consistent with conceptualizations emphasizing job control as a strain-buffering resource, extant research has primarily emphasized the well-being enhancing effects of high job control, rather than the converse. In an experience sampling study across 10 workdays, Ilies, Dimotakis, & De Pater (2010) found higher trait job control to be predictive of diminished daily strain (r = -.26). Collecting daily diary data, Sonnentag and Zijlstra (2006) linked higher job control to diminished perceptions of need for recovery at bedtime (r = -.24). Using a similar design, Butler, Grzywacz, Bass, and Linney (2009) found daily job control to be associated with lower levels of work-family conflict (r = -.40) in a sample of couples with children. Studies have not typically been designed to examine the reactivity-exacerbating properties of low daily job control on off-job time outcomes. However, it is predicted that these variables will be negatively associated at the daily level, based on both extant theory of the detrimental impact of low job control on stress-related outcomes (e.g., Karasek, 1979) and existing research using a trait-level conceptualization of job control.

Hypothesis 6: Low daily job control is associated with state off-job reactivity (anticipated r = -.25).

1.5.3 Situational Constraints.

At a broad level, situational constraints are conceptualized as work-setting characteristics which impair the expression of employees' ability or motivation at work (Peters, Chassie, Lindholm, O'Connor, & Rudolf Kline, 1982), and have been supported as a major determinant of workplace stress (r = .64 - .75) (Jex et al., 2003). Common examples of situational constraints include equipment failures and insufficient time to

accomplish work goals (Kane, 1997). Researchers have often observed a relationship between situational constraints and negative affective reactions, particularly when analyzing frustration (r = .36) (see Peters & O'Connor, 1988 for a review). Therefore, more frequent situational constraints at work should engender greater off-job reactivity, primarily through negative frustration spillover from work to non-work. In support of this view, Sonnentag and Zijlstra (2006) found that daily situational constraints were predictive of higher need for recovery from work (r = .40) and diminished well-being (r = -.24) at bedtime. Similarly, daily situational constraints and daily negative affect have been linked at a within-day level (r = .24) (Binnewies & Wörnlein, 2011). Analyzing recovery processes over the course of one week using a microlongitudinal design, Sonnentag, Mojza, Demerouti, & Bakker (in press) linked daily situational constraints to diminished recovery levels (r = -.26) and elevated negative affect (r = .48) at the end of the workday. Taken together, these lines of evidence lead to the prediction that more encountered situational constraints will lead to greater off-job reactivity.

Hypothesis 7: Encountered daily situational constraints are predictive of state off-job reactivity (anticipated r = .25).

1.6 Personality Predictors of Off-Job Reactivity

In comparison to specific daily work stressors, there has been substantially more research evaluating the role of personality in the daily stress process. This research has been heavily influenced by the model of stress exposure and reactivity outlined by Bolger and Zuckerman (1995). These authors suggested that personality may manifest itself in relation to stress through stressor exposure, stressor reactivity, and/or predispositions to particular coping strategies. In a 14-day daily diary study of interpersonal conflicts, Bolger and Zuckerman found evidence to support all three components of the model, suggesting that exposure, reactivity, and coping choices are potentially important aspects to study in the daily stress process. Researchers have

generally heeded these recommendations, examining the impact of personality traits on differential exposure (e.g., Suls & Martin, 2005), reactivity (e.g., Hay & Diehl, 2010), and coping strategies (e.g., Bartley & Roesch, 2011) in relation to daily stress.

In line with Bolger and Zuckerman's (1995) recommendations, I review research analyzing differential daily stressor exposure and reactivity as a function of several personality traits in the following sections. First, extant research investigating the constructs of negative affectivity (NA) and positive affectivity (PA) (Watson, Clark, & Tellegen, 1988) in the daily stress process will be discussed. I hypothesize main effect relationships linking these affective tendencies to state off-job reactivity. Following this discussion, I review evidence for potential interactional relationships between the previously reviewed daily occupational stressors and facets of trait extraversion, agreeableness, and conscientiousness (Costa & McCrae, 1995) in the prediction of daily off-job reactivity. Throughout this section, I discuss the roles of specific personality facets in moderating the daily stressor – off-job reactivity relationship and present predictions to be investigated in an exploratory manner in this dissertation.

1.6.1 Negative Affectivity.

As many contemporary personality theorists consider trait neuroticism and trait NA to be largely equivalent (see Suls & Martin, 2005), I review research linking off-job reactivity to "a predisposition to experience frequently a wide range of strong negative affects" (Suls & Martin, 2005, p.2), referred to as trait NA throughout this dissertation. In terms of stress exposure, researchers utilizing diverse samples have linked trait NA to greater exposure to negative daily events (r = .14 - .44) (e.g., Bolger & Schilling, 1991). In addition to tendencies to perceive more stressors, there is evidence to suggest greater reactivity to encountered daily stressors in participants reporting higher levels of this trait. At a broad level, investigators have linked neuroticism and daily stress reactivity (r = .14 - .30) (Bolger & Schilling, 1991; Mroczek & Almeida, 2004; Stawski,

Sliwinski, Almeida, & Smyth, 2008). At a more nuanced level, neuroticism has been associated with cognitive indicators of reactivity (r =.16 - .55) (Hankin, Fraley, & Abela, 2005; Rusting, 1999), negative emotional reactions at work (r = .16) (Grandey, Tam, & Brauburger, 2002), post-work task negative mood (r = .55) (O'Brien, Terry, & Jimmeison, 2008), and maladaptive stressor appraisal processes (r = .24) (Schneider, Rench, Lyons, & Riffle, 2012). Given that trait NA and related constructs have been consistently shown to contribute to elevated stressor exposure and reactivity to stress, this personality characteristic is likely to contribute to tendencies to experience elevated state off-job reactivity, irrespective of the particular pattern of stressors encountered within a given day. Therefore, I propose that trait NA exerts a main effect relationship with state off-job reactivity, stemming from greater exposure and reactivity to encountered daily occupational stressors.

*Hypothesis 8: Trait NA is associated with elevated state off-job reactivity (*anticipated r = .30).

1.6.2 Positive Affectivity.

Trait PA represents general tendencies to experience positive emotional states (see Watson & Naragon, 2009). In comparison to trait NA, substantially less research has been conducted to link trait PA to stress reactivity. In a broad sense, it has become increasingly clear that PA tends to be associated with positive qualities, such as health, success, and longevity (see reviews by Cohen & Pressman, 2006, and by Lyubomirsky, King, & Diener, 2005). In a similar manner, recent meta-analytic work has been conducted to demonstrate that positive psychological traits, such as PA, are predictive of diminished physiological reactivity to laboratory stressors ($\hat{\rho}$ = -.14) (Chida & Hamer, 2008). There is also evidence that PA may influence the stressor appraisal process (see Lazarus, 1991), in that participants reporting higher state PA have been shown to focus more on positive features of encountered stressors (r = .36) (Hemenover, 2001). These

results are suggestive of reduced perceived exposure to daily work stressors for people reporting higher trait PA. Regarding reactivity, Dua (1993) obtained a negative correlation indexing the relationship between PA and global perceived stress using a cross-sectional design (r = -.42 - -.44), while Watson (1988) has linked state PA to diminished perceived stress at a within-day level (r = -.09). More recently, Bartley & Roesch (2011) found daily PA to be predictive of diminished responsiveness to the most stressfully perceived event of the day (r = -.09). The substantially weaker effect size estimates linking within-day state PA and stress reactivity, in comparison to the influence of trait PA, are suggestive of a process whereby tendencies towards the experience of more positive emotions are more predictive of stress reactivity than state-level fluctuations. In summary, both direct and indirect evidence support a main effect negative relationship between trait PA and state off-job reactivity, irrespective of the pattern of encountered stressors within a given day.

Hypothesis 9: Trait PA is negatively associated with state off-job reactivity (anticipated r = -.20).

1.6.3 Occupational Stressor - Personality Trait Interactions.

While the value of examining statistical interactions has long been recognized in psychology (Cronbach, 1957), the dominant model in daily occupational stress research has been the examination of the main effect personality - stressor exposure and personality - stressor reactivity relationships. The goal of this section is to outline personality traits which are likely to interact with exposure to specific daily occupational stressors in predicting off-job reactivity. In contrast to the broad stress reactance main effects hypothesized for trait NA and PA, these proposed interactions focus on personality trait facets that are likely to interact with specific daily occupational stressors, in order to increase the correspondence between the analysis levels of the interacting variables (Wittmann & Süβ, 1999). Due to the low frequency with which interactional

relationships between specific occupational stressors and personality traits have been investigated, occupational stressor - personality interactions are investigated in an exploratory manner in this dissertation.

1.6.3.1 Interactional Relationships with Daily Interpersonal Stressors.

1.6.3.1.1 Facets of Extraversion.

Trait extraversion is thought to represent tendencies towards sociability and social closeness (McCrae & John, 1992), as well as preferences for greater levels of activity (see Furnham, 1981). At a main effect level, preferences for social interaction should lead individuals who report higher levels of extraversion to engage in more interpersonal interactions, potentially increasing exposure to daily interpersonal stressors. Although this effect is likely partially due to social interaction frequency, recent evidence of positive correlations between trait extraversion and other-rated negative affective presence (r = .22) and perceived relationship conflict (r = .34) has been obtained (Bono, Boles, Judge, & Lauver, 2002; Eisenkraft & Elfenbein, 2010). When analyzing extraversion facets, it is likely that higher assertiveness, representing dominance and influence in social interactions (Costa & McCrae, 1995), drives more frequent exposure to negative interpersonal interactions. This explanation is indicative of a process in which more assertive employees engage in more forceful social interactions, despite the generation of negative affective reactions in other employees. In support of this view, more assertive individuals perceive that they can perform more assertive behaviors before negative social consequences occur, compared to less assertive individuals (r = .23) (Ames, 2008). The ultimate result of this process will be more days containing negative interpersonal interactions for individuals reporting high trait assertiveness.

Although more assertive individuals may have greater exposure to interpersonal conflicts, there are two primary reasons to suspect that other facets of extraversion will

be associated with diminished off-job reactivity to this source of stress. First, extraverted individuals generally report preferences for higher activity levels, such as social activities (Furnham, 1981); with elevated activity levels proposed to result in an optimal level of physiological arousal for this personality type (Eysenck, 1967). Accordingly, the presence of interpersonal interactions, even if they are negative, will likely decrease extraverts' stress reactivity due to the elevated activity level facet of the trait (Costa & McCrae, 1995). Second, trait-level extraversion has been associated with adaptive responses to stress (e.g., Luhmann & Eid, 2009), likely due to the positive emotionality facet of the trait. Hemenover (2001) found support for this view in an investigation of college student stressor appraisals, with evidence favoring a mechanism in which a bias to process positive features of stressors mediated the relationship between trait extraversion and stressor appraisals. Synthesizing these lines of indirect evidence, higher levels of trait activity level and positive emotionality are anticipated to be predictive of diminished off-job reactivity to negative interpersonal interactions.

1.6.3.1.2 Agreeableness.

Trait agreeableness reflects tendencies towards trust, altruism, compliance, modesty, and tender-mindedness (McCrae & John, 1992). As this description makes clear, more agreeable individuals possess several characteristics which may enhance social interaction quality. Investigators have found higher levels of agreeableness to be associated with reduced perceived interpersonal conflict (r = -.21) and adaptive conflict resolution strategies (r = .22 - .40) (Ilies, Johnson, Judge, & Keeney, 2011; Jensen-Campbell, Gleason, Adams, & Malcolm, 2003; Jensen-Campbell & Graziano, 2001). At a facet level, the trust, compliance, and modesty tendencies characteristic of agreeable individuals should enhance social interaction quality, ultimately leading individuals with higher levels of these traits to have fewer days in which negative interpersonal interactions occur.

Although high levels of the trust, compliance, and modesty facets of agreeableness are likely to reduce exposure to negative interpersonal conflict, there is evidence to suggest *increased* reactivity when interpersonal conflicts do occur for more agreeable individuals. Analyzing daily conflict in a group of adolescents, Jensen-Campbell and Graziano (2001) found higher levels of agreeableness to be predictive of elevated anger (r = .36) and hurt feeling reactions (r =.32) in response to interpersonal conflict. In a two-week experience sampling study of university employees, Ilies et al. (2011) observed that experienced interpersonal conflicts generated more negative affect in employees reporting higher trait agreeableness (r = .25). These reactivity-exacerbating findings have also been indirectly supported at a neurological level, as researchers have used functional magnetic resonance imaging (*fMRI*) to provide evidence that more agreeable individuals find the regulation of negative affect to be more effortful than less agreeable individuals (r = .16) (Tobin, Graziano, Vanman, & Tassinary, 2000; see Haas, Omura, Constable, & Canli, 2007). At a facet level, the tender-mindedness characterizing agreeable individuals is likely to predispose them to elevated reactivity to negative interpersonal conflict.

1.6.3.2 Interactional Relationships with Daily Low Job Control and Situational Constraint Stressors.

In contrast to daily interpersonal stressors, dispositional tendencies are less likely to influence exposure to low job control and situational constraints at a daily level. While aspects of personality may play some role in selection into jobs characterized by a given degree of control and situational constraint frequency through person – environment fit processes (see Edwards, 1991), day-to-day variation in the frequency with which low job control and constraint stressors are encountered is more likely to be influenced by characteristics of the job or interactions with supervisory figures. Keeping that point in mind, personality may still play a significant role in off-job reactivity to stress stemming

from low job control and situational constraints. Specifically, employees who are motivated to achieve are most likely to react negatively to both a lack of autonomy to accomplish work tasks and daily obstructions which prevent the expression of their motivation. Based on this description, individuals reporting higher trait achievement striving (Costa & McCrae, 1995) are likely to be negatively impacted by the undermining of work goal accomplishment and the ability to operate autonomously. Surprisingly, no empirical research has been conducted to investigate the relationship between achievement striving and off-job reactivity at the daily level. This study will represent the first effort to investigate differential off-job reactivity to both daily lack of control and encountered situational constraints in achievement-striving individuals. Based on behavioral tendencies characterizing this personality facet, I predict that more frequent instances of low job control and situational constraints will generate greater off-job reactivity in individuals reporting higher trait achievement striving.

1.7 Outcomes of Off-Job Reactivity

Typically, researchers studying off-job stress reactions have examined experienced reactivity itself as the outcome of interest (e.g., Bolger & Schilling, 1991; Bolger & Zuckerman, 1995). Although there have been recent studies analyzing next day and long-term reactivity outcomes from an off-job recovery perspective (Zilstra & Sonnentag, 2006), these researchers have often only analyzed a portion of the reactivity construct, such as psychological detachment (e.g., Sonnetag & Bayer, 2005) or affective spillover (Judge & Ilies, 2004). The third goal of this dissertation is to investigate outcomes of both state and trait tendencies to experience off-job reactivity. In the following three sections, I review existing research on off-job reactivity outcomes. In the first section, I will highlight outcomes hypothesized to be present at both a state and trait level of off-job reactivity. I will review research linking components of off-job reactivity to subjective well-being, work to non-work conflict, and non-work to work conflict in this

section. In the second section, I will discuss the effects of state off-job reactivity on the pursuit of post-work recovery activities at the daily level. In the third section, I will describe the potential effects of general tendencies to experience off-job reactivity on somatic complaint frequency. I provide specific hypotheses regarding the criterion space of the off-job reactivity construct throughout these three sections.

1.7.1 Outcomes of Off-Job Reactivity Present at State and Trait Levels.

1.7.1.1 Subjective Well Being.

A consistent finding emerging from off-job recovery and reactivity studies is a link between off-job reactivity and perceived well-being. For example, researchers have demonstrated that psychologically detaching from work ameliorates subjective well-being (r = .09 - .54) (e.g., Fritz & Sonnentag, 2006; Fritz et al., 2010). Similarly, Cropley et al. (2006) found that higher levels of off-job rumination predict less sleep time (r = -.21) and lower sleep quality (r = -.24), correlates of diminished well-being (r = .16 - .42) (Pilcher & Ott, 1998). At a behavioral level, investigators have documented a link between negative work to non-work spillover and diminished perceived well-being (r = -.20 - -.43) (e.g., Kinnunen, Feldt, Geurts, & Pulkkinen, 2006), and a positive relationship linking behavioral spillover to burnout (r = .43) (Hecht & Boies, 2009), a criterion of poor mental health (see Schaufeli, Leiter, & Maslach, 2009 for a review). Synthesizing these lines of evidence together, I predict that both state and trait off-job reactivity will be predictive of diminished subjective well-being.

Hypothesis 10: State and trait off-job reactivity are predictive of impaired subjective well being (anticipated r = -.30).

1.7.1.2 Work — Non-Work Conflict.

When considering that off-job reactivity is proposed to involve the cognitive, affective, and behavioral spillover of work stress to off-job time, it follows that higher levels of reactivity will be predictive of elevated work — non-work conflict, both at a

state-level and when considering trait tendencies to react to work. Behavior-based conflict, representing incompatibilities between work and non-work behaviors, has been shown to be a component of work - family conflict (Greenhaus & Beutell, 1985). Accordingly, there should be a correspondence between behavioral components of off-job reactivity and this form of cross-domain interference. When considering affective spillover, an association has generally been found between negative mood spillover and elevated work – family conflict (r = .18 - .20) (Chen et al., 2009; Williams & Alliger, 1994). Although less research has been conducted to investigate cognitive indicators of reactivity and perceptions of conflict, Moreno-Jiménez et al. (2009) found a negative association between psychological detachment and work – family conflict (r = -.24), as well as an interactive effect in which low levels of psychological detachment increased psychological strain resulting from high work – family conflict (r = -.19). When considering these sources of evidence together, it is probable that greater off-job reactivity covaries with higher perceived work – non-work conflict, both in terms of the daily reactivity experience and trait off-job reactivity tendencies.

Hypothesis 11: State and trait off-job reactivity are predictive of elevated work — non-work conflict (anticipated r = .30).

1.7.1.3 Non-Work — Work Conflict.

Despite that work to non-work and non-work to work conflict are often investigated as distinct processes (e.g., Voydanoff, 2005), researchers investigating cross-domain interference have typically observed a positive link between bidirectional spillover processes (r = .30 - .47) (e.g., Adams, King, & King, 1996). This observed positive association has recently been validated by meta-analytic research ($\hat{\rho}$ = .38) (Mesmer-Magnus & Viswesvaran, 2005). It seems likely that negative bidirectional spillover processes are responsible for a repeating cycle of negative outcomes, in which work and non-work sources of stress mutually exacerbate one another. The results of a

large-scale cross-lagged panel correlation study of over 2,000 employees support this contention, in that both synchronous (r = .40 - .41) and asynchronous (r = .31 - .34) correlations linking work to non-work and non-work to work sources of interference were positive and of a moderate magnitude (Innstrand, Langballe, Espnes, Falkum, & Aasland, 2008). While this evidence indirectly supports a mechanism linking bidirectional spillover processes, few studies have been conducted at this time predicting non-work to work conflict from facets of off-job reactivity. However, those studies which have been conducted have provided evidence to support the prediction of greater non-work to work conflict in response to off-job reactivity and related-correlates, such as low psychological detachment (r = .33) (Moreno-Jiménez et al., 2009) and tendencies towards negative affective experiences (Allen et al., 2012; Michel & Clark, 2009). From this perspective, both daily and chronic sources of off-job reactivity would be expected to have a detrimental impact on non-work to work interference, by heightening role stress in both work and non-work domains of life.

Hypothesis 12: State and trait off-job reactivity are predictive of greater non-work to work conflict (anticipated effect size r = .30).

1.7.2 The Impact of State Off-Job Reactivity on Post-Work Recovery Activity Pursuit.

Researchers have obtained convincing evidence for the importance of off-job time activities in promoting recovery from work demands (see Zijlstra & Cropley, 2006 for a review). Although mood-repair researchers (e.g., Totterdell & Parkinson, 1999) have emphasized recovery from negative affective spillover, recovery activities represent a broader set of behaviors which may be associated with multiple facets of the off-job reactivity construct. In support of this linkage, Sonnentag and her colleagues have repeatedly demonstrated the potential for recovery activity pursuit to be associated with decreased levels of components of off-job reactivity (r = -.10 - -.26) (e.g., Mojza et al.,

2010). However, researchers have not directly analyzed the time-lagged relationship between off-job reactivity and the subsequent pursuit of recovery activities on the same day. Instead, the tendency has been to either measure indicators of reactivity and recovery activity pursuit at the same time point or to investigate the effects of previous day reactivity on next day recovery (e.g., Sonnentag et al., 2008). Given the typical negative relationship observed between indicators of reactivity and recovery, I predict that employees experiencing higher levels of off-job reactivity when returning home from work will pursue *fewer* recovery activities during off-job time. This prediction represents a mechanism through which strain-based interference, in which individuals perceive their off-job activities to be altered by work strain (Greenhaus & Beutell, 1985), results in an actual reduction in pursued recovery activities. The prediction that diminished recovery activity pursuit is associated with the experience of elevated off-job reactivity implies that employees who have the highest need for recovery from work will be *least* likely to pursue recovery activities. It should be noted that, due to an absence of nuanced models or empirical studies investigating the differential relationships between work stress and the pursuit of *specific* recovery activities, no predictions are made regarding the extent to which off-job reactivity exerts a weaker or stronger relationship to the pursuit of specific types of recovery activities.

Hypothesis 13: Off-job reactivity when returning home is predictive of diminished subsequent recovery activity pursuit (anticipated $r = -.20$).

1.7.3 Outcomes of Off-Job Reactivity Present Only at the Trait Level.

1.7.3.1 Somatic Complaints.

Beyond indicators of state subjective fatigue, it is unlikely that off-job reactivity to acute occupational stress has a detrimental impact on physical health on a daily basis. Instead, typical tendencies to experience greater off-job reactivity likely play a more substantial role in the reactivity – health relationship. In support of this notion,

researchers have demonstrated a relationship between stress reactivity and various indicators of impaired health, such as cardiovascular reactivity (see Goyal, Shimbo, Mostofsky, & Gerin, 2008). Several researchers have linked job strain to elevated evening and night time physiological stress responses (e.g., Rau et al., 2001), providing a pathway through which off-job time stress reactivity tendencies may influence health. Viewing these findings from an allostatic load perspective (McEwen, 1998), elevated stress response tendencies during off-job time are likely to have a cumulative impact on an employee's health over time. However, due to the low base rate of serious health problems (Infurna, Gerstorf, & Zarit, 2011), actual documented health problems are unlikely to be detected with sufficient frequency in non-clinical samples. To account for this limitation, somatic complaints, representing physical complaints of a non-pathological nature (Höge, 2009), are used as a proxy for perceptions of impaired health in this dissertation. Researchers have shown indicators of elevated off-job reactivity to be predictive of more frequent somatic complaints using both cross-sectional and longitudinal designs (r = .26 - .58) (Kuiper, Van der Beek, & Meijman, 1998; Sonnentag et al., 2010). I anticipate trait off-job reactivity to be predictive of elevated somatic complaints. The relationship between state off-job reactivity and somatic complaints will also be investigated in an exploratory manner to ascertain whether the experience of heightened off-job reactivity within a given day is sufficient to engender greater somatic complaints.

Hypothesis 14: Trait off-job reactivity tendencies are predictive of somatic complaints (anticipated r = .35).

1.8 A Theoretical Model of the Nomological Network of the Off-Job Reactivity Construct

Figure 2 presents a theoretical model which integrates the preceding review of daily stressors, work characteristics, personality variables, and outcomes proposed to be

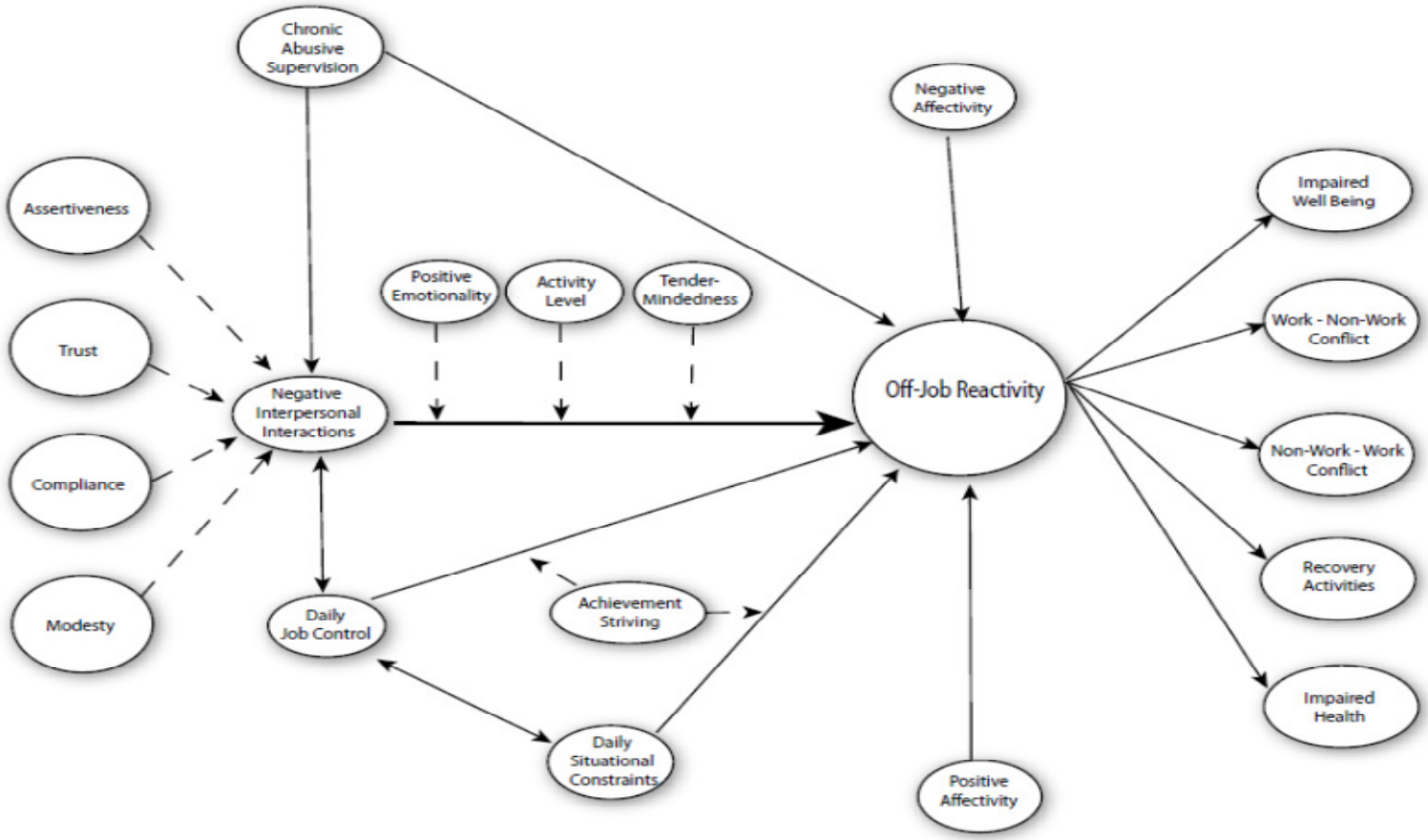

Figure 2. A theoretical model of off-job reactivity encompassing the predictor and criterion spaces of the construct. Main effects are represented by direct links between constructs, while moderator constructs are represented by a link between a given construct and another main effect linkage. Dashed lines represent relationships which will be investigated in an exploratory manner.

associated with off-job reactivity. Of the included daily stressors, negative interpersonal interactions are hypothesized to exert the strongest relationship to off-job reactivity, as evidenced by the darkening of this main effect linkage in this diagram. Consistent with Affective Events Theory (Weiss & Cropanzano, 1996), I propose that trait abusive supervision engenders greater off-job reactivity both through a direct linkage to this outcome and through the mediating role of negative interpersonal interaction frequency. I anticipate that both low daily job control and encountered situational constraints increase off-job reactivity.

The remaining variables in the predictor space represent the main and interactional effects of personality traits and facets on experienced off-job reactivity. I anticipate NA to be predictive of elevated off-job reactivity, while I propose PA to be associated with lower off-job reactivity. The interactional relationships between daily occupational stressors and personality facets are represented with dashed lines in Figure 2 to emphasize that these predictions are exploratory in nature. I anticipate trait assertiveness to be associated with greater interpersonal stressor exposure, while I expect trait trust, compliance, and modesty to be linked to decreased exposure to this source of stress. I anticipate trait activity level and positive emotionality to be predictive of reduced reactivity to negative interpersonal interactions, while I predict more tender-minded individuals to be more reactive to perceived interpersonal stress. Trait achievement striving is expected to be predictive of greater reactivity to both low job control and situational constraint stressors.

Turning to the criterion space of the off-job reactivity construct, the right-hand side of Figure 2 presents the hypothesized outcomes associated with off-job reactivity. At both a state and trait level, I expect higher levels of off-job reactivity to be associated with diminished subjective well-being, elevated work to non-work conflict, and elevated non-work to work conflict. At a state level, I anticipate higher off-job reactivity when

returning home from work to be associated with diminished total recovery activity pursuit duration. Finally, I propose off-job reactivity to be predictive of more somatic complaints at the trait level of analysis only. In total, I hypothesize elevated off-job reactivity to be predictive of impaired well-being, cross-domain interference, maladaptive recovery strategies, and more frequent daily health complaints.

1.9 Sample and Study Design to Test the Proposed Theoretical Model

Nurses were selected as an occupational group in which to empirically validate the proposed theoretical model of off-job reactivity to work stress. There are three primary reasons why nurses represent an ideal occupational group in which to study off-job reactivity to work. First, using both cross-sectional and longitudinal designs, nurses have been shown to be at elevated risk for a number of stress-related outcomes, including occupational burnout (Hsu, Chen, Yu, & Lou, 2010) and psychological distress (Watson et al., 2009). Second, multilevel analyses of daily stress in nursing have demonstrated a significant number of encountered stressors in this population, as well as evidence of substantial between and within-individual variation in daily stressor exposure (e.g., Elfering, Semmer, & Grebner, 2006). Third, given that the majority of critical work tasks which nurses perform are patient-centered and can only be accomplished at the workplace (O*NET; 2010), studying off-job reactivity in this population minimizes the degree to which reactivity is confounded with performing work tasks during off-job time.

Due to previous research demonstrating changes in fatigue and mood in nurses working weekend and night shifts (Bohle & Tilley, 1993), participants were required to be working weekday, non-overnight shifts. Because of the large percentage of women in the nursing profession (Heikes, 1991) and consistently observed sex differences in work – non-work spillover processes (e.g., Rothbard, 2001), only women nurses were recruited for study participation. While investigations of spillover processes in men in the

nursing profession may illustrate interesting sex differences in off-job reactivity, the small percentage of men in this occupational group (6.2% - 9.6%; U.S. Department of Health and Human Services, 2010) would severely limit statistical power to detect sex differences in this sample. Finally, to eliminate additional recovery opportunities for part time workers, participants were required to work full time (at least 32 hours per week).

In choosing a sample in which to validate the proposed theoretical model, consideration was given to the inherent tradeoff between selecting participants from a broad range of occupational groups and selecting participants from an occupational group in which daily stress and off-job reactivity are particularly salient concerns. In this study, the latter decision was made to ensure the selection of an occupational group for which daily stressors are encountered with sufficient frequency, to allow analysis of daily stressor – off-job reactivity relationships. In making this decision, the degree to which empirical validation of the proposed theoretical model in this sample would generalize to other occupational groups was considered. In terms of work activities performed, nursing duties center around assisting and caring for others, communicating with superiors, co-workers and patients in an interpersonal context, and making decisions in response to changing circumstances and events (O*NET, 2010). Based on this description, empirical validation in a nursing sample should allow generalization to other occupations with patient care demands, an interpersonal context, and/or the need for dynamic decision making. Examples of occupational groups to which these activities most closely apply include other physical and mental health-care professionals (including doctors, clinical psychologists/psychiatrists, and administrators), social workers, and employees in sales and customer service (O*NET, 2010). In addition, in light of demonstrations of the high prevalence of occupational stress in the nursing profession (e.g., Golubic, Milosevic, Knezevic, & Mustajbegovic, 2009), empirical validation in this sample should allow generalizations to other high stress occupational

groups, such as teachers (Bellingrath, Weigl, & Kudielka, 2009) and call-center workers (Kjellberg et al., 2010). Therefore, while focusing this study to a specific occupational group reduced the generality of the empirical study to a degree, validation of the theoretical model in a nursing sample allows confident generalization to many occupational groups for which off-job reactivity is likely a salient issue.

To validate the proposed dimensionality, predictor space, and criterion space of the off-job reactivity construct, an application of the daily stressor paradigm was utilized in which nurses reported daily stressor exposure, off-job reactivity, and anticipated related outcome variables both immediately when returning home from work and at bedtime for four work days. Personality traits, work characteristics, and trait-level outcome variables were measured via an at-home questionnaire (AHQ) completed prior to the daily survey period. Application of the daily stressor paradigm in this study allows for an examination of the degree to which specific categories of daily stress predict intra-individual variation in state off-job reactivity, the role of personality and work characteristics in predicting inter-individual variation in state off-job reactivity, and the impact of state and trait off-job reactivity on state- and day-level criterion variables. In addition, the assessment of off-job reactivity processes and potential correlates via the AHQ allows for an examination of trait-level relationships linking off-job reactivity, personal and work characteristics, and average daily stressor frequency estimates. Use of the daily stressor paradigm in this study provides the opportunity for a thorough investigation of all hypothesized and exploratory trait and state-level linkages to the off-job reactivity construct.

In selecting a four-day time period for the assessment of daily stress, a balance was struck between the amount of data accrued and the demands imposed on participants in the context of the voluntary nature of participation. Although temporal periods of daily stress measurement have ranged from examinations of single day stress

variability (e.g., Galván & McGlennen, 2012) to periods of 45 days (Röcke, Li, & Smith, 2009), investigators have reliably demonstrated linkages between stress exposure, off-job reactivity, and related outcomes in periods of four days or less (e.g., Cropley et al., 2006; Cropley & Millward Purvis, 2003; Slatcher, Robles, Repetti, & Fellows, 2010; Sonnentag & Bayer, 2005; Wang, Repetti, & Campos, 2011). A four day time frame allows for the investigation of both within- and between-individual variations in off-job reactivity processes, predictors, and outcomes, while also providing a level of participant demand commiserate with the voluntary nature of participation. Though the administration of surveys at both an immediate and delayed post-work time point each day raised these participant demands, there have been studies in which differences in off-job reactivity or recovery processes have been observed at different points within the post-work period (e.g., Cropley et al., 2006; Sonnentag, 2001). While temporal findings have been too inconsistent to warrant specific predictions regarding differences between immediate and delayed state off-job reactivity, measurements at both time points allowed for potential differences in off-job reactivity and related-processes with greater time spent away from work to be investigated for exploratory purposes.

CHAPTER 2

OVERVIEW OF THE EMPIRICAL STUDY

To empirically test the proposed theoretical model of the dimensionality, predictor space, and criterion space of the off-job reactivity construct, an empirical study was conducted using the daily stressor paradigm. Nurses from 16 different hospitals in the southeastern United States were recruited via recruitment e-mails, flyers, and/or letters for a study of the impact of workplace events, enduring work characteristics, and personal characteristics on continued reactivity to work during off-job time. Nurses who responded to the recruitment materials were mailed a packet containing a consent form, an AHQ assessing trait-level variables, and a set of daily surveys assessing all state- and day-level variables to be completed twice a day for four days. Participants were instructed to complete the AHQ before beginning the set of daily surveys. During the daily survey portion of the study, participants were asked to select four days in which they were working within the next month to complete the packet of daily surveys. Participants returned all study materials via postal mail using a pre-stamped envelope, and were debriefed either via postal mail or e-mail (depending on their preference). Participants who received the study materials had the option to enter a raffle to win a *Nintendo Wii* video game console as compensation for their participation.

The AHQ took approximately 30 minutes to complete and contained measures of all trait-level variables involved in specific hypotheses or included for exploratory purposes. Regarding variables included in specific hypotheses, this set of questionnaires comprised measures assessing trait-level off-job reactivity, perceptions of abusive supervision, NA, and PA. To assess exploratory predictions regarding differential exposure and off-job reactivity to specific categories of daily stress as a function of personality facets, the AHQ contained measures of assertiveness, activity

level, positive emotionality, trust, compliance, modesty, tender-mindedness, and achievement striving. Additional measures included in the AHQ for exploratory purposes included questionnaires assessing trait-level cross-domain interference, somatic complaint frequency, bidirectional positive and negative spillover, and transformational leadership.

The two surveys participants completed each day during the daily survey portion of the study contained some overlapping content, but were not equivalent. For the immediate post-work survey (completed within 30 minutes of arrival at home after work), participants provided reports of state off-job reactivity, state subjective well-being, and daily stressor exposure, frequency, and perceived stressfulness ratings for stressors mapping to the categories of negative interpersonal interactions, low job control, or encountered situational constraints. At the delayed post-work survey (completed within 30 minutes of going to sleep), participants once again provided reports of state off-job reactivity and state subjective well-being, but also provided ratings of daily cross-domain interference and somatic complaints, as well as recovery activity pursuit duration estimates between the time they arrived at home and bedtime. Both the immediate and delayed post-work surveys took approximately 7 – 8 minutes to complete.

Seventy-five nurses meeting the study inclusion criteria responded to the recruitment materials, returned their study materials, and provided usable data. These participants completed daily surveys at 577 out of 600 possible time points (Missing Data = 3.84%). All participants returned signed informed consent forms and were debriefed via either postal mail or e-mail.

2.1 Statistical Power Analysis

A series of analyses were conducted to examine the statistical power to detect the hypothesized multilevel effects at a sample size of 75 participants with eight repeated measurements and a Type I error rate of $\alpha = .05$. All power analyses were

performed using the approach to statistical power analysis for multilevel models recommended by Scherbaum and Ferreter (2009). In this framework, the following steps are taken: (1) Determine the strength of the hypothesized effect using past research or rules of thumb; (2) Estimate the ICC(1) using past research or rules of thumb; (3) Use the ICC(1) estimate and sample sizes at Level 1 and Level 2 to compute the standard error of the hypothesized multilevel effect, and (4) Estimate statistical power using a formula involving the anticipated effect size, the derived standard error estimate, and the selected α level.

For the multilevel power analyses, anticipated effect sizes derived from past research ranged from $r = .20 – .40$. Given infrequent reporting of unconditional between group variability in past daily stressor studies, a conservative estimate of ICC(1) = .12 was selected based on recommendations of multilevel theorists and researchers (James, 1982; Scherbaum & Ferreter, 2009). The number of Level 1 measurements over the course of the study was set to eight, while the number of Level 2 measurements was set to 75. It should be noted that, in comparison to multilevel models in which people are nested within groups, multilevel models in which measurements are nested within people are typically more statistically powerful, given the pronounced contribution of Level 2 measurements to statistical power (Scherbaum and Ferreter, 2009).

Results of the statistical power analyses conducted for each hypothesized multilevel effect are presented in Table 1. As can be seen from this table, obtained statistical power estimates yielded values above conventional rules of thumb ($1 – \beta \geq .80$; Cohen, 1988) for all hypothesized effects of $r = .30$ or greater. For hypothesized effects ranging in magnitude from $r = .20$ - .25, estimates of statistical power for the design utilized in this study ranged from $1 – \beta = .67$ - .73. While it is permissible to interpret statistically significant findings at these ranges of power (given that they were statistically supported despite the heightened Type II error rate), no substantive

Table 1. *Results of Multilevel Statistical Power Analyses for the Current Study.*

Hypothesis Number	Hypothesis	Estimated Effect Size (*r*)	Estimated Statistical Power
2	Daily negative interpersonal interactions are predictive of state off-job reactivity.	.40	.97
3	Daily negative interpersonal interactions account for more intra-individual variation in off-job reactivity than other sources of daily occupational stress.	.40	.97
4	Trait abusive supervision is predictive of higher state off-job reactivity.	.25	.73
5	Daily negative interpersonal interactions partially mediate the relationship between trait abusive supervision and state off-job reactivity.	.20	.67
6	Low daily job control is associated with state off-job reactivity.	.25	.73
7	Encountered daily situational constraints are predictive of state off-job reactivity.	.25	.73
8	Trait NA is associated with elevated state off-job reactivity.	.30	.86
9	Trait PA is negatively associated with state off-job reactivity.	-.20	.67
10	State and trait off-job reactivity are predictive of impaired subjective well-being.	-.30	.86
11	State and trait off-job reactivity are predictive of elevated work to non-work conflict.	.30	.86
12	State and trait off-job reactivity are predictive of greater non-work to work conflict.	.30	.86
13	Off-job reactivity when returning home is predictive of diminished subsequent recovery activity pursuits.	-.20	.67
14	Trait off-job reactivity tendencies are predictive of somatic complaints.	.35	.93

Note. The estimated *ICC*(1) value used for these statistical power analyses was .12 (see James, 1982). The study design consisted of eight repeated measurements (Level

Table 1 (Continued).

1) for 75 participants (Level 2). The combination of the selected *ICC*(1) value, number of Level 1 measurements and number of Level 2 observations yielded an estimated multilevel *S.E.* estimate of .11. All estimates of statistical power were derived from the hypothesized effect size, the multilevel *S.E.* value, and the sample sizes at Level 1 and Level 2 using the formula recommended by Scherbaum and Ferreter (2009).

interpretation can be given to any non-statistically significant effects at power estimate lower than .80 (see Cohen, 1994). Given the reduced levels of statistical power to detect the smallest hypothesized effects in this study, substantive interpretations of statistical results are limited to effects which attained statistical significance.

2.2 Psychometric Reliability Criteria

As described by Cronbach and colleagues in their presentation of reliability generalizability theory (Cronbach, Gleser, Nanda, & Rajaratnam, 1972), any given test or set of measurements may be sampled from a predefined domain of different sources of test and scale variance (such as items, raters, or repeated measurements), and the estimates of reliability that should be evaluated in a given study depend on which of these sources of variance are deemed most relevant to the study context (Cortina, 1993). As the current study focuses on trait and state level measurements of hypothesis-relevant study variables across time, I determined that internal consistency reliability was an important criterion to consider for all study measures. In addition, given that state-level variables are sampled repeatedly across the four-day study period, I deemed it important to establish a degree of temporal stability to the measurement of these constructs, in the form of inter-correlations of repeated measurements of state-level constructs.

2.2.1 Internal Consistency.

Despite that researchers often apply common rules of thumb, such as $\alpha \geq .70$ (Kline, 2000), to determine an acceptable threshold for internal consistency reliability, it has been demonstrated that utilizing minimum threshold criteria for coefficient α represents an overly simplistic approach to psychometric reliability evaluation. Ponterotto and Ruckdeschel (2007) provide an informative discussion of the sensitivity of coefficient α to both the number of items included in a measure and the total sample size in which reliability estimates are calculated. Given that more items and greater

sample sizes inflate coefficient α, these authors demonstrate that internal consistency estimates conventionally viewed as approximating the lower bound of acceptability (e.g., α = .75) may represent high levels of internal consistency with a smaller number of items and a lower sample size (e.g., less than 6 items, less than 100 participants). In addition, one assumption of coefficient α is that there is *tau-equivalence* across items, meaning that the same true score contributes to all items measuring a construct equally (Yang & Green, 2011). In factor analytic terms, this assumption implies that items have equal loadings on a single underlying factor, resulting in the sensitivity of coefficient α to construct homogeneity (Cortina, 1993; Cronbach, 1951; Cronbach & Shavelson, 2004). However, contemporary researchers have argued that completely unidimensional factor structures only occur for measures of very narrow constructs (see Reise, Morizot, & Hays, 2007). Therefore, scale homogeneity is generally evaluated in terms of the degree to which items of a measure load on a general factor (Yang & Green, 2011). Based on these potential influences on coefficient α, internal consistency reliability in this study was evaluated by considering each obtained coefficient α estimate, the total sample size, and the measure length and estimated homogeneity of each scale.

The first step taken to assess the estimated internal consistency reliability of each measure was to examine the magnitude of coefficient α in relation to the length of each measure and the total sample size. To accomplish this goal, obtained coefficient α estimates were compared against recommended values in light of different measure lengths and sample sizes described by Ponterotto and Ruckdeschel (2007). These authors provide guidelines for the interpretation of excellent, good, moderate, fair, and unsatisfactory coefficient α values at various measure lengths and sample sizes. I set a threshold such that coefficient α estimates had to demonstrate at least moderate internal consistency by these guidelines to be retained for subsequent analyses.

Given the need to consider estimates of scale homogeneity in reliability assessments (Revelle & Zinbarg, 2009), the second step taken to examine internal consistency reliability was to evaluate the estimated homogeneity of each scale by computing McDonald's ω (McDonald, 1999; see Zinbarg, Revelle, Yovel, & Li, 2005). This statistic is derived by calculating a ratio of the squared sum of all item loadings on a general factor to the total variance comprising the scale (calculated as the squared sum of all item loadings plus the sum of the unique item variances). By providing an estimate of the proportion of scale variance due to a general factor, this metric represents an estimate of scale homogeneity. As researchers have recommended 50% item variance attributable to a general factor as a minimum cut-off for scale homogeneity (e.g., Revelle, 1979), I set a threshold of $\omega \geq .50$ for a scale to be included in subsequent analyses. For all obtained coefficient α and ω values, consideration was also given to the anticipated broadness or narrowness of each measured construct in making decisions to retain or not retain a scale, given the influence of construct breadth on interpretations of acceptable internal consistency (see Ackerman & Humphreys, 1990).

2.2.2 Stability.

The matter of an acceptable threshold for the demonstration of stability of repeatedly measured constructs becomes complicated by the fact that state-level constructs predicted to differ as a function of exposure to specific daily events are being assessed. Given that the constructs included in the daily surveys represent repeated measures expected to vary across time, meeting a conventional criteria for high test – retest reliability, such as a correlation greater than or equal to .80 (Kline, 2000), would undermine the measurement of state variables. Typically, repeated administrations of state-scales are expected to show low, but statistically significant, positive inter-correlations (Zuckerman, 1983). In the current study, the threshold for acceptable stability was set such that all repeated measurements of the same construct must be

inter-correlated at a statistically significant level of α =.05. All measured state-level constructs exceeded this threshold for acceptable stability.

CHAPTER 3

METHOD

3.1 Recruitment

Hospital nurse administrators from 47 different hospitals in the southeastern United States were sent e-mails requesting their assistance in recruiting participants for a study of the impact of daily work events, personality, and enduring work characteristics on nurses' reactivity to work during their off-job time. Negotiations with these hospital administrators resulted in 16 hospitals (Hospital Participation Rate = 34%) which allowed nurses to be recruited for the study through recruitment e-mails sent by hospital administrators, flyers posted in nursing break rooms, and/or recruitment letters distributed by nursing unit directors. The participating organizations represent a broad cross-section of hospitals throughout the state of Georgia and ranged in size from 83 - 953 patient beds. At each hospital, recruitment efforts were active for a period of eight weeks.

In addition to these hospital-based recruitment efforts, recruitment flyers were posted in restaurants and stores in close proximity to all hospitals located in the Atlanta Metropolitan area, and at nursing uniform stores throughout the area. Finally, using publicly accessible information available through the Tennessee Board of Nursing, a randomly selected sample of 200 actively licensed registered nurses in Tennessee were mailed recruitment letters.

3.2 Procedure

Participants who responded to the recruitment materials were asked to provide their postal mailing addresses for purposes of receiving the study materials. Those who agreed to participate were mailed a packet of materials containing the following items: (1) A consent form explaining the purpose of the study (along with a copy for their

records); (2) An instruction sheet detailing the data collection protocol; (3) An approximately 30 minute AHQ measuring trait level variables; (4) A diary of four daily questionnaires to be completed upon returning home from work on four weekdays in which they were working; (5) A diary of four daily questionnaires to be completed at bedtime on the same four weekdays in which they were working; and (6) A form to indicate how they would like to be debriefed (e-mail or postal mail) and whether they would like to enter a raffle to receive compensation.

Participants were instructed to read and sign the informed consent form and to complete the 30 minute AHQ prior to beginning the daily survey packet. Participants selected four consecutive weekdays in which they were working to complete the packets of daily surveys. Given that requiring the four day survey period to occur on contiguous days (e.g., Monday – Thursday) would have limited participation almost entirely to nurse managers, participants were instructed that the four day period they choose must contain four consecutive shifts in which they were working (which were not required to occur on contiguous days). During the daily survey portion of the study, participants were asked to complete two questionnaires per day: (1) A post-work questionnaire measuring encountered daily stressors, immediate post-work off-job reactivity, and immediate post-work subjective well-being; and (2) A bedtime questionnaire assessing delayed post-work off-job reactivity, delayed post-work subjective well-being, daily somatic complaints, daily cross-domain interference, and pursued recovery activities during the post-work period. Participants were instructed to return their completed study materials using a pre-stamped, self-addressed envelope. Nurses who received the study materials had the option to enter a raffle to win a *Nintendo Wii* video game console (estimated retail value = $199.00).

3.3 Sample

In total, 170 potential participants meeting the inclusion criteria received the study materials via postal mail, with 78 participants returning their study packets (Response Rate = 45.88%). Two participants' data were excluded for a failure to return AHQs, while the data of one participant were excluded for skipping pages of the AHQ containing measures of trait off-job reactivity. Thus, the final sample for statistical analysis consisted of 75 participants (N = 75). Table 2 provides descriptive statistics for all trait-level study variables in this sample.

The normality of variables included in the AHQ was investigated by dividing obtained skewness and kurtosis statistics by respective variable standard error estimates. Potential departures from normality were statistically evaluated by comparing the obtained value to a two-tailed z distribution at the $\alpha = .001$ level, as recommended by Fidell and Tabachnick (2003). Evaluation of non-normality by this criterion yielded the following trait-level variables which evidenced statistically significant skewness and/or kurtosis: Abusive supervision, NA, subjective well-being, non-work to work conflict, achievement striving, assertiveness, activity level, and negative spillover from home. Despite this observed evidence of non-normality, these variables were not subjected to statistical transformations in subsequent analyses for four reasons. First, subjecting variables to a transformation clouds the substantive interpretation of statistically significant relationships linking transformed and non-transformed variables, with researchers suggesting that data transformations should not be performed without a clear rationale (Osborne, 2002). Second, when considering trait NA and abusive supervision (the non-normal, trait-level variables involved in specific hypotheses), researchers validating measures of these constructs have generally found low mean-scale values indicative of positive skew (Tepper, 2000; Watson et al., 1988), reflecting that the underlying construct distributions may be non-normal. Third, trait-level violations of the normality assumption in multilevel analyses have little to no biasing effect on

Table 2. *Item-Level Means, Standard Deviations, and Internal Consistency Estimates for all Trait-Level Variables Measured in the At-Home Questionnaire.*

Variable	Number of Items	α	*M*	*S.D.*	Skewness	Kurtosis
Behavioral Reactivity	10	.94	3.08	1.22	.42	-.35
Cognitive Reactivity	6	.89	3.44	1.11	-.01	-.41
Affective Reactivity	11	.91	2.50	.69	.61	1.34
Aggregate Reactivity	27	.95	2.93	.86	.54	.21
Abusive Supervision	15	.93	1.52	.59	1.89*	3.23*
Transformational Leadership	18	.95	3.39	.80	-.69	-.04
Positive Affect	10	.90	3.86	.63	-.66	.95
Negative Affect	10	.85	1.53	.49	1.42*	3.20*
Subjective Well-Being	5	.89	4.36	1.12	-1.16*	1.29
Work to Non-Work Conflict	5	.88	3.14	1.27	.42	-.14
Non-Work to Work Conflict	5	.81	1.65	.78	1.88*	4.28*
Somatic Complaints	14	.84	2.47	.59	.02	-.58
Achievement Striving	10	.76	5.18	.47	-.97*	1.76*
Modesty	10	.75	4.09	.63	.38	-.22
Tender-Mindedness	10	.72	4.48	.59	-.62	1.05
Assertiveness	10	.78	4.04	.66	-.93*	1.62

Table 2 (Continued)

Compliance	10	.69	4.68	.57	-.81	1.17
Positive Emotionality	10	.85	4.41	.74	-.73	.96
Trust	10	.84	4.41	.61	-.16	-.35
Activity Level	10	.83	4.00	.72	-.86	2.39*
Negative Spillover from Work	6	.83	3.35	1.14	-.09	-.41
Negative Spillover from Home	5	.71	1.66	.67	1.37*	2.06*
Positive Spillover from Work	3	.79	3.98	1.15	-.35	-.28
Positive Spillover from Home	6	.74	4.36	.84	-.50	.19
Segmentation	2	.76	3.47	1.37	.08	-.87
Compensation	5	.52	3.13	.84	-.05	-.79
General Stress	4	.87	4.54	1.20	-.79	-.14

Note. N = 75. Aggregate reactivity reflects the summation of responses to items measuring cognitive, behavioral, and affective facets of off-job reactivity. The estimated standard error for skewness values is .28. The estimated standard error for kurtosis values is .55.
* $p < .001$.

obtained model parameter estimates (Maas & Hox, 2004). Fourth, equivalent patterns of statistical significance and comparable effect size estimates were obtained for all tests of specific hypotheses regardless of whether non-transformed or transformed variables were used.

No outliers were removed from the sample due to an absence of any obtained values three standard deviations above or below the corresponding scale mean, as well as a close correspondence between the mean, the median, and the trimmed mean (with the top and bottom 5% of obtained values removed) for all hypothesis-relevant study variables.

Raw and relative frequency estimates of the number of participants at different age ranges and ranges of organizational tenure in the obtained sample are presented in Tables 3 and 4. For comparison purposes, the percentage of full-time nurses at different age ranges in a national sample of U.S. registered nurses is also included in Table 3 (U.S. Department of Health and Human Services, 2010). While this national survey specified different age range categories than were utilized in the current study, these data provide a general sense of the representativeness of the obtained sample in terms of age. Unfortunately, corresponding nationally representative data were not available for lengths of organizational tenure. In general, participants in this study skewed somewhat older than the nationally representative sample. This effect was primarily driven by a greater participation rate of nurses between the ages of 51 and 60, and a reduced participation rate of nurses between the ages of 36 and 50, in comparison to the nationally representative sample.

Of the 74 participants who returned complete demographics sections[1], 57 participants (77%) currently shared their household with another adult, while 37

[1] One participant did not complete the demographics section of their questionnaire.

Table 3. *Raw and Relative Frequencies of Different Age Ranges in the Obtained Sample, with Relative Frequency Estimates from a Nationally Representative Sample of Nurses Presented for Comparison Purposes.*

Obtained Sample									
Variable	Under 30	30 – 35	36 – 40	41 – 45	46 - 50	51 – 55	56 - 60	61 – 65	Over 65
Age	6 (8.0%)	6 (8.0%)	5 (6.7%)	8 (10.7%)	7 (9.3%)	18 (24.0%)	18 (24.0%)	5 (6.7%)	1 (1.3%)

National Sample									
Variable	Under 29	30 – 34	35 – 39	40 – 44	45 – 49	50 – 54	55 – 59	60 – 64	65 and older
Age	9.4%	9.2%	10.8%	11.4%	14.4%	16.2%	13.0%	8.1%	5.5%

Note. *N* = 74. One participant left their demographics page blank, and was not included in these frequency estimates. Raw frequencies of the number of participants occupying each age range are provided. The percentage of the sample reporting each age range is provided in parentheses. Data from the nationally representative sample are from a survey of 34,219 registered nurses conducted by the U.S. Department of Health and Human Services (2010; Appendix A, Table 1).

Table 4. *Raw and Relative Frequencies of Different Organizational Tenure Ranges in the Obtained Sample.*

Variable	< 1 Year	1 - 4 Years	5 - 8 Years	9 - 12 Years	13 - 16 Years	17 - 20 Years	21 - 24 Years	> 25 Years
Org. Tenure	3 (4%)	16 (21%)	18 (24%)	8 (11%)	4 (5%)	9 (12%)	7 (9%)	9 (12%)

Note. $N = 74$. One participant left their demographics page blank, and was not included in these frequency estimates. Raw frequencies of the number of participants occupying each organizational tenure range are provided. The percentage of the sample reporting each organizational tenure range is provided in parentheses (rounded to nearest whole number).

participants (50%) currently had one or more dependent children living at home. As way of a comparison, 74% of nurses from a nationally representative sample were married or in a domestic partnership, while 53% of these sampled nurses had children under the age of 18 living at home (U.S. Department of Health and Human Services, 2010). Therefore, the obtained sample was similar to a national sample in terms of marital status and the number of nurses with dependent children at home. Within the subsample of participants with dependent children living at home in the obtained sample, 15 participants had one child (40%), 16 participants had 2 children (43%), 3 participants had 3 children (8%), and 3 participants had four children (8%) currently living at home.

3.4 Compliance

Three steps were taken to increase compliance with the data recording protocol. First, participants were required to record the date and time at which they completed each state-level survey. For the immediate post-work survey, participants were also required to indicate the time at which they left work. The average time lag between when participants left work and when they completed the immediate post work survey was 78 minutes (*S.D.* = 43.30). When considering that the average amount of time

participants spent commuting per day was 36 minutes (*S.D.* = 24.36), participants typically completed their immediate post-work questionnaires approximately 30 minutes after arriving at home. Second, participants were instructed to only complete state-level questionnaires at the required time points (when arriving at home and at bedtime), rather than going back to retrospectively complete any questionnaires which they skipped. Although this procedure had the potential to increase the amount of missing data in the obtained sample, trait reporting tendencies would likely have a strong impact on provided state reports if delayed retrospective reports were allowed (see Parkinson, Briner, Reynolds, & Totterdell, 1995). Finally, participants were asked to report the reason that they did not complete any missing questionnaires with an open-ended response to the prompt "If you did not complete the Day _____ Post-work/Bedtime Questionnaire, please indicate why you did not complete it below." This step allowed for an investigation of the cause of missing values, a helpful step in ascertaining if data can be assumed missing completely at random (MCAR), missing at random (MAR), or if missingness represents a non-ignorable (NI) pattern in the data set (Little & Rubin, 2002).

Participants completed 577 out of 600 possible state-level surveys (96.17%), with an average of 7.75 (*S.D.* = .68) of 8 possible surveys completed per participant. Of the 23 surveys which participants failed to complete, 6 were missing because the participant reported falling asleep without completing the bedtime survey (26.09%), 2 were entered as missing because participants accidently skipped a page of the survey (8.70%), 3 were reported missing due to the pursuit of other post-work activities (13.04%), 2 participants reported forgetting to complete the survey at a given time point (8.70%), and 10 participants did not provide a reason that a given survey was missing (43.48%). No trait-level variables were correlated with the number of state-level surveys which

participants completed, all |*r*|s < .19, n.s. Given the small amount of missing data in the total sample (3.83%), the lack of a consistent pattern in reasons reported for missing individual surveys, and no obtained support for statistically significant relationships between missingness and any trait-level study variables, the data were assumed to be MCAR. All subsequent analyses were conducted on the complete data set with missing values excluded.

In addition to the 23 time points for which participant data were missing, there were several instances in which participants failed to respond to items using the scale provided or did not enter numeric estimates for occupational stressor frequency or recovery activity pursuit estimates. Of the 295 immediate post-work time points which were provided by participants, non-compliant answers were given for 7 daily negative interpersonal interaction frequency estimates (2.37%), 12 low daily job control frequency estimates (4.07%), 11 daily situational constraint frequency estimates (3.73%), and 1 recovery activity pursuit duration estimate (0.34%). Of the 282 delayed post-work time points which participants provided, non-compliant answers were provided for 2 off-job reactivity estimates (0.71%), 1 subjective well-being estimate (0.36%), 2 somatic complaint reports (0.71%), 5 estimates of cross-domain interference (1.77%), and 1 recovery activity pursuit estimate (0.36%). As measures of these constructs were designed to capture state-level estimates which vary based on specific daily experiences, each of these individual response values were coded as missing rather than imputing values to replace non-compliant answers. Given that multilevel analyses are substantially more robust to statistical artifacts stemming from missing data than are linear approaches when data are assumed MCAR (Atkins, 2005), this approach is preferable to the imputation of frequency and duration estimates (which likely would not

accurately and precisely reflect the events which participants experienced on a given day).

3.5 Measures

3.5.1 AHQ.

In the following section, I describe trait and demographic measures included in the approximately 30-minute AHQ completed by participants prior to the daily survey portion of the study. This section concludes with a description and evaluation of the estimated internal consistency reliability of all measures included in the AHQ.

3.5.1.1 *Trait cognitive reactivity.*

In a general sense, trait cognitive reactivity represents tendencies to ruminate about negative work events and fail to psychologically detach from work. Items from two scales were included in the AHQ as trait measures of cognitive reactivity. First, an adaptation of the four item psychological detachment subscale of the Recovery Experiences Questionnaire (Sonnentag & Fritz, 2007) was utilized. Items from this scale were reverse scored to represent tendencies to fail to psychologically detach from work during off-job time. Initial validation work and subsequent empirical investigations have demonstrated both the construct validity and psychometric properties of this measure (Sonnentag & Fritz, 2007). Second, two items from a scale developed by Cropley et al. (2006) to assess retrospective and prospective work rumination were adapted to reflect trait work rumination. Participants were asked to indicate the degree to which each statement was true of their experiences during time spent away from work (off-job time) on a scale ranging from 1 (*Very Untrue of Me*) to 6 (*Very True of Me*). Items from these two scales were aggregated to represent trait cognitive reactivity.

3.5.1.2 Trait affective reactivity.

Unfortunately, researchers have not typically analyzed affective off-job reactivity at the trait-level, instead often examining the correspondence between at-work and post-work mood at the state level (e.g., Judge et al., 2006). In the current study, items from an 11 item state measure of affective spillover developed by Repetti and colleagues (Repetti, 1989; Story & Repetti, 2006) were adapted to reflect trait affective spillover. Participants were provided with a list of mood related adjectives and asked to identify how typical it is for them to experience each adjective during off-job time due to work on a scale ranging from 1 (*never*) to 5 (*frequently*).

3.5.1.3 Trait behavioral reactivity.

The most commonly used measures of behavioral reactivity are work - family conflict scales (e.g., Kinnunen et al., 2006), which confound affective and behavioral sources of spillover. The more appropriate focus of a measure of trait behavioral reactivity is an assessment of the extent to which employees perceive that their off-job time behaviors are altered by work demands and work stress. To meet this goal, items from pre-existing measures which specifically focus on the effects of work factors on off-job time behaviors were used to measure behavioral reactivity. This construct was measured with four items developed by Voydanoff (2005) and six items from Carlson, Kacmar, and Williams (2000). All of these items focus on temporal and behavioral interference between work and non-work demands at the trait level. Participants were asked to respond to each statement on a scale ranging from 1 (*very UNTRUE of me*) to 6 (*very TRUE of me*).

3.5.1.4 Abusive Supervision.

Abusive supervision was measured with Tepper's (2000) commonly used 15 item scale, consisting of a list of behaviors which are sometimes performed by supervisors. Participants were instructed to report the frequency with which their supervisors engage

in each described behavior on a scale ranging from 1 (*never*) to 5 (*very often*). Given that all the items in this scale are phrased in terms of negative behaviors, these items were intermixed with items from Wang and Howell's (2010) validated transformational leadership scale, to avoid priming participants to only focus on negative aspects of supervisory behavior.

3.5.1.5 NA and PA.

Trait NA and PA were measured with the 20 item Positive and Negative Affect Schedule (PANAS; Watson et al., 1988). This scale consists of ten adjectives measuring trait NA and ten adjectives measuring trait PA. Participants were asked to indicate the extent to which each adjective described the way they feel in general on a scale ranging from 1 (*not at all*) to 5 (*extremely*).

3.5.1.6 Five Factor Model Facets.

Facets of extraversion, agreeableness, and conscientiousness were assessed using 80 items drawn from eight facet subscales of the International Personality Item Pool - NEO (IPIP-NEO; Goldberg et al., 2006). Participants responded to ten statements corresponding to each facet anticipated to interact with daily occupational stressor exposure or off-job reactivity on a scale ranging from 1 (*very UNTRUE of me*) to 6 (*very TRUE of me*).

3.5.1.7 Subjective well-being.

Subjective well-being was assessed with the five item Satisfaction with Life Scale (SWLS) (Diener, Emmons, Larsen, & Griffin, 1985), the most widely used and psychometrically researched measure of the construct. Participants were asked to respond to each item on a scale ranging from 1 (*strongly disagree*) to 6 (*strongly agree*).

3.5.1.8 Cross-Domain Interference.

Trait level perceptions of work – non-work and non-work – work conflict were evaluated using a 10 item scale developed by Netemeyer, Boles, and McMurrian (1996). As this scale focuses on family-based interference specifically, items were adapted to reflect non-work interference processes at a more general level to make the items appropriate to both participants who lived alone and participants who lived with family members. Participants were asked to rate their degree of agreement with each statement on a scale ranging from 1 (*strongly disagree*) to 6 (*strongly agree*).

3.5.1.9 Somatic complaints.

Somatic complaints were evaluated using six items from the health subscale of the revised Occupational Stress Indicator (Evers, Frese, & Cooper, 2000) and seven items from the Occupational Health Questionnaire (Weel & Fortuin, 1998). An additional item assessing how often nurses experience feelings of fatigue was added, in light of research indicating the relevance of fatigue to nursing-related outcomes (e.g., Barker & Nussbaum, 2011; Rella, Winwood, & Lushington, 2009; Winwood, Winefield, & Lushington, 2006). In total, participants were provided with a list of 14 non-clinical physical symptoms and asked to indicate the frequency with which they experience each symptom on a scale ranging from 1 (*never*) to 5 (*very often*).

3.5.1.10 Exploratory Trait-Level Variables.

To investigate linkages of the off-job reactivity construct to alternative conceptualizations of work – non-work relationships and job stress, participants completed the 32-item Work Family Linkage Questionnaire (Sumer & Knight, 2001) and a four item measure of global job stress developed by Motowidlo, Packard, and Manning (1986). The former measure was developed to assess the degree to which work — non-work relationships are linked by processes of negative and positive spillover from both home and work, as well as the degree to which participants perceive that they segment

their work and non-work lives or compensate for deficiencies in one domain of life in the other. Participants responded to all exploratory trait-level items on a scale ranging from 1 (*strongly disagree*) to 6 (*strongly agree*).

3.5.1.11 Internal Consistency Reliability Assessment.

Table 5 presents coefficient α and ω estimates for all measures included in the AHQ. Interpretations of coefficient α values in light of measure length and sample size, as well as the anticipated breadth of each underlying construct, are also provided in this table. Scales assessing facets of extraversion, agreeableness, and conscientiousness were expected to be homogenous based on the anticipated narrow breadth of these constructs (Costa & McCrae, 1992). Scales assessing abusive supervision, transformational leadership, NA, and PA were expected to be homogenous given that these constructs reflect the experience of more focused aspects of supervisory behavior and emotional experience. Although cognitive, affective, and behavioral off-job reactivity are facet-level constructs, measures of these facets were expected to exhibit a degree of heterogeneity, as these constructs represent moderately broad patterns of off-job thoughts, emotions, and behaviors stemming from work stress. Somatic complaints, cross-domain interference, subjective well-being, general job stress, and perceptions of bidirectional positive and negative spillover were anticipated to reflect broad traits, given that these constructs reflect rather general perceptions of work and non-work life.

Trait NA, PA, abusive supervision, and off-job reactivity were constructs involved in hypothesized relationships within the proposed theoretical model. Scales assessing these constructs exceeded the minimum threshold of at least moderate coefficient α estimates in light of measure length and sample size, α = .85 - .93. In line with the anticipated narrowness of the NA, PA, and abusive supervision traits, a large amount of the inter-item variance in measures of these constructs was attributable to a general

Table 5. *Internal Consistency Reliability Estimates of Trait and Facet Measures included in the At-Home Questionnaire Based on Obtained Coefficient α and ω Estimates.*

Variable	α	Number of Items	Qualitative Descriptor of Obtained Internal Consistency[a]	ω	Construct Description	Retention Decision
Abusive Supervision	.93	15	Excellent	.92	Narrow	Retained
Transformational Leadership	.95	18	Excellent	.89	Narrow	Retained
Positive Affect	.90	10	Excellent	.87	Narrow	Retained
Negative Affect	.85	10	Excellent	.87	Narrow	Retained
Affective Reactivity	.91	11	Excellent	.85	Moderately Broad	Retained
Trust	.84	10	Excellent	.80	Narrow	Retained
Achievement Striving	.76	10	Good	.78	Narrow	Retained
Somatic Complaints	.84	14	Good	.77	Broad	Retained
Positive Emotionality	.85	10	Excellent	.74	Narrow	Retained
Behavioral Reactivity	.94	10	Excellent	.74	Moderately Broad	Retained
Activity Level	.83	10	Excellent	.71	Narrow	Retained
Assertiveness	.78	10	Good	.69	Narrow	Retained
Non-Work to Work Conflict	.81	5	Excellent	.68	Broad	Retained
Tender-Mindedness	.72	10	Moderate	.65	Narrow	Retained
Cognitive Reactivity	.89	6	Excellent	.64	Moderately	Retained

Table 5 (Continued).

					Broad	
Negative Spillover from Home	.71	5	Good	.64	Broad	Retained
Subjective Well-Being	.89	5	Excellent	.63	Broad	Retained
Modesty	.75	10	Good	.63	Narrow	Retained
Compliance	.69	10	Fair	.61	Narrow	Not Retained
Work to Non-Work Conflict	.88	5	Excellent	.56	Broad	Retained
General Stress	.87	4	Excellent	.55	Broad	Retained
Positive Spillover from Home	.74	6	Good	.54	Broad	Retained
Negative Spillover from Work	.83	6	Excellent	.53	Broad	Retained
Positive Spillover from Work	.79	3	Excellent	.48	Broad	Not Retained
Segmentation	.76	2	Excellent	.35	Broad	Not Retained
Compensation	.52	5	Unsatisfactory	.21	Broad	Not Retained

Note. Variables are ordered from top to bottom in terms of estimated scale homogeneity (most homogenous to most heterogeneous).
[a] Recommendations and qualitative descriptions are based on the criteria for internal consistency reliability described by Ponterotto and Ruckdeschel (2007), which takes account of the number of items included in a measure and obtained sample size.

factor, ω = .87 - .92, supporting the homogeneity of these scales. As expected, there was a degree of heterogeneity to the facet measures of off-job reactivity, ω = .64 - .85, but each of these scales exceeded the criteria for acceptable scale homogeneity. In summary, all measures used to operationalize constructs involved in specific hypotheses demonstrated acceptable psychometric properties.

Constructs included for exploratory purposes which were anticipated to be narrow included measures of transformational leadership and facets of agreeableness, extraversion, and conscientiousness. The transformational leadership scale exceeded the threshold of at least moderate internal consistency, α = .95, and yielded a high estimate of homogeneity, ω = .89. Estimates of coefficient α also exceeded the threshold of at least moderate internal consistency for measures of trait trust (α = .80), achievement striving (α = .76), positive emotionality (α = .85), activity level (α = .83), assertiveness (α = .78), tender-mindedness (α = .72), and modesty (α = .75). Scale homogeneity estimates for measures of these personality facets were lower than would be expected when considering the anticipated narrowness of these constructs, ω = .63 - .80. However, all of these measures were retained for subsequent analyses as they met the specified thresholds for internal consistency and scale homogeneity. While the measure of trait compliance met the threshold for scale homogeneity, ω = .69, this measure did not meet the criteria of moderate internal consistency, α = .69. Therefore, the compliance subscale was not included in subsequent exploratory analyses due to the unsatisfactory psychometric properties of this measure.

Regarding variables which were anticipated to represent broad constructs, estimates of coefficient α exceeded the threshold of at least moderate internal consistency for scales assessing somatic complaints (α = .84), non-work to work conflict (α = .81), negative spillover from work and home (α = .71 - .83), positive spillover from

home (α = .74), subjective well-being (α = .89), work to non-work conflict (α = .88), and general stress (α = .87). Although generally lower than coefficient α estimates for narrow variables included in specific hypotheses, it is to be expected that the heterogeneity resulting from the breadth of these constructs, ω = .53 - .77, would yield lower coefficient α estimates (see Ackerman & Humphreys, 1990). As all of these measures exceeded the internal consistency and homogeneity thresholds, these scales were retained for subsequent analyses. Measures of positive spillover from work and work – non-work segmentation did not meet the homogeneity threshold, ω = .35 - .48, while the work – non-work compensation scale did not exceed the internal consistency or homogeneity thresholds, α = .52, ω = .21. These scales were not included in subsequent exploratory analyses due to their unsatisfactory psychometric properties.

3.5.2 Daily Diary Measures.

The following sections detail all measures included in the post-work and bedtime daily diary questionnaires, which participants completed over the course of four work shifts. On each day, participants were asked to complete measures of state off-job reactivity and subjective well-being at both the post-work and bedtime time points. Participants provided daily stressor ratings at the post-work time points only. As the focus of this study is on daily stressors *encountered at work*, measuring daily stressor exposure immediately after work prevented the confounding of at-work and after-work sources of stress in participants' daily reports. The exception to this statement was stress stemming from commuting between the end of the workday and arrival at-home, which was measured by having participants report their total commuting duration each day. Measures of somatic complaints and perceptions of both work to non-work and non-work to work conflict were retrospectively reported at bedtime, as these items were phrased to ask participants to reflect on these outcomes as they were experienced over

the course of the day. Finally, participants reported their recovery activity pursuit duration between their arrival at home and at bedtime (retrospectively reported at bedtime).

3.5.2.1 State off-job reactivity.

The same measures used to assess trait cognitive, affective, and behavioral off-job reactivity (Carlson et al., 2000; Cropley et al., 2006; Repetti, 1989; Sonnentag & Fritz, 2007; Voydanoff, 2005) were adapted for state level measurement of the construct. Where necessary, items were altered to reflect current perceptions of off-job reactivity, as opposed to perceptions of general reactivity tendencies. Participants were instructed to respond to the items in terms of how they currently felt on a scale ranging from 1 (*very UNTRUE of me*) to 6 (*very TRUE of me*). Table 6 provides internal consistency estimates for the off-job reactivity measure at each of the eight state-level time points, and a correlation matrix indexing the stability of reports of off-job reactivity across the eight study time points.

3.5.2.2 Daily subjective well-being.

Daily subjective well-being was measured with six items assessing well-being after work and at bedtime created by Sonnentag (2001) and seven items from the Profile of Mood States (POMS; McNair, Lorr, & Droppleman, 1971). The Sonnentag (2001) scale is ideal for the current study, as these items were specifically designed to assess subjective well-being at the included time points. Consistent with past studies in which the POMS has been used as an index of state well-being (e.g., Sonnentag & Natter, 2004), participants rated the degree to which seven adjectives drawn from the Vigor and Fatigue subscales of the measure described how they currently felt. Where appropriate, responses were reverse scored to represent higher subjective well-being. The reliability and validity of the POMS have been shown to be acceptable in past research (see

Table 6. *Obtained Internal Consistency and Stability Estimates for All Measured State-Level Off-Job Reactivity Time Points.*

Time Point	*M*	*S.D.*	PW DAY 1	BED DAY 1	PW DAY 2	BED DAY 2	PW DAY 3	BED DAY 3	PW DAY 4	BED DAY 4
PW DAY 1	2.94	1.03	(.96)							
BED DAY 1	2.76	1.08	**.81***	(.97)						
PW DAY 2	2.77	.98	.68*	.60*	(.96)					
BED DAY 2	2.71	.93	.69*	.69*	**.93***	(.95)				
PW DAY 3	2.81	1.03	.68*	.56*	.66*	.70*	(.96)			
BED DAY 3	2.59	.92	.74*	.69*	.64*	.74*	**.91***	(.95)		
PW DAY 4	2.71	1.06	.70*	.71*	.59*	.67*	.68*	.82*	(.96)	
BED DAY 4	2.62	.95	.65*	.73*	.57*	.68*	.65*	.79*	**.92***	(.95)

Note. PW = Immediate Post-Work Time Point (within 30 minutes of arrival at home after work). BED = Bedtime Time Point (within 30 minutes before going to sleep). Internal consistency estimates (α) are presented in parentheses. Correlations between same-day time points are in bold.

* $p < .01$.

Bourgeois, LeUnes, & Meyers, 2010). For both the Sonnentag and POMS scales, participants were asked to rate the extent to which each statement described how they currently felt on a scale ranging from 1 (*very UNTRUE of me*) to 6 (*very TRUE of me*). Table 7 provides a correlation matrix indexing the stability of reported subjective well-being across the eight state-level time points, in addition to obtained internal consistency estimates for each time point. Scores from the situational well-being subscale (Sonnentag, 2001) and the POMS (McNair et al., 1971) were aggregated.

3.5.2.3 Daily negative interpersonal interactions.

Although checklist formats are often used to assess exposure to daily negative interpersonal events (e.g., Bolger & Zuckerman, 1995), existing measures typically analyze stressor exposure in both work and non-work domains. In this study, potential sources of negative interpersonal interactions were limited to workplace relationships only. The exception to this statement was an assessment of negative interactions with friends and family which occurred while at the workplace. Consistent with Bolger and Zuckerman's (1995) negative interpersonal stressor checklist, participants separately reported whether they had any exposure during their workday to arguments, tensions, or instances of criticism with: (1) A supervisor, (2) A co-worker, (3) A patient, or (4) A family member or friend. For each of these options, participants indicated whether a given event had occurred that day and the number of times each event occurred. Participants also rated the subjective severity of each source of daily interpersonal stress on a scale ranging from 1 (*not at all stressful*) to 8 (*extremely stressful*). This measurement strategy allowed for a quantification of whether any instances of this source of daily stress were encountered (*stressor exposure*), the number of different types of this daily stressor that were encountered (*stressor breadth*), the total number of times this type of daily stress occurred (*stressor frequency*), and the perceived stressfulness of this source of stress (*perceived stressfulness*).

Table 7. *Obtained Internal Consistency and Stability Estimates for All Measured State-Level Subjective Well-Being Time Points.*

Time Point	*M*	*S.D.*	PW DAY 1	BED DAY 1	PW DAY 2	BED DAY 2	PW DAY 3	BED DAY 3	PW DAY 4	BED DAY 4
PW DAY 1	2.57	.87	(.94)							
BED DAY 1	2.19	.83	.65*	(.92)						
PW DAY 2	2.60	.81	.67*	.46*	(.93)					
BED DAY 2	2.21	.79	.64*	.71*	.74*	(.91)				
PW DAY 3	2.67	.86	.69*	.60*	.58*	.67*	(.94)			
BED DAY 3	2.30	.80	.72*	.70*	.52*	.68*	.80*	(.91)		
PW DAY 4	2.73	.86	.67*	.51*	.64*	.59*	.66*	.69*	(.93)	
BED DAY 4	2.33	.71	.53*	.60*	.53*	.64*	.55*	.70*	.74*	(.88)

Note. PW = Immediate Post-Work Time Point (within 30 minutes of arrival at home after work). BED = Bedtime Time Point (within 30 minutes before going to sleep). Internal consistency estimates (α) are presented in parentheses.
* $p < .01$.

3.5.2.4 Daily job control.

Perceptions of job control at the daily level were measured with a modified version of the 9 item decision latitude subscale of the revised Job Content Questionnaire (JCQ-R; Karasek et al., 1998). Although this measure was designed to evaluate enduring trait level job characteristics, past researchers have adapted items to assess state job control (e.g., Butler et al., 2005). Extensive evidence of the reliability and validity of the JCQ has been provided by Karasek et al. (1998) in a series of large, cross-cultural validation studies. Items from this measure were altered to reflect daily perceptions of job control, and the wording of each item was adapted to be indicative of lower levels of job control. This approach allowed the same checklist format to be used for daily job control which was used to measure other daily stressor categories. This measurement strategy once again resulted in a quantification of stressor exposure, stressor breadth, stressor frequency, and perceived stressfulness for this source of daily stress.

3.5.2.5 Daily situational constraints.

Daily situational constraints were measured with a state-level adaptation of the Situational Constraint Questionnaire (SCQ; O'Connor et al., 1984), providing an assessment of the frequency with which participants encountered 7 different situational constraints on each day. O'Connor et al. (1984) demonstrated in their initial validation research that different forms of constraints can reasonably be summed into an overall composite of encountered constraints. Participants were asked to identify in a checklist format, identical to that used for the other sources of daily stress, whether each situational constraint had been encountered on a given day. Once again, this measurement strategy allowed for quantification of stressor exposure, stressor breadth, stressor frequency, and perceived stressfulness for this category of daily stress.

3.5.2.6 Somatic Complaints and Daily Cross-Domain Interference.

Daily somatic complaints, work to non-work conflict, and non-work to work conflict were measured with day-level adaptations of the scales used to measure trait level conceptualizations of these variables. For each of these measures, participants responded to items by reflecting on their preceding day at bedtime. Two items from the trait level version of the somatic complaint scale ("Inability to get to sleep" and "Feeling as though you do not want to get up in the morning") were removed due to a lack of relevance for these complaints to the state-level context. Table 8 provides day-level means, standard deviations, and cross-day stability estimates for measures of somatic complaints, while Table 9 provides within and across time point stability estimates of measures of cross-domain interference and obtained internal consistency estimates.

3.5.3.7 Pursued recovery activities.

Past recovery activity researchers have suggested that low effort, social, physical, and creative activities during off-job time all contribute to the work recovery

Table 8. *Item-Level Means, Standard Deviations, and Stability Estimates for all Daily Somatic Complaint Measures.*

Variable	*M*	*S.D.*	D1 SOM	D2 SOM	D3 SOM	D4 SOM
D1 SOM	3.68	2.20	-			
D2 SOM	3.25	2.05	.74*	-		
D3 SOM	3.26	2.00	.74*	.72*	-	
D4 SOM	3.04	2.05	.47*	.49*	.65*	-

Note. D1SOM - D4SOM = Day 1 - Day 4 of retrospective reporting of daily somatic complaints at bedtime. No estimates of internal consistency (α) are provided as reports of daily somatic complaints were provided in a binary checklist format (somatic symptom did not occur/occurred).
* $p < .01$.

process (Sonnentag, 2001). Accordingly, the amount of time participants spent engaged in 13 common activities corresponding to these four recovery activity categories was measured using an approach adapted from Sonnentag (2000). Based on research linking off-job work related and domestic activities to diminished recovery processes (e.g., Sonnentag & Zijlstra, 2006), this measure also asked participants to report the amount of time they had spent engaged in six different activities corresponding to these two categories of behavior for exploratory purposes. Appendix A contains a list of all specific activities included in the post-work activity measure, as well as the activity category to which each activity corresponds. Participants were asked at the bedtime time point to estimate the amount of time they had spent engaged in each specific activity since their arrival at home that day.

Table 9. *Obtained Internal Consistency Estimates, Within-Time Point Correlations, and Across-Time Point Correlations for Measures of Cross-Domain Interference.*

Variable	*M*	*S.D.*	D1 WNW	D2 WNW	D3 WNW	D4 WNW	D1 NWW	D2 NWW	D3 NWW	D4 NWW
D1 WNW	2.91	1.55	(.93)							
D2 WNW	2.80	1.40	.66**	(.91)						
D3 WNW	2.66	1.53	.68**	.64**	(.94)					
D4 WNW	2.76	1.60	.58**	.64**	.71**	(.95)				
D1 NWW	1.17	.38	.07	.03	.04	.06	(.79)			
D2 NWW	1.26	.45	-.01	-.01	.14	.14	.27*	(.88)		
D3 NWW	1.35	.58	-.04	-.06	.22	.08	.30**	.55**	(.81)	
D4 NWW	1.37	.61	-.03	-.06	.13	.18	.24*	.57**	.64**	(.80)

Note. D1 - D4 = Day 1 - Day 4 of daily retrospective reporting of study variables. WNW = Work to non-work conflict. NWW = Non-work to work conflict. Internal consistency estimates (α) are presented in parentheses.
* $p < .05$. ** $p < .01$.

CHAPTER 4

RESULTS

The analyses proceeded in six general stages. First, the dimensionality of the off-job reactivity construct was analyzed via structural equation modeling (SEM). Second, descriptive analyses were conducted to quantify daily stressor exposure, breadth, frequency, and perceived stressfulness for each category of daily stress, as well as the relationships between average stressor frequency, average off-job reactivity, personality, and work characteristics at the aggregate level. Third, hypothesized main-effect predictors of state off-job reactivity were tested via hierarchical linear modeling (HLM). Fourth, hypothesized cross-level mediation effects were investigated via multilevel structural equation modeling (MSEM; Preacher, Zyphur, & Zhang, 2010). Fifth, slope estimates linking different categories of daily stressor frequency to state off-job reactivity were regressed on personality facets using HLM to examine exploratory cross-level moderation predictions. Sixth, a series of HLM analyses were conducted to investigate hypothesized outcomes of state and trait off-job reactivity. SEM analyses were conducted with EQS 6.2 (Bentler & Wu, 1995), while HLM analyses were conducted using HLM 7 (Raudenbush, Bryk, Cheong, Congdon, & du Toit, 2011). MSEM analyses were conducted using Mplus 7 (Muthén & Muthén, 1998 – 2010), via the analytic approach outlined by Preacher et al. (2010). HLM and MSEM analyses were run separately for the immediate and delayed post-work time points to examine any potential differences in off-job reactivity relationships at these two time points.

For the hypothesized main effect daily stressor, personality trait, and work characteristic predictors of state off-job reactivity, a separate HLM model was run to examine the prediction of this outcome by each individual hypothesized predictor.

Consistent with Ilies, Schwind, & Heller (2007a), Level 1 predictor variables in these analyses were centered around the individual's mean score across the four day study to statistically control for inter-individual characteristics associated with stressor frequency (see Ilies et al., 2011). Level 2 predictor variables in these analyses were grand-mean centered to statistically control for intra-individual variance in daily stressor frequency estimates (see Enders & Tofighi, 2007).

For the HLM analyses investigating outcomes of off-job reactivity, state and trait off-job reactivity were entered simultaneously as predictors of each of the hypothesized criterion variables. State off-job reactivity was centered around the individual's mean score across the four day study to statistically control for inter-individual variance associated with trait off-job reactivity. Due to high intercorrelations among immediate and delayed measurements of off-job reactivity taken on the same day (within day *r*s = .81 - .93), immediate off-job reactivity was entered for immediate post-work outcomes, while delayed off-job reactivity was entered for delayed post-work outcomes. This decision reduced the likelihood of Type II errors resulting from multicollinearity among the Level 1 predictor variables, which would potentially result in only one of the two measurements of state off-job reactivity meeting the criteria for statistical significance if they were entered simultaneously. Trait off-job reactivity was grand-mean centered to statistically control for intra-individual variance in state off-job reactivity. The approach outlined above was utilized for all hypothesized outcomes of off-job reactivity with the exception of recovery activity pursuit. For this criterion variable, the prediction of post-work recovery activity pursuit (retrospectively reported at bedtime) from state off-job reactivity when returning home from work was statistically evaluated.

For all HLM analyses conducted to test the predictor and criterion space of the construct, the statistical significance of each separate predictor was evaluated through

the derivation of a *t* statistic based on the multilevel coefficient and standard error estimate for the individual predictor. The multilevel coefficient represents the overall unstandardized regression coefficient linking the Level 1 or Level 2 predictor to the criterion variable, and evaluation of the *t* statistic allows for a determination of whether the obtained multilevel coefficient is significantly different from zero such that the null hypothesis of no relationship would be rejected.

The proportion reduction in variance (i.e., variance explained) with the entry of each predictor or block of predictors is presented as an effect size estimate. The notation R_1^2 is used to represent the proportion of intra-individual criterion variance explained, while the notation R_2^2 is used to quantify the proportion of inter-individual criterion variance explained (see Roberts & Monaco, 2006). Consistent with common rules of thumb for the interpretation of variance accounted for estimates (Cohen, 1988), for both intra- and inter-individual criterion variance estimates, values of R^2 greater than or equal to .02, .15, and .35 were interpreted as representing small, medium, and large effect sizes. Any predictor variables failing to account for at least 2% of the intra- or inter-individual criterion variance were not considered to represent a meaningful relationship, even if the threshold for statistical significance was met. It should be noted that, when any variables in the model have low variance estimates or with the inclusion of Level 2 predictors, it is possible for very small effects to produce negative variance accounted for estimates using the proportion reduction in variance effect size estimate (Roberts & Monaco, 2006). Any obtained effect size estimates which display this characteristic were interpreted as having accounted for no variance in the criterion variable.

4.1 The Dimensionality of Off-Job Reactivity

Hypothesis 1: Off-job reactivity represents a higher-order factor comprising the correlated facets of cognitive, affective, and behavioral reactivity to daily occupational stress.

Confirmatory factor analyses were conducted to empirically test the dimensionality of the hypothesized three-facet, higher-order factor model of off-job reactivity. To avoid confounding these results with potential fluctuations in facets of off-job reactivity at the state level, these analyses were conducted using items assessing trait off-job reactivity. The model was specified such that items assessing facets of reactivity loaded on three latent lower-order factors of cognitive, affective, and behavioral reactivity (6, 11, and 10 items, respectively). These three latent facets were specified to load on a higher order off-job reactivity latent factor. For model identification purposes, one item to facet pathway was constrained to 1 for each lower order facet, while the higher order factor variance was constrained to 1, consistent with the approach recommended by Byrne (2006).

The hypothesis that off-job reactivity is best conceptualized as a three-facet, higher-order factor model was tested by comparing the fit of the hypothesized model *(three-facet, higher-order factor model)* to the following alternative models: 1) A single factor model in which all off-job reactivity items load on one latent factor *(single-factor model)*; and 2) A three-factor model in which items assessing cognitive, affective, and behavioral reactivity load on three independent factors *(independent facet model).* Model fit was evaluated by computing the estimated *Root Mean Square Error of Approximation (RMSEA;* Steiger, 1990), Akaike Information Criterion (*AIC*; Akaike, 1973*)*, and Bayesian Information Criterion (*BIC;* Schwarz, 1978; Raftery, 1995*)* for each evaluated model. The *RMSEA* is based on the estimated non-centrality parameter of a given model and penalizes for model complexity, with values closer to 0 indicative of better fit (West,

Taylor, & Wu, 2012). Both the *AIC* and *BIC* evaluate model fit via the estimated minimized discrepancy function of a given model and penalize for model complexity, with smaller values interpreted as representing better fit (West et al., 2012). The *AIC* and *BIC* also allow for comparisons between nested and non-nested latent variable models (Vrieze, 2012), providing the opportunity to examine the relative performance of the three candidate models in the current analysis. The candidate model which yielded the smallest *RMSEA, AIC,* and *BIC* value was interpreted as representing the best fit to the data (West et al., 2012).

Comparisons of the fit of the three-facet, higher-order factor model against the fit of the single-factor and independent facet models are presented in Table 10. As can be seen in this table, the hypothesized three-facet, higher-order factor model yielded lower estimated *RMSEA*, *AIC*, and *BIC* values than both the single-factor model and the model of three-independent facets. Therefore, the hypothesized model demonstrated superior fit in comparison to both of the alternative models even when penalizing for the additional complexity of the hypothesized model. Figure 3 graphically displays the three-facet, higher-order factor model solution with obtained parameter estimates. All facet to

Table 10. *Comparison of the Performance of the Hypothesized Three-Facet, Higher-Order Factor Model to both a Single-Factor and an Independent-Facet Model.*

Model	*d.f.*	*RMSEA*	*AIC*	*BIC*
Single-Factor Model	324	.14	905.29	777.38
Independent Facet Model	324	.12	773.80	645.89
Three-Facet, Higher-Order Factor Model	**321**	**.10**	**689.12**	**552.75**

Note. $N = 75$. $\alpha = .95$ for a scale combining item responses to trait cognitive, affective, and behavioral off-job reactivity items. The hypothesized model is in bold.

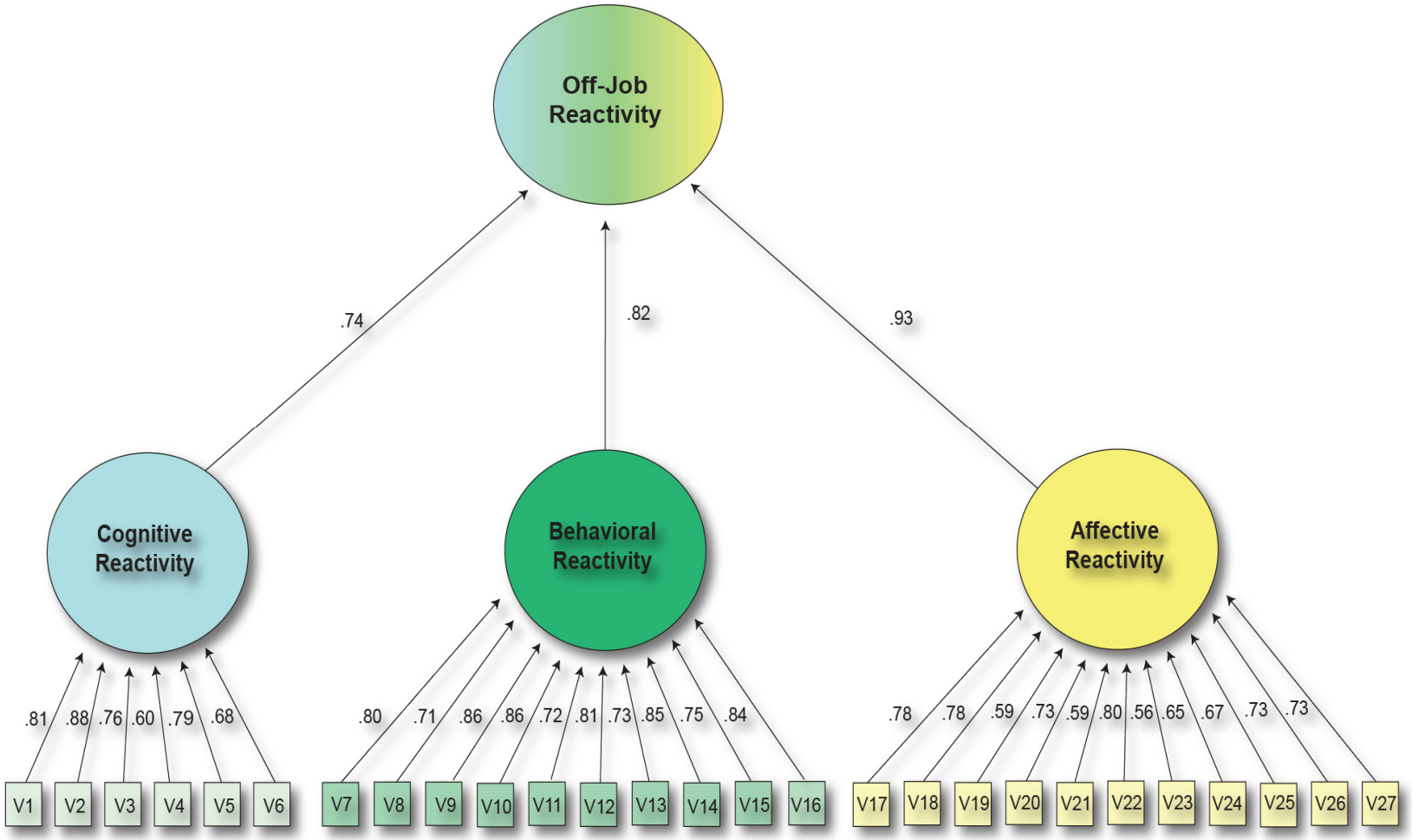

Figure 3. Obtained solution for a second-order confirmatory factor analytic model of a three-facet, higher-order factor model of off-job reactivity. For model identification purposes, one item to facet pathway was constrained to 1 for each lower-order facet, while the higher-order factor variance was constrained to 1, consistent with recommendations made by Byrne (2005).

higher order factor loadings were large and positive (all $\hat{\beta}$s > .74), while all items loaded on the facet they intended to measure with large, positive parameter estimates (all $\hat{\beta}$s > .56). In total, the results of these confirmatory factor analyses provide full support to Hypothesis 1. Based on this pattern of results, subsequent hypothesis tests at both the trait and state levels focus on the higher order off-job reactivity construct, computed as an aggregation of cognitive, affective, and behavioral facets of the construct.

4.2 The Off-Job Reactivity Predictor Space

For exploratory purposes, patterns of correlations linking all trait-level personality, work characteristic, and outcome variables with average reports of state off-job reactivity across the four day study are presented in Appendix B. To quantify daily stressor patterns over the course of the study, descriptive analyses and inter-relationships of trait-level variables to average daily stressor frequency estimates are presented in Appendix C. Statistical tests empirically investigating hypothesized and exploratory main effect relationships of state- and trait-level variables in the prediction of state off-job reactivity are presented in the following sections. Each anticipated relationship in the predictor space of the nomological network of off-job reactivity was investigated separately for the immediate and delayed post-work time points.

4.2.1 The Composition of State Off-Job Reactivity Criterion Variance.

Prior to conducting any conditional HLM analyses, unconditional models for the outcomes of immediate and delayed state off-job reactivity were run to examine the proportions of variance in these outcomes attributable to within- and between-participant sources. At the immediate post-work time point, 34.03% of the criterion variability was attributable to within-participant sources, while 65.97% of the criterion variance was attributable to between-participant sources. At the delayed post-work time point, 29.71% of the state off-job reactivity criterion variance was attributable to within-participant

sources, while 70.29% of the criterion variance was attributable to between-participant sources. The presence of intra-individual criterion variability in state off-job reactivity at both the immediate and delayed post-work time points indicates that HLM is an appropriate statistical technique for this data set.

4.2.2 Encountered Daily Stressors.

4.2.2.1 Daily Negative Interpersonal Interactions.

Hypothesis 2: Daily negative interpersonal interactions are predictive of state off-job reactivity.

In separate HLM analyses for the immediate and delayed post-work time points, daily negative interpersonal interaction frequency estimates were entered as a Level 1 predictor of state off-job reactivity. At the immediate post-work time point, daily negative interpersonal interaction frequency estimates were a statistically significant predictor of state off-job reactivity, *Coefficient* = 3.89, *SE* = 0.90, t (224) = 4.35, $p < .01$, $R_1^2 = .06$, with more instances of this category of daily stress predictive of elevated state off-job reactivity. Negative interpersonal interaction frequency accounted for 6% of the intra-individual variance in immediate state off-job reactivity, corresponding to a small effect size. Turning to the delayed post-work time point, although negative interpersonal interaction frequency estimates emerged as a statistically significant predictor of delayed state off-job reactivity, *Coefficient* = 1.99, *SE* = 0.87, t (225) = 2.30, $p < .05$, $R_1^2 = .00$, more instances of this type of stress failed to meet the specified threshold for a meaningful effect. Instead, negative interpersonal interaction frequency produced a negative variance accounted for estimate at the delayed post-work time point, interpreted as no variance in off-job reactivity accounted for by this category of daily stress. This pattern of results provides partial support for Hypothesis 2, with the caveat

that negative interpersonal interactions were only statistically supported as a predictor of off-job reactivity when arriving at home after work.

4.2.2.2 Daily Low Job Control Stressors.

Hypothesis 6: Low daily job control is associated with state off-job reactivity.

To investigate the role of daily instances of low job control in predicting state off-job reactivity, two separate HLM analyses were run to analyze the prediction of immediate and delayed post-work off-job reactivity from low job control frequency estimates. At both the immediate and delayed post-work time points, instances of low job control were not statistically supported as predictors of state off-job reactivity, *Coefficient* = .12, *SE* = .13, *t* (225) = .36, n.s., R_1^2 = .00 and *Coefficient* = .07, *SE* = 0.12, *t* (226) = .53, n.s., R_1^2 = .00 for the immediate and delayed time points, respectively. Estimates of daily low job control frequency did not account for any within-participant criterion variance in off-job reactivity at either time point. This pattern of results provides no support for Hypothesis 6, in that there was no evidence to demonstrate that more frequent instances of low job control were associated with variations in state off-job reactivity.

4.2.2.3 Encountered Situational Constraints.

Hypothesis 7: Encountered daily situational constraints are predictive of state off-job reactivity.

Separate HLM analyses were run at both the immediate and delayed post-work time points to test the prediction that more frequent encountered situational constraints are predictive of elevated state off-job reactivity. At the immediate post-work time point, situational constraints were statistically supported as a predictor of state off-job reactivity, *Coefficient* = 1.58, *SE* = .35, *t* (226) = 4.53, $p < .01$, R_1^2 = .07, with more encountered constraints predictive of higher reported reactivity. Situational constraint

frequency estimates accounted for 7% of the intra-individual variance in immediate state off-job reactivity. At the delayed post-work time point, situational constraints were once again statistically supported as a predictor of state off-job reactivity, *Coefficient* = 1.08, *SE* = .35, *t* (227) = 3.06, $p < .01$, $R_1^2 = .00$, but failed to meet the threshold for a meaningful effect size. In combination, the immediate and delayed time point results indicate partial support for Hypothesis 7, with more frequent situational constraints statistically supported as a predictor of state off-job reactivity when returning home from work.

4.2.2.4 The Relative Contribution of Individual Categories of Daily Stress.

Hypothesis 3: Daily negative interpersonal interactions account for more intra-individual variation in off-job reactivity than other sources of daily occupational stress.

As outlined in the preceding sections reporting the results of statistical tests linking daily stressor frequency estimates to state off-job reactivity, negative interpersonal interactions were not supported as the most off-job reactivity inducing source of daily stress. At the immediate post-work time point, daily negative interpersonal interactions independently accounted for 6% of the intra-individual variance in state off-job reactivity, while situational constraints and low daily job control independently accounted for 7% and 0% of the criterion variance, respectively. At the delayed time point, each category of daily stress did not account for any intra-individual criterion variance when entered independently. This pattern of results provides no support for Hypothesis 3, in that situational constraints account for more intra-individual variance in immediate off-job reactivity than negative interpersonal interactions and no individual category of daily stress makes a meaningful contribution to off-job reactivity at bedtime.

4.2.2.5 Summary of Daily Stressor Predictors of Off-Job Reactivity.

Statistical hypothesis tests targeted at analyzing the contribution of different categories of daily stress to state off-job reactivity provided mixed support for the main effect, daily stressor variables in the proposed predictor space of the construct. As hypothesized, daily negative interpersonal interaction and encountered situational constraint frequency were statistically supported as predictors of elevated state off-job reactivity when returning home from work. Effect size estimates linking these two categories of stress to immediate state off-job reactivity were small in magnitude, R_1^2 =.06 and R_1^2 = .07, respectively. When considering that 34.03% of the criterion variance in off-job reactivity at the immediate post-work time point was attributable to within-participant sources, it can be concluded that these two categories of stress play a relatively minor role in the experience of immediate state off-job reactivity. No statistical support was obtained linking negative interpersonal interaction or encountered situational constraint frequency to delayed state off-job reactivity. Daily low job control was not statistically supported as a predictor of either immediate or delayed state off-job reactivity. Regarding the relative contribution of each category of daily stress to state off-job reactivity, for the immediate post-work time point, the largest proportional reduction in variance was obtained linking situational constraint frequency to state off-job reactivity, while no individual category of daily stress met the threshold for a meaningful effect in predicting delayed state off-job reactivity.

4.2.3 Enduring Work and Personality Characteristic Predictors of State Off-Job Reactivity.

4.2.3.1 Perceived Abusive Supervision.

Hypothesis 4: Trait abusive supervision is predictive of higher state off-job reactivity. Hypothesis 5: Daily negative interpersonal interactions partially mediate the relationship between trait abusive supervision and state off-job reactivity.

To statistically explore the prediction that trait-level perceptions of abusive supervision would be predictive of elevated state off-job reactivity, perceived abusive supervision was entered as a cross-level predictor of state off-job reactivity in separate HLM analyses for the immediate and delayed post-work time points[2]. When considering immediate state off-job reactivity, perceived abusive supervision was a statistically significant cross-level predictor of this outcome, *Coefficient* = 1.09, *SE* = .29, t (72) = 3.76, $p < .01$, $R_2^2 = .17$, with higher abusive supervision associated with elevated state off-job reactivity. The same pattern of results was found at the delayed time point, with greater abusive supervision once again statistically supported as a predictor of higher state off-job reactivity, *Coefficient* = .98, *SE* =.28, t (71) = 3.45, $p < .01$, $R_2^2 = .15$. Abusive supervision accounted for 17% and 15% of the inter-individual variation in immediate and delayed state off-job reactivity, respectively, corresponding to medium size effects. This pattern of results provides full support to Hypothesis 4, in that abusive supervision was predictive of state off-job reactivity both immediately when returning home from work and at bedtime.

The hypothesized mediational role of daily negative interpersonal interactions in the trait abusive supervision – state off-job reactivity relationship was tested using MSEM (Preacher et al., 2010; Preacher, Zhang, & Zyphur, 2011). In this statistical technique, multilevel latent variable relationships are modeled in such a manner that Level 1 variables are partitioned into within- and between-participant variance

[2] The data of one participant were excluded from all statistical analyses involving abusive supervision due to a failure to complete several questions pertaining to the measurement of the construct.

components. This variance partitioning prevents the conflation of these theoretically orthogonal sources of latent construct variance, which would bias estimated slope values relevant to the testing of meditational relationships (Preacher et al., 2010). Although some researchers have suggested a more simplistic approach of unconflating within- and between-participant sources of variance through predictor variable centering (e.g., MacKinnon, 2008; Zhang, Zyphur, & Preacher, 2009), this strategy does not eliminate bias under conditions of low Level 2 sample size or small ICC(1) values (Preacher et al., 2011). By separately modeling within- and between-participant sources of criterion variance, the MSEM approach is superior to alternative HLM frameworks for testing multilevel mediated effects (e.g., Krull & MacKinnon, 2001; Zhang et al., 2009; see Preacher et al., 2011 for a comparison of MSEM and HLM approaches to multilevel mediation).

The hypothesized model was specified such that the relationship between abusive supervision (Level 2) and state off-job reactivity (Level 1) was partially mediated by daily negative interpersonal interaction frequency (Level 1), corresponding to a 2-1-1 model in the notation of Krull and MacKinnon (1999; 2001). As recommended by Preacher et al. (2010), an indirect effect coefficient was estimated from the between-participant component of the hypothesized model using MSEM. This coefficient reflects the indirect effect of the predictor variable (abusive supervision) on the between-participant portion of the criterion variable (state off-job reactivity) via the between-participant portion of the mediator (negative interpersonal interaction frequency). This coefficient is calculated by obtaining the product of the between-participant effect of the predictor variable on the mediator and the between-participant effect of the mediator on the criterion variable (Preacher et al., 2011). By only modeling the between-participant component of the mediated effect, the MSEM approach prevents the conflation of within-

and between-participant Level 1 construct variance, which would systematically bias the estimated mediated effect coefficient relative to its true score value (e.g., Preacher et al., 2010). Given that the predictor variable in the hypothesized meditational model contains only between-participant variance, there is no corresponding within-participant indirect effect to be modeled (see Preacher et al., 2011).

The statistical significance of the indirect effect coefficient was evaluated by computing an asymmetric 95% confidence interval (*C.I.*) for the indirect effect, using the distribution of the product method (MacKinnon, Lockwood, Hoffman, West, & Sheets, 2002). In this approach, the statistical significance of the mediated effect is evaluated by calculating an asymmetric *C.I.* for the distribution of the product (i.e., the indirect effect coefficient); with a *C.I.* which does not contain zero interpreted as a statistically significant mediated effect (MacKinnon et al., 2002). This approach has been shown in simulation studies to have a more accurate Type I error rate and higher statistical power than alternative approaches to testing mediated effects (MacKinnon et al., 2002; Tofighi & MacKinnon, 2011). In the current analysis, the upper and lower bounds of the 95% *C.I.* for the indirect effect were calculated using *RMediation* (Tofighi & MacKinnon, 2011).

MSEM analyses were run separately for the immediate and delayed post-work time points. For all MSEM analyses, the estimated indirect effect coefficient and a 95% *C.I.* for the indirect effect are reported. In addition, I also report the direct-effect multilevel coefficients linking the hypothesized predictor variable, mediator, and criterion variable in each MSEM analysis.

4.2.3.1.1 Mediational Analyses Predicting Immediate Off-Job Reactivity.

For the immediate post-work time point, the 95% *C.I.* of the indirect effect coefficient, testing mediation of the abusive supervision – state off-job reactivity

relationship by negative interpersonal interaction frequency, contained zero, *Coefficient* = .25, 95% *C.I.* = [-.17, .78]. Therefore, the anticipated mediated effect was not statistically significant for the immediate post-work time point. Examination of the direct-effect path coefficients in the MSEM model revealed that both the number of negative interpersonal interactions an employee encountered, *Coefficient* = 8.32, *SE* = 2.52, *t* = 3.30, *p* < .01, and perceptions of abusive supervision, *Coefficient* = .87, *SE* = .23, *t* = 3.73, *p* < .01, were statistically significant predictors of between-participant variance in immediate post-work off-job reactivity. However, no statistical support was obtained for a between-participant relationship between abusive supervision and daily negative interpersonal interaction frequency, *Coefficient* = .03, *SE* = .03, *t* = 1.17, n.s. Therefore, there was no evidence to suggest that the relationship between abusive supervision and immediate post-work off-job reactivity was partially mediated by daily negative interpersonal interaction frequency.

4.2.3.1.2 Mediational Analyses Predicting Delayed Off-Job Reactivity.

Consistent with the immediate post-work time point results, the 95% *C.I.* of the indirect effect coefficient, evaluating mediation of the abusive supervision – delayed state off-job reactivity relationship by negative interpersonal interaction frequency, contained zero, *Coefficient* = .27, 95% *C.I.* = [-.20, .81]. Therefore, the hypothesized delayed post-work mediated effect was not statistically significant. Once again, the between-participant relationships of daily negative interpersonal interaction frequency, *Coefficient* = 9.15, *SE* = 2.27, *t* = 1.14, *p* < .01, and abusive supervision, *Coefficient* = .73, *SE* = .26, *t* = 2.82, *p* < .01, to delayed post-work off-job reactivity were statistically supported, but no evidence was obtained to link abusive supervision to negative interpersonal interaction frequency at the between-participant level, *Coefficient* = .03, *SE* = .03, *t* = 1.14, n.s. In summary, there was no evidence obtained to indicate that the

relationship between abusive supervision and state off-job reactivity is partially mediated by negative interpersonal interaction frequency. Therefore, the results of these analyses provide no support for Hypothesis 5.

4.2.3.2 Trait NA.

Hypothesis 8: Trait NA is associated with elevated state off-job reactivity.

To investigate the cross-level prediction of state off-job reactivity from trait NA, reports of this personality trait were entered as a predictor of both immediate and delayed state off-job reactivity. Trait NA was statistically supported as a predictor of state off-job reactivity at both the immediate, *Coefficient* = 2.05, *SE* = .52, t (73) = 3.91, $p < .01$, $R_2^2 = .19$, and delayed-post work-time points, *Coefficient* = 1.81, *SE* = .51, t (72) = 3.53, $p < .01$, $R_2^2 = .15$. Trait NA accounted for 19% of the inter-individual variation in immediate state off-job reactivity and 15% of the inter-individual variation in delayed state off-job reactivity, corresponding to medium size effects. This pattern of results provides full support to Hypothesis 8, with trait NA supported as a statistically significant predictor of state off-job reactivity both immediately after work and at bedtime.

4.2.3.3 Trait PA.

Hypothesis 9: Trait PA is negatively associated with state off-job reactivity.

To test the hypothesis that trait PA is a cross-level predictor of diminished state off-job reactivity, two HLM analyses were conducted in which this trait-level variable was entered as a predictor of immediate and delayed state off-job reactivity. At the immediate post-work time point, trait PA was not statistically supported as a predictor of state off-job reactivity, *Coefficient* = -.51, *SE* = .44, t (73) = -1.17, n.s., $R_2^2 = .01$. Trait-level PA accounted for only 1% of the inter-individual variation in state off-job reactivity at this time point. Non-significant results were also obtained at the delayed post-work time point, with no supporting statistical evidence for a trait PA – state off-job reactivity

relationship, *Coefficient* = -.13, *SE* = .43, *t* (72) = -.32, n.s., R_2^2 = .00. Trait PA did not account for any inter-individual variance in delayed state off-job reactivity. This pattern of results provides no support for Hypothesis 9, in that trait PA was not a statistically significant predictor of either immediate or delayed post-work off-job reactivity.

4.2.3.4 Summary of Work and Personality Characteristic Predictors of Off-Job Reactivity.

Regarding trait level predictors of inter-individual variance in state off-job reactivity, both trait NA and abusive supervision were found to be predictive of greater levels of experienced reactivity. For both variables, medium size effect size estimates were obtained linking these trait-level predictors to state off-job reactivity both immediately after work and at bedtime, R_2^2 = .15 - .19 and R_2^2 = .15 - .17 for trait NA and abusive supervision, respectively . When considering that more criterion variance in off-job reactivity at both post-work time points was at the between-participants level (65.97% – 70.29%), it can be concluded that these trait-level variables make a substantial contribution to the experience of state off-job reactivity. There was no evidence obtained to support a mechanism through which daily negative interpersonal interactions partially mediate the relationship between abusive supervision and state off-job reactivity. In addition, no statistical support was obtained for the hypothesized stress buffering effects of greater levels of trait PA on experienced state off-job reactivity.

4.2.4 Cross-Level Personality Facet Predictors of Differential Stressor Exposure.

The roles of facets of extraversion and agreeableness in predicting negative interpersonal interaction exposures were evaluated in an exploratory manner using HLM. A binary variable indexing whether any negative interpersonal interactions had been encountered in a given day served as the criterion variable, while trait

assertiveness, modesty, and trust were entered simultaneously as Level 2 predictors of this outcome. The anticipated role of trait compliance in predicting negative interpersonal interaction exposure was not investigated due to the unsatisfactory psychometric properties of the measure of this personality facet. All Level 2 predictors were grand-mean centered to control for day-to-day variability in negative interpersonal interaction exposure.

Running of an unconditional model quantifying the criterion-variance composition of negative interpersonal interaction exposure revealed that 63.08% of the criterion variance in this outcome was at the within-participants level, while 36.92% of the criterion variance in this outcome was at the between-participants level. Entry of the facets of agreeableness and extraversion after the unconditional model revealed that trait modesty and trust were statistically supported as predictors of daily negative interpersonal interaction exposure, *Coefficient* = .02, *SE* = .01, *t* (71) = 2.37, $p < .05$ and *Coefficient* = -.02, *SE* = .01, *t* (71) = -2.49, $p < .05$, respectively. As predicted, trait trust was associated with decreased exposure to negative interpersonal interactions. However, contrary to expectations, greater modesty was associated with *increased* exposure to this category of stress. Trait assertiveness was not statistically supported as a predictor of negative interpersonal interaction exposure, *Coefficient* = .01, *SE* = .01, *t* (71) = 1.94, n.s. In total, this set of variables accounted for 18% of the inter-individual variance in negative interpersonal interaction exposure, $R_2^2 = .18$.

4.2.5 Moderation of the Daily Stressor – Off-Job Reactivity Relationship by Personality Facets.

A three-step HLM analysis (run for both the immediate and delayed post-work time points) was examined to investigate potential moderation of the relationships between off-job reactivity and specific categories of daily stress by personality facets.

After running an unconditional model for the state off-job reactivity outcome, daily stressor category frequency estimates with slopes were entered in the next step to test for the presence of inter-individual variation in the Level 1 regression slopes linking these estimates to off-job reactivity. In the third step, slope estimates from the preceding step were regressed on personality facets as a test of moderation of the daily stressor category frequency – off-job reactivity relationship by these trait-level variables. Predictor variables in these cross-level moderation analyses were not centered to avoid removing any variance attributable to between- or within-participant sources from these statistical tests. The results of these cross-level tests of moderation are presented in Table 11. Statistically significant interactions were graphed by plotting regression lines for participants 1 *S.D.* below the mean, between ± 1 *S.D.* from the mean, and 1 *S.D.* above the mean, in line with the approach recommended by Aiken and West (1991).

4.2.5.1 Statistical Tests of Moderation for the Immediate Post-Work Time Point.

Entry of negative interpersonal interaction frequency estimates with slopes statistically supported the presence of inter-individual variability in the regression slopes linking this variable to state off-job reactivity, *Coefficient* = 6.64, *SE* = 1.01, t (74) = 6.55, $p < .01$, $R_1^2 = .13$. Trait activity level, positive emotionality, and tender-mindedness were next simultaneously entered as predictors of this inter-individual slope variation. As expected, higher levels of trait tender-mindedness predicted steeper slopes linking negative interpersonal interaction frequency to state off-job reactivity, *Coefficient* = .40, *SE* = .13, t (71) = 2.97, $p < .01$. However, no statistical support was obtained for the activity level and positive emotionality facets of extraversion as moderators of the negative interpersonal interaction – immediate state off-job reactivity relationship, *Coefficient* = .13, *SE* = .10, t (71) = 1.31, n.s. and *Coefficient* = .07, *SE* = .13, t (71) =

Table 11. *Prediction of Slope Differences in Daily Stressor Frequency - Off-Job Reactivity Relationships as a Function of Personality Facets.*

		Immediate Off-Job Reactivity			Delayed Off-Job Reactivity		
Stressor Category	Personality Facet	*Estimate*	*SE*	*t*	*Estimate*	*SE*	*t*
Negative Interpersonal Interactions	Activity Level	.13	.10	1.31	.17	.14	1.17
Negative Interpersonal Interactions	Positive Emotionality	.07	.13	.55	.17	.15	1.15
Negative Interpersonal Interactions	Tender-Mindedness	.40	.13	2.97**	.56	.18	3.19**
Low Daily Job Control	Achievement-Striving	.02	.02	.90	.00	.02	-.02
Situational Constraints	Achievement-Striving	.17	.11	1.53	.20	.10	1.95

Note. $N = 75$. Trait activity level, positive emotionality, and tender-mindedness were entered simultaneously as predictors of slope differences in the relationships linking negative interpersonal interaction frequency to both immediate and delayed off-job reactivity in two separate analyses. Trait achievement striving was entered as a predictor of slope differences in the relationships linking both low daily job control and situational constraints to both immediate and delayed off-job reactivity in two separate analyses.
** $p < .01$.

0.55, n.s., respectively. In total, the entered facets of agreeableness and extraversion explained 29% of the inter-individual variance in the slopes linking negative interpersonal interaction frequency and state off-job reactivity, $R_2^2 = .29$.

Moderation of the negative interpersonal interaction frequency – immediate post-work state off-job reactivity relationship by trait tender-mindedness is displayed in Figure 4, with the intra-individual regression slope linking these constructs plotted for participants at low (1 *S.D.* below the mean), medium (between ± 1 *S.D.* from the mean), and high (1 *S.D.* above the mean) levels of tender-mindedness. As can be seen from this diagram, the effects of even a small number of daily negative interpersonal interactions on off-job reactivity were quite pronounced for high tender-mindedness individuals, in comparison to individuals reporting both medium and low levels of this facet. Participants reporting a moderate degree of tender-mindedness also had steeper slopes linking this category of daily stress to the immediate state off-job reactivity outcome than those reporting a low level of tender-mindedness. These results provide support for the proposed exacerbating influence of high trait tender-mindedness on the relationship between more frequent negative interpersonal interactions and elevated state off-job reactivity.

Two separate HLM analyses were next run to test whether trait achievement striving moderated the relationships of low daily job control or situational constraints with the immediate off-job reactivity outcome. Regarding low job control frequency, no statistical support was found for the presence of inter-individual variation in the Level 1 regression slopes linking low daily job control to state off-job reactivity, *Coefficient* = .17, *SE* = .14, t (73) = 1.23, n.s., $R_1^2 = .01$. Consistent with these results, trait achievement striving was not statistically supported as a moderator of the Level 1 regression slopes linking these constructs, *Coefficient* = .02, *SE* = .02, t (72) = 0.90, n.s., $R_2^2 = .00$.

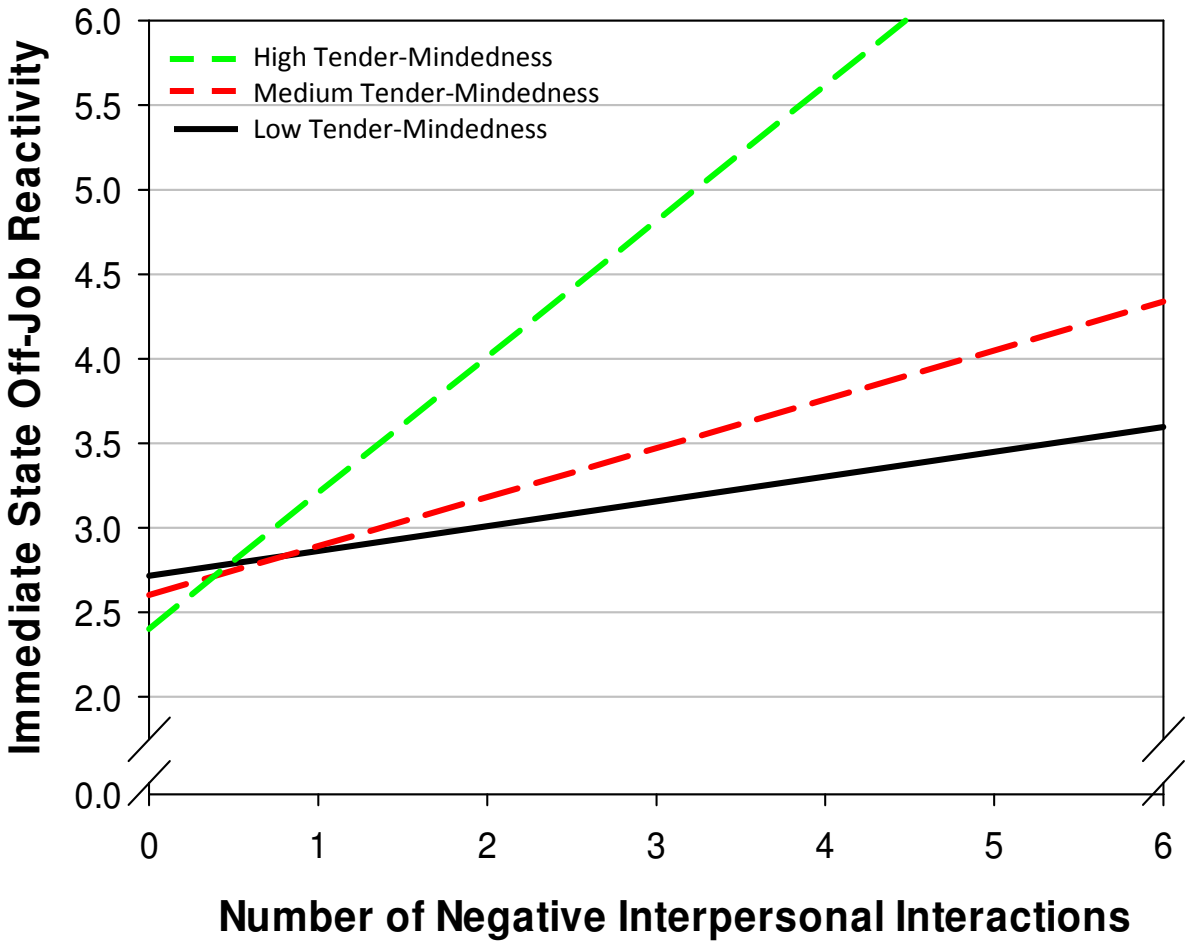

Figure 4. Moderation of the negative interpersonal interaction frequency – immediate post-work state off-job reactivity relationship by trait tender-mindedness. Separate lines indicate intra-individual regression slopes for participants 1 S.D. below the mean, between ± 1 S.D. from the mean, and 1 S.D. above the mean on trait tender-mindedness.

Regarding encountered situational constraints, statistical support was obtained for the presence of inter-individual variability in the regression slopes linking this category of stress to immediate state off-job reactivity, *Coefficient* = 2.26, *SE* = 0.46 , *t* (72) = 4.95, *p* < .01, R_1^2 = .14. However, achievement striving was not statistically supported as a predictor of this inter-individual variance in the next step, *Coefficient* = .17, *SE* = .11, *t* (71) = 1.53, n.s., R_2^2 = .00. In summary, no evidence was obtained to support the exploratory prediction that higher trait achievement striving would make individuals more prone to experience heightened immediate post-work off-job reactivity in response to low daily job control or situational constraint stressors.

4.2.5.2 Tests of Moderation for the Delayed Off-Job Reactivity Time Point.

A parallel set of analyses were conducted to analyze any differences in patterns of moderation between daily stressor frequency estimates and state off-job reactivity as a function of personality facets for the delayed off-job reactivity time point. The first set of HLM analyses focused on moderation of the daily negative interpersonal interaction – delayed state off-job reactivity relationship by trait activity level, positive emotionality, and tender-mindedness. Consistent with the immediate post-work time point results, the presence of inter-individual variability in the Level 1 regression slopes linking negative interpersonal interaction frequency and state off-job reactivity was statistically supported, *Coefficient* = 6.14, *SE* = 1.40, *t* (73) = 4.39, *p* < .01, R_1^2 = .16. In the next step, trait tender-mindedness was once again statistically supported as a moderator of the negative interpersonal interaction – state off-job reactivity relationship, *Coefficient* = .56, *SE* = .18, *t* (70) = 3.19, *p* < .01. No evidence was obtained suggesting moderation of this daily stressor – off-job reactivity relationship by trait activity level or positive emotionality, *Coefficient* = .17, *SE* = .14, *t* (70) = 1.17, n.s., and *Coefficient* = .17, *SE* = .15, *t* (70) = 1.15, n.s., respectively. Therefore, these results were concordant with the

interactional analyses conducted for the immediate post-work time point. The block of personality facets containing trait tender-mindedness, activity level, and positive emotionality accounted for 8% of the inter-individual variance in the Level 1 regression slopes linking negative interpersonal interactions to delayed off-job reactivity, $R_2^2 = .08$.

Moderation of the daily negative interpersonal interaction – delayed state off-job reactivity relationship by trait tender-mindedness is displayed in Figure 5. The interactional relationship obtained at the delayed post-work time point was identical to that seen for immediate off-job reactivity. Participants reporting high trait tender-mindedness reacted more strongly during off-job time to the experience of frequent negative interpersonal interactions than individuals reporting intermediate and low levels of this personality facet. Those who reported moderate levels of tender-mindedness also had steeper intra-individual regression slopes linking more frequent exposure to negative interpersonal interactions than those reporting low levels of the trait.

The next two sets of HLM analyses were run to separately test moderation of the relationships of low job control and situational constraint frequency to delayed state off-job reactivity by trait achievement striving. In terms of low job control, the presence of inter-individual variability linking this category of stress to state off-job reactivity was not supported, *Coefficient* = .09, *SE* = .12, t (72) = .76, n.s., $R_1^2 = .00$. In the next step, achievement striving was not supported as a moderator of the low job control – off-job reactivity relationship, *Coefficient* = .00, *SE* = .02, t (71) = -.02, n.s, $R_2^2 = .00$. In terms of situational constraints, statistical support was obtained for the presence of inter-individual variance in the Level 1 slopes linking situational constraint frequency to delayed off-job reactivity, *Coefficient* = 1.36, *SE* = .37, t (71) = 3.66, $p < .01$, $R_1^2 = .01$, but this effect size did not meet the threshold to be considered meaningful. Entry of trait achievement striving as a cross-level moderator of this relationship in the next step did

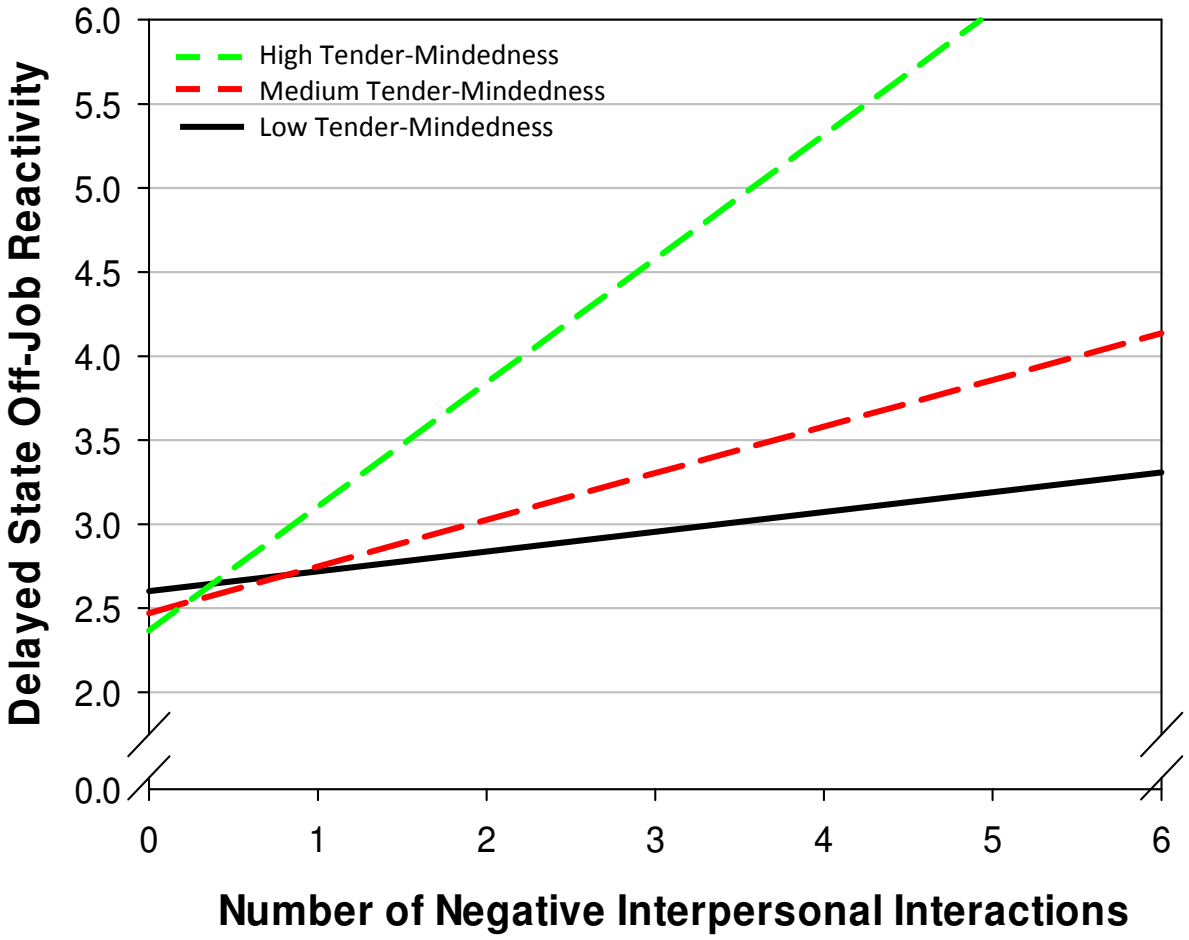

Figure 5. Moderation of the negative interpersonal interaction frequency – delayed post-work state off-job reactivity relationship by trait tender-mindedness. Separate lines indicate intra-individual regression slopes for participants 1 *S.D.* below the mean, between ± 1 S.D. from the mean, and 1 S.D. above the mean on trait tender-mindedness.

not yield statistically significant results, *Coefficient* = .20, *SE* = .10, *t* (70) = 1.95, n.s., R_2^2 = .07. No statistical support was attained for trait achievement striving as a moderator of the relationships between both low job control and situational constraints in predicting state off-job reactivity.

4.2.5.3 Summary of Personality Facets in the Specific Daily Stressor Exposure and Reactivity Processes.

The obtained results in these exploratory analyses yielded mixed support for the anticipated personality facet predictors of exposure and off-job reactivity to specific categories of stress. In terms of stressor exposure, trait trust was predictive of decreased exposure to negative interpersonal interactions, while trait modesty was associated with increased exposure to this category of stress. As it concerns off-job reactivity in response to specific categories of stress, exploratory analyses indicated that trait tender-mindedness exacerbated the relationship between more frequent negative interpersonal interactions and elevated state off-job reactivity at both the immediate and delayed post-work time points. No statistical support was found for the proposed mechanism through which higher trait activity level and positive emotionality reduced reactivity to negative interpersonal interactions. The anticipated role of trait achievement-striving in exacerbating the relationship of low job control and situational constraint frequency to state off-job reactivity was also not statistically supported.

4.3 Outcomes of Off-Job Reactivity

The following sections summarize the results of HLM analyses conducted to analyze hypothesized outcomes of state and trait off-job reactivity. First, I examine the influence of off-job reactivity on state subjective well-being, with results presented separately for ratings of subjective well-being provided immediately after work and at bedtime. In the subsequent two sections, I statistically explore the role of off-job

reactivity in predicting outcomes of daily work to non-work and non-work to work conflict. I statistically test the prediction of post-work recovery activity pursuit from state off-job reactivity when returning home from work in the following section. Finally, I evaluate reported daily somatic complaints as an outcome of trait and state off-job reactivity.

4.3.1 Statistical Control.

For both state-level somatic complaints and non-work to work conflict, repeated measures analyses of variance (ANOVAs) testing the cross-day stability of these variables yielded a statistically significant main effect of day of study recording on obtained values, F (3, 177) = 3.09, f = .23, p < .05 and F (3, 171) = 3.15, f = .23, p < .05, respectively. For somatic complaints, higher mean reported values were obtained on the first day of study recording in comparison to the subsequent three days, all ts > 2.12, d = .28 - .29, p < .05. For non-work to work conflict, obtained mean values were lower on the first day of study recording than on the third and fourth days of the daily survey period, t (67) = -2.48, d = -.31 p < .05 and t (65)= -2.54, d = -.32, p < .05, respectively. As these effects sizes approximate values conventionally interpreted as small to medium size effects (d = .20 - .50; f = .10 - .25; Cohen, 1988), day of study recording was statistically controlled for in subsequent analyses in which state somatic complaints or non-work to work conflict served as the criterion variable. To statistically determine whether state and trait off-job reactivity predict these outcomes beyond the effects of day of study recording, the improvement in fit of conditional models containing these two predictors over the conditional model containing only day of study recording was evaluated using a likelihood ratio difference test. The test statistic obtained from this test (difference of -2*log) approximately follows a χ^2 distribution with *d.f.* equal to the number of new parameters added to the model (Wilks, 1938). Evaluation of this test statistic allows for a determination of the degree to which the model with additional predictors

(state and trait off-job reactivity) fits the data better than the more general model (day of study recording) to a statistically significant degree. I report and evaluate the results of this intermediate statistical control step for analyses linking off-job reactivity to somatic complaints and non-work to work conflict.

4.3.2 State Subjective Well-Being.

Hypothesis 10: State and trait off-job reactivity are predictive of impaired subjective well being.

4.3.2.1 Immediate Post-Work Time Point.

Examination of an unconditional model indexing criterion variance in immediate post-work subjective well-being revealed that 35.91% of the variance in this outcome was attributable to within-individual sources, while 64.09% of the variance in this outcome was attributable to between-individual sources. Entry of estimates of off-job reactivity in the conditional model supported both immediate state off-job reactivity, *Coefficient* = -.31, *SE* = .02, t (224) = -17.76, $p < .01$, $R_1^2 = .59$, and trait off-job reactivity, *Coefficient* = -.22, *SE* = .04, t (73) = -5.55, $p < .01$, $R_2^2 = .24$, as predictors of diminished immediate post-work subjective well-being. The effect size estimate linking state off-job reactivity to state subjective well-being was large, while the relationship between trait off-job reactivity and this outcome was a medium size effect.

4.3.2.2 Delayed Post-Work Time Point.

An equivalent analysis was conducted to analyze the impact of state and trait off-job reactivity on delayed post-work subjective well-being. Running of the unconditional model revealed that 34.09% and 65.91% of the variance in this criterion variable was attributable to within- and between-individual sources of variation, respectively. Both state and trait off-job reactivity were statistically supported as predictors of impaired delayed subjective well-being in the conditional model, *Coefficient* = -.27, *SE* = .02, t

(225) = -12.10, $p < .01$, $R_1^2 = .41$ and *Coefficient* = -.21, *SE* = .04, *t* (72) = -5.42, $p < .01$, $R_2^2 = .27$, respectively. In line with the immediate post-work results, the effect size estimate linking state off-job reactivity to subjective well-being was large, while the effect size estimate linking trait off-job reactivity to this criterion variable was a medium size effect. In combination, the immediate and delayed time point analyses provide evidence for the roles of state and trait off-job reactivity in predicting diminished state subjective well-being, fully supporting Hypothesis 10.

4.3.3 Daily Work to Non-Work Conflict.

Hypothesis 11: State and trait off-job reactivity are predictive of elevated work — non-work conflict.

An HLM analysis was conducted to examine the degree to which state and trait off-job reactivity are predictive of elevated daily work to non-work conflict. In the first step, an unconditional model was run, which revealed that approximately 35.83% of the variance in work to non-work conflict was at the within-participant level of analysis, while 64.17% of the variance in this criterion variable was at the between-participant level of analysis. Running of the conditional model provided statistical support for off-job reactivity as a predictor of elevated work to non-work conflict, at both the state-level, *Coefficient* = .19, *SE* = .02, *t* (225) = 10.28, $p < .01$, $R_1^2 = .34$, and the trait-level, *Coefficient* = .17, *SE* = .03, *t* (72) = 6.08, $p < .01$, $R_2^2 = .33$. Effect size estimates linking state and trait off-job reactivity to daily work to non-work conflict were moderate in magnitude. As both state and trait off-job reactivity were supported as predictors of elevated work to non-work conflict, this pattern of results provides full support to Hypothesis 11.

4.3.4 Daily Non-Work to Work Conflict.

Hypothesis 12: State and trait off-job reactivity are predictive of greater non-work to work conflict.

To analyze whether state non-work to work conflict is associated with state and trait off-job reactivity, a nested HLM analysis was tested. In the first step, running of the unconditional model indicated that 59.24% of the variance in non-work to work conflict was at the within-participant level of analysis, while 40.76% of the variance in this outcome was at the between-participant level of analysis. Given obtained findings suggesting variation in non-work to work conflict across study days, day of study recording was entered as a statistical control variable in a conditional model prior to the entry of estimates of off-job reactivity. Day of study recording was a statistically significant predictor of non-work to work conflict, *Coefficient* = .34, *SE* = .10, *t* (225) = 3.25, $p < .01$, R_1^2 =.04, accounting for a small amount of intra-individual variance in this outcome. Entry of state and trait off-job reactivity estimates in the next step did not result in a statistically significant change, difference of -2*log = 0, *d.f.* = 2, n.s., with both state and trait off-job reactivity not statistically supported as predictors of elevated non-work to work conflict, *Coefficient* = .01, *SE* = .01, *t* (224) = 1.29, n.s., R_1^2 =.00 and *Coefficient* = .02, *SE* = .01, *t* (72) = 1.57, n.s., R_1^2 =.03, respectively. This pattern of results provides no support for Hypothesis 12, in that both state and trait off-job reactivity were not linked to non-work to work conflict.

4.3.5 Daily Off-Job Recovery Activity Pursuit.

Hypothesis 13: Off-job reactivity when returning home is predictive of diminished subsequent recovery activity pursuit.

To test the prediction that elevated post-work off-job reactivity is predictive of diminished subsequent recovery activity pursuit, an HLM analysis was conducted. The total amount of time participants engaged in recovery activities between their arrival at

home and bedtime served as the criterion variable in this analysis, while state off-job reactivity when returning home was entered as the predictor variable. Analysis of the unconditional model revealed that 38.09% of the variance in off-job recovery activity pursuit was accounted for by within-participant sources, while 61.91% of the variance in the criterion variable was attributable to between-participant sources. State off-job reactivity when returning home from work was statistically supported as a predictor of at-home recovery activity pursuit in the conditional model, *Coefficient* = -.64, *SE* = .30, *t* (225) = -2.14, $p < .05$, $R_1^2 = .05$. As hypothesized, higher levels of off-job reactivity when returning home from work were predictive of less time spent pursuing recovery activities in the post-work time period. However, it should be noted that the effect size estimate linking these variables was small in magnitude. Interestingly, an alternative exploratory model testing the prediction of off-job reactivity at bedtime from post-work recovery activity pursuit also achieved statistical significance, *Coefficient* = -.03, *SE* =.01, *t* (225) = -2.26, $p < .05$, $R_1^2 = .02$, supporting a small role for recovery activities in ameliorating off-job reactivity. In combination, these findings support the proposed mechanism through which post-work off-job reactivity impairs recovery activity pursuit, which would itself be a pathway to reduce off-job reactivity. These results provide full support for Hypothesis 13, with the caveat that the effect size estimates indexing these relationships are quite small in magnitude.

4.3.6 Daily Somatic Complaints.

Hypothesis 14: Trait off-job reactivity tendencies are predictive of somatic complaints.

A nested HLM analysis was run to investigate the contribution of state and trait-level perceptions of off-job reactivity to daily somatic complaints. A summation of the number of somatic complaints participants reported each day served as the Level 1 criterion variable in this analysis. Examination of the unconditional model revealed that

38.88% of the variance in daily somatic complaints was attributable to within-participant sources, while 61.12% of the criterion variance was accounted for by between-participant sources. Day of study recording was statistically supported as a predictor of daily somatic complaints in the first conditional model, *Coefficient* = -.21, *SE* = .07, *t* (225) = -3.04, $p < .01$, $R_1^2 = .04$, although the effect size estimate for this predictor was small in magnitude. Entry of state and trait off-job reactivity in the subsequent conditional model resulted in a statistically significant change, difference of -2*log = 41.02, *d.f.* = 2, $p < .01$. Both greater state, *Coefficient* = .04, *SE* = .01, *t* (224) = 6.73, $p < .01$, $R_1^2 = .17$, and trait off-job reactivity, *Coefficient* = .03, *SE* = .01, *t* (72) =3.54, $p < .01$, $R_2^2 = .13$, were associated with elevated daily somatic complaints after controlling for day of study recording. Effect size estimates linking state and trait off-job reactivity to daily somatic complaints were of a medium size. By supporting the linkage between trait off-job reactivity and daily somatic complaints, these results provide full support to Hypothesis 14, with additional obtained evidence to indicate that state off-job reactivity also influences this day-level outcome.

4.3.7 Summary of the Off-Job Reactivity Criterion Space.

The obtained data in this study largely support the hypothesized criterion space of the off-job reactivity construct. As predicted, higher levels of both state and trait off-job reactivity were predictive of diminished subjective well being, both immediately when returning home from work and at bedtime, $R_1^2 = .41$ - .59 and $R_2^2 = .24$ - .27. Daily work to non-work conflict was supported as an outcome of off-job reactivity, when considering both state level fluctuations and enduring trait-level perceptions, $R_1^2 = .34$ and $R_2^2 = .33$. Daily somatic complaints were supported as an outcome of both state and trait off-job reactivity, $R_1^2 = .17$ and $R_2^2 = .13$. The mechanism through which heightened off-job reactivity after work is associated with decreased subsequent recovery activity pursuit

was supported, R_1^2 = .05, with additional statistical support for the efficacy of recovery activity pursuit in diminishing state off-job reactivity, R_1^2 = .02. No statistical support was found to link the experience of elevated state or trait off-job reactivity to reported non-work to work conflict.

CHAPTER 5

DISCUSSION

The pattern of results obtained in this dissertation study were largely concordant with the proposed hypotheses, accomplishing the goals of mapping the dimensionality, predictor space, and criterion space of the off-job reactivity construct. As regards the dimensionality of the construct, confirmatory factor and nested model comparison analyses were consistent with the proposed three-facet, higher order factor model of off-job reactivity. A model in which cognitive, affective, and behavioral indicators of spillover represented correlated facets of an overarching off-job reactivity construct provided acceptable fit to the data and was demonstrated to be superior to both a single factor model and a model in which these facets represent independent constructs. This pattern of findings undermines the approach often taken by past researchers of only investigating a single component of the off-job reactivity construct, such as psychological detachment (Sonnentag, 2012), the relationship between mood at work and at home (Judge & Ilies, 2004), or post-work behavior alteration in response to job stress (Wang et al., 2011). The findings accrued from this research study support the superiority of multidimensional studies of off-job reactivity to investigations of single facets of the construct.

When considering the predictor space of the construct, linkages hypothesized to account for intra- individual variance in the experience of reactivity to work stress during off-job time received mixed statistical support. Daily negative interpersonal interaction and situational constraint frequency were small but meaningful predictors of within-individual variability in state off-job reactivity when returning home from work, $R_1^2 = .06$

and R_1^2 = .07. Situational constraint frequency accounted for the greatest percentage of within-individual variance in state off-job reactivity of the included categories of daily stress. No statistical support was obtained for low job control as a predictor of intra-individual variance in state off-job reactivity.

Statistical support was largely obtained for the role of proposed personality and work characteristics in predicting inter-individual variance in state off-job reactivity. Although evidence was not obtained to link trait PA to state off-job reactivity, both trait NA, R_2^2 = .15 - .19, and abusive supervision, R_2^2 = .15 - .17, were supported as main effect predictors of elevated immediate and delayed state off-job reactivity. Effect size estimates linking each of these trait-level predictor variables to state off-job reactivity were of a medium strength. However, no support was found for a cross-level mediation effect in which the relationship between trait abusive supervision and immediate post-work off-job reactivity was partially mediated by daily negative interpersonal interaction frequency.

Less consistent support was obtained for exploratory predictions in which specific personality facets were proposed to moderate the relationships of categories of daily stress to state off-job reactivity. Regarding differential exposure to specific categories of daily stress, trait trust was associated with decreased exposure to negative interpersonal interactions, while trait modesty was predictive of increased exposure to this category of daily stress. In total, the included facets of agreeableness and extraversion accounted for a moderate amount of variance in negative interpersonal interaction exposure, R_2^2 = .18. Exploratory analyses of the alteration of state off-job reactivity in response to specific categories of daily stress by personality facets only found statistical support for the tender-mindedness facet of agreeableness in predicting inter-individual slope variance. More tender-minded individuals responded with greater off-job reactivity to

instances of interpersonal conflict, an effect which was observed at both the immediate and delayed post-work time points. Facets of agreeableness and extraversion accounted for a moderate amount of inter-individual variance in the regression slopes linking negative interpersonal interaction frequency and state off-job reactivity immediately after work, R_2^2 = .29, and a small amount of this variance at bedtime, R_2^2 = .08.

Empirical validation of the hypothesized criterion space of the off-job reactivity construct yielded support for the proposed outcomes predicted by both trait and state off-job reactivity. State off-job reactivity predicted diminished perceptions of subjective well-being, R_1^2 = .41 - .59, while trait off-job reactivity predicted general tendencies to experience impaired well-being, R_2^2 = .24 - .27. Similar results were obtained for daily reports of experienced work to non-work conflict, in that a greater interference of the work life on the non-work domain was found with greater levels of both state and trait off-job reactivity, R_1^2 = .34 and R_2^2 = .33. For both subjective well-being and work to non-work conflict, effect size estimates linking indicators of off-job reactivity to these outcomes were medium to large. No statistical support was found for the hypothesized relationship of state and trait off-job reactivity to non-work to work conflict. While the anticipated relationship between off-job reactivity and elevated somatic complaints was only expected to be observed at the trait level, both state and trait reports of off-job reactivity were predictive of elevated daily somatic complaints, R_1^2 = .17 and R_2^2 = .13. Finally, support was found for the proposed mechanism through which heightened off-job reactivity when returning home from work reduces subsequent recovery activity pursuit, R_1^2 = .05, despite that these activities ameliorate feelings of off-job reactivity, R_1^2 = .02.

5.1 The Multidimensional Nature of Off-Job Reactivity

Despite well-specified attempts by theorists to provide comprehensive, multidimensional organizing frameworks for the study of work – non-work linking mechanisms (Ashforth, Kreiner, & Fugate, 2000; Bakker, Westman, & van Emmerik, 2009; Clark, 2000; Edwards & Rothbard, 2000; Greenhaus & Beutell, 1985; Greenhaus & Powell, 2006), empirical researchers investigating off-job reactivity to work have generally narrowed their focus to limited manifestations of off-job reactivity. Extant empirical investigations of off-job reactivity can roughly be divided into studies examining work – family conflict and/or facilitation (Greenhaus & Powell, 1985; Greenhaus & Powell, 2006), at-work to post-work mood correspondence (e.g., Judge & Ilies, 2004), off-job recovery processes (Zijlstra & Sonnentag, 2006), or the effects of at-work events on post-work mood states and behaviors (e.g.,Gross et al., 2011; Ilies et al., 2007b). Although there has been some recent consideration given to the potential overlap of affective and behavioral sources of spillover (Hecht & Boies, 2009), the tendency remains to study components of the off-job reactivity process independently.

The results of this study demonstrate the value of expanding to a more integrated view of the off-job reactivity construct. In contrast to the most common approaches of assuming cognitive, affective, and behavioral forms of spillover to represent completely distinct or modestly correlated variables, the confirmatory factor analysis results presented in this study validate the integration of these facets under an overarching off-job reactivity construct. The model empirically validated in this dissertation reflects a substantially more general work to non-work linking mechanism than has typically been investigated under the heading of spillover, which should maximize the correspondence of this trait to other broader outcomes relevant to work and non-work life (Wittmann, 1988). However, arguments in favor of this general model should not be interpreted as a rejection of the value of studying individual facets of off-job reactivity. Given that a three-

facet, higher order off-job reactivity model evidenced superior fit over a single factor model, explorations of the predictive power of individual facets of off-job reactivity in relation to different work and non-work outcomes also have the potential to be informative. The development of this integrative model of off-job reactivity is arguably the most important theoretical contribution of this dissertation.

In addition to providing a theoretical model which allows researchers to study both general and more focused aspects of off-job reactivity, the multidimensional construct developed and validated in this dissertation provides a novel, alternative model through which to examine work – non-work relationships. While the development of work – family conflict theory (Greenhaus & Beutell, 1985) represented a major catalyst in the advancement of knowledge regarding cross-domain processes, an over-reliance on this theoretical model becomes apparent when examining the work – non-work relationship literature today. New theoretical perspectives such as boundary theory (Ashforth et al., 2000) and spillover/crossover theory (Bakker et al., 2009) are beginning to gain traction in the field, but the prediction of work – family conflict and associated outcomes remains the most common foci of work – non-work relationship studies (see, for examples, recent meta-analytic reviews by Amstad et al., 2011 and Michel, Kotrba, Mitchelson, Clark, & Baltes, 2011). Just as it has been argued that the Five Factor model has severely narrowed the focus of research in personality (Paunonen & Jackson, 2000), the popularity of work – family conflict theory has resulted in a strong bias to the study of behavioral indicators of off-job reactivity in work – non-work relationship studies. While not a replacement for work – family conflict theory, the model presented and developed in this dissertation will allow future researchers to sufficiently broaden the scope of investigations into linkages between work and non-work life by emphasizing cognitive, affective, and behavioral manifestations of work to non-work spillover.

5.2 The Role of Daily Stress in the Off-Job Reactivity Process

The obtained results linking specific categories of daily stress to experienced state off-job reactivity demonstrate the benefits of adapting the daily stressor paradigm to the study of work – non-work spillover processes. Consistent with results found in studies of daily stress across multiple domains of life (e.g., Brissette & Cohen, 2002; Costanzo, Stawski, Ryff, Coe, & Almeida, 2012; Turk Charles, Piazza, Luong, & Almeida, 2009), experienced daily interpersonal conflict was predictive of elevated immediate post-work off-job reactivity, $R_1^2 = .06$. However, in contrast to observations made by past researchers (Bolger et al., 1989), this category of daily stress was not found to be the most reactivity-inducing stressor category in this study at a within-day level. Despite this pattern of results, it could be argued that negative interpersonal interactions exerted the broadest influence on work and non-work life of the daily stressors included in this study. When considering trait-level relationships to average daily stressor frequency estimates (see Appendix C), more negative interpersonal conflicts were predictive of a broad range of maladaptive outcomes, including off-job reactivity, perceived job stress and work to non-work conflict, and experienced somatic complaints, $r = .30$ - $.34$. These trait-level relationships were observed despite that negative interpersonal conflicts were reported with the lowest frequency of the included categories of daily stress. While the effects of negative interpersonal interactions on state off-job reactivity were not as pronounced as anticipated in this study, there was evidence to support the claim that this source of daily stress is positively associated with a broad constellation of maladaptive, trait-level outcomes.

Only a few investigators to date have included measures of situational constraints at the daily-level when predicting off-job time outcomes (Binnewies & Wörnlein, 2011; Sonnentag & Jelden, 2006; Sonnentag & Zijlstra, 2006), but obtained

evidence in the current study supports this category of daily stress as a predictor of state off-job reactivity. More frequently encountered situational constraints were predictive of elevated immediate post-work state off-job reactivity, R_1^2 = .07. Although only accounting for 7% of the intra-individual criterion variance, constraint frequency did individually account for the most variability in immediate post-work state off-job reactivity. However, even though situational constraints exerted the strongest relationship to off-job reactivity of any daily stressors in this study, it is important to keep in mind that nurses may be more sensitive to situational constraints than some other occupational groups, given the potential dire consequences which could result from equipment failures, poor working conditions, or other common situational constraints in this occupational group. Replication of these findings in other occupational groups will be necessary to explore the possibility that situational constraints are a more relevant predictor of state off-job reactivity than other categories of daily stress.

5.3 Enduring Characteristics Predictive of State Off-Job Reactivity

Theorists and empirical researchers have long recognized that tendencies to experience more frequent negative emotions are associated with elevated reactivity to stress. Dating back to Eysenck's (1967) assertion that more neurotic individuals have more reactive autonomic nervous systems, several decades of research have supported relationships linking both trait neuroticism and NA to greater reactivity to stress. This exacerbating effect has been supported in relation to numerous stress-related outcomes, including reactivity to work demands (Parkes, 1990), cardiovascular responses to stress (Jonassaint et al., 2009), daily NA (Mroczek & Almeida, 2004), and stress responses to laboratory tasks (see Chida & Hamer, 2008 for a review). The current investigation contributes to this line of research by providing evidence that NA is a cross-level predictor of elevated state off-job reactivity to work stress, R_2^2 = .15 - .19. Future

research should be targeted at examining the degree to which higher levels of trait NA differentially predict reactivity to specific categories of daily work stress, or whether the effects observed in this study represent a broad stress-exacerbating tendency in response to any form of experienced daily stress.

The results obtained in this study also support lines of evidence linking perceived abusive supervision to maladaptive outcomes (see Tepper, 2007 for a review). The majority of past investigations have been focused on workplace-related outcomes of heightened perceptions of abusive supervisory behaviors, such as diminished performance of organizational citizenship behaviors (Xu, Huang, Lam, & Miao, 2012), supervisor-directed employee deviance (Liu, Ho, Wu, & Wu, 2010), and turnover intentions (Tepper et al., 2009). While several studies of abusive supervision in relation to state-level, off-job outcomes have recently been published (e.g., Restubog et al., 2011), there is little knowledge at this time about the impact of abusive supervision on work to non-work spillover processes. In the current study, abusive supervision perceptions were shown to predict elevated state off-job reactivity immediately after work and at-bedtime, R_2^2 = .13 - .17. This pattern of results makes a contribution to the abusive supervision literature by advancing understanding of the relationship of this construct to a previously unexplored off-job time outcome.

5.4 Cross-Level Moderation of the Relationships between Specific Daily Stressors and Off-Job Reactivity

Past studies of exposure and reactivity to daily negative interpersonal stressors have primarily focused on the superordinate trait of neuroticism (e.g., Gunthert, Cohen, & Armeli, 1999). The results of this study provided evidence for facets of agreeableness in predicting exposure and reactivity to daily negative interpersonal interactions. Consistent with research suggesting that aspects of agreeableness are associated with

social interaction quality (e.g., Jensen-Campbell et al., 2003); individuals reporting higher trait trust were exposed to fewer negative interpersonal interactions. However, contrary to expectations and typical findings in studies of agreeableness and interpersonal outcomes (see Sedikides, Gregg, & Hart, 2007 for a review), trait modesty was associated with *increased* exposure to negative interpersonal interactions in this study. Given the inconsistency of the findings obtained in this study with past research linking modesty to interaction quality, it is possible that modesty may be detrimental in the nursing profession to some degree, as nurses sometimes are called upon to deal with patients who can be verbally or even physically abusive (Uzun, 2003; Whyte, 2002). As no research has been conducted to assess this prediction yet, this potential explanation remains purely speculative at this time. Finally, regarding reactivity to daily negative interpersonal stressors, more tender-minded individuals experienced greater state off-job reactivity when faced with more frequent negative interpersonal interactions. Therefore, while agreeableness at a superordinate level has been found to be associated with adaptive coping strategies when faced with interpersonal conflict (Wood & Bell, 2008), the results of this study indicate that the tender-mindedness facet of the trait is associated with elevated off-job reactivity to interpersonal conflicts which have occurred.

5.5 Outcomes of State and Trait Off-Job Reactivity

The findings of this study draw attention to the practical relevance of the study of off-job reactivity to the psychological, occupational health, and medical communities. Elevated levels of off-job reactivity, when considering state-level fluctuations and enduring trait tendencies, were predictive of both diminished subjective well-being, R_1^2 = .41 - .59 and R_2^2 = .24 - .27, and elevated perceptions of work to non-work conflict, R_1^2 = .34 and R_2^2 = .33. For both of these outcome variables, state and trait off-job reactivity

respectively accounted for a moderate to large amount of estimated intra- and inter-individual criterion variance. Regarding subjective well-being, the substantial impact of experienced state and trait off-job reactivity on this outcome variable takes on even greater practical significance when considering the multitude of positive outcomes elevated subjective well-being can have on various domains of life (see Judge & Klinger, 2008; Lyubomirsky et al., 2005). Conversely, meta-analytic evidence has been obtained to indicate that elevated work to non-work conflict can have a substantial detrimental impact on valued outcomes in both work and non-work life (Amstad et al., 2011). By assessing off-job reactivity to work in their employees, employers may be able to identify individuals at a higher risk for feelings of low well-being and high cross-domain interference before these processes spiral further into increasingly maladaptive, associated outcomes, such as poor physical and mental health (Carlson et al., 2011b; van Steenbergen & Ellemers, 2009), job burnout (Singh, Suar, & Leiter, 2012), and/or turnover intentions (Spector et al., 2007). If future researchers can extend recent efforts to develop off-job time recovery training interventions (Hahn, Binnewies, Sonnentag, & Mojza, 2011) to encompass specific strategies to reduce off-job reactivity to work, these assessments could be diagnostic of employees who may be in need of a reactivity-reducing intervention before these more extreme maladaptive individual and organizational outcomes occur.

Theoretical models postulating a link between stress and health have typically received support in the empirical literature (see Rice, 2012 for a review). When considering health-related outcomes during off-job time, the phenomenological participant perspective has often been ignored in favor of physiological responses, such as blood pressure and heart rate (e.g., Goldstein, Jamner, & Shapiro, 1992). Despite past research linking indicators of off-job reactivity to daily health complaints (e.g.,

Repetti, 1993), few studies have been targeted at linkages between subjective health and spillover from work to non-work time. Perhaps due to this under-emphasis on subjective health in studies of daily stress, there is little knowledge regarding the temporal time course and threshold at which stress-reactivity processes begin to influence day-to-day fluctuations in health perceptions. In the current study, it was hypothesized that typical off-job reactivity tendencies would be associated with daily fluctuations in reported somatic complaints. Although this prediction was supported by the data, R_2^2 = .17, state off-job reactivity was also predictive of elevated daily somatic complaints, R_1^2 = .13, indicating that it is not necessary for off-job reactivity to reach a more chronic threshold before it begins to influence subjective health perceptions. When viewing these results in tandem, it can be concluded that both state and trait manifestations of off-job reactivity have an impact on subjective perceptions of daily health, a finding which undermines tendencies by occupational health researchers to primarily focus on trait-level predictors of daily health outcomes, such as job strain (see Rau, 2001).

Empirically validated process models linking work and non-work life have become increasingly sophisticated in the last decade, with researchers investigating complex issues such as the crossover of work stress from one spousal partner to another (Song, Foo, & Uy, 2008), linkages between off-job recovery and at-work engagement (Sonnentag et al., in press), and the effects of recovery experiences on next-day affect (Sonnentag et al., 2008). This study contributes to this advancing sophistication in the study of work – non-work relationships by examining within-day temporal relationships between off-job reactivity and recovery activity pursuit. Although not an explicit assumption made by recovery researchers, the order of predictor variable entry and included criterion variables in past research have focused on how recovery

activities ameliorate off-job reactivity (e.g., Hahn et al., 2011). This study is the first to reverse the temporal relationship to examine the effects of off-job reactivity on recovery activity pursuit. The results of this study supported a model in which heightened off-job reactivity when returning home from work diminished subsequent recovery activity pursuit, $R_1^2 = .05$, which in turn is a mechanism to ameliorate off-job reactivity, $R_1^2 = .02$. However, due to the very small effect size estimates linking reactivity and recovery obtained in this study, investigations of these processes in future studies will likely require large sample sizes and many repeated measurement time points. In light of the magnitude of these effect sizes and the potentially cost-intensive research designs needed to detect these effects, future investigations of the time-lagged relationship of off-job reactivity to subsequent recovery activity pursuit are unlikely to make a substantial contribution to the work – non-work relationship literature.

5.6 Interpreting Obtained Effects within the Broader Context of Stress and Off-Job Reactivity

While a major contribution of this study has been to investigate categories of daily stress within the occupational domain, it is important to consider the implications of the results of this study within the broader context of general life stress. More specifically, one issue to consider in providing substantive interpretation to obtained effect size estimates in this study is the degree to which the included categories of stress make a salient contribution to stress reactivity in comparison to other sources of stress. Several relevant lines of evidence obtained from the National Study of Daily Experiences, in which 1,483 adults were interviewed regarding exposure and reactivity to different categories of stress across eight consecutive days (see Almeida, 2005), are illustrative of the relative contribution of the stressors included in this study to stress reactivity. Investigations into the prevalence of daily stressors in this nationally-

representative sample have shown that interpersonal and work stressors, the primary daily stressors assessed in this study, are the most frequently occurring categories of stress (Almeida, Wethington, & Kessler, 2002; Stawski, Almeida, Lachman, Tun, & Rosnick, 2010), with reported ranges of daily exposure ranging from as low as 8% of days to as high as 50% of days in different participants and populations. In addition, participants typically report that daily stressors have a substantially greater impact on their daily lives than more global aspects of stress (Almeida et al., 2002). In the current study, within-domain base rates of occupational stressor exposure ranged from 33% for negative interpersonal interactions to 84% for low job control stressors. While effect size estimates linking daily stressors to off-job reactivity were smaller than anticipated, in a broader sense, the types of stressors evaluated in this study have been supported as the most proximal, frequently occurring sources of daily stress in the broader population (Almeida, 2005).

In light of the relative salience of interpersonal and work-related sources of stress to strain-related outcomes, it is useful to consider which statistically supported predictors and outcomes of off-job reactivity represent the best targets for future research in light of the results of this study. When considering the predictor space of the construct, in contrast to the increasingly popular approach of modeling intra-individual variability in stress-related responses (e.g., Almeida, Piazza, & Stawski, 2009), inter-individual variance and trait-level predictors were more pronounced contributors to the off-job reactivity process. Effect size estimates linking both trait NA and abusive supervision to state off-job reactivity were of a medium magnitude, and took on greater significance when considering that a greater proportion of off-job reactivity criterion-variance was at the inter-individual level. It seems wise at this time to expand the predictor space of off-

job reactivity to investigate other trait-level correlates of the construct, particularly when considering potential stress-exacerbating traits.

While effect size estimates linking negative interpersonal interactions and situational constraints to off-job reactivity were relatively small in size, these daily stressors did both contribute to immediate post-work levels of reactivity. Therefore, the encounter of these types of daily stressors during the workday may set the stage for post-work interactions characterized by manifestations of spillover and crossover of daily stress to other family members (see Bakker et al., 2009). It would be a useful endeavor in future research to make comparisons between at-home interpersonal processes on days in which specific types of daily stress did or did not occur. Such studies could be conducted in tandem with explorations of the potential time course of the dissipation of reactivity to specific stressors across the post-work period, which may illuminate the differential patterns of statistical significance observed at the immediate and delayed post-work time points in this study.

The strongest support in this study was obtained for the associations between heightened off-job reactivity and the outcomes of diminished subjective well-being and work to non-work conflict. Given the moderate to large effect size estimates linking both state and trait off-job reactivity to these criterion variables, it may be time to move beyond demonstrations of these associations to process models explicating the psychological mechanisms through which the experience of greater reactivity comes to reduce perceptions of well being and contribute to interference between work and non-work roles. In line with other process models of job stress, it may be useful to examine the contribution of differential job demands to the exacerbation of these relationships or the diminishment of these effects through various job resources (e.g., Demerouti, 2012). Although associated with off-job reactivity to a lesser degree, daily somatic complaint

fluctuations were observed in relation to both state and trait perceptions of reactivity. Therefore, it may be worthwhile to investigate the relative contribution of off-job reactivity perceptions to experienced somatic complaints, and ideally, whether the experience of off-job reactivity translates into actual documented physical and mental health problems over time. Finally, very small effect sizes were observed linking within-day reactivity and recovery processes in this study. The small magnitude of this effect seriously calls into question the value of conducting future direct investigations of the within-day temporal relationship of the off-job reactivity – recovery relationship, particularly in light of the very large samples and many repeated observations which would be necessary to reliably demonstrate these effects.

5.7 Limitations

While this dissertation has made numerous theoretical and practical contributions to understanding the dimensionality, predictor space, and criterion space of the off-job reactivity construct, there are several limitations of this research which must be kept in mind when interpreting the results. First, the statistical power to detect the smallest set of hypothesized effects in this study ($1 - \beta = .67$ - $.73$) was below conventionally desired standards ($1 - \beta = .80$; Cohen, 1988). Second, several measures included for exploratory purposes in this study had unsatisfactory psychometric properties. Third, the theoretical model tested in this study was empirically validated in a single, volunteer sample of registered nurses. Fourth, all measures collected in this study were self-report in nature, introducing the potential for common-method bias (Podsakoff, MacKenzie, Lee, & Podsakoff, 2003). The potential effects of each of these limitations on the obtained results will be considered in the following paragraphs.

Regarding the size of the sample, while the number of participants recruited for this study is in line with that seen in published daily diary studies (Fritz & Sonnentag,

2005; Gross et al., 2011; Ilies et al., 2011; Judge et al., 2006), statistical power should always be considered when making inferences from statistical results, in light of the heightened potential for Type II errors with lower levels of power (Cohen, Cohen, West, & Aiken, 2003). In the current study, the statistical power to detect the hypothesized relationships of off-job reactivity to daily low job control ($1 - \beta = .73$), daily situational constraints ($1 - \beta = .73$), trait abusive supervision ($1 - \beta = .73$), trait PA ($1 - \beta = .67$), and recovery activity pursuits ($1 - \beta = .67$) fell below typical criteria for desirable statistical power ($1 - \beta = .80$; Cohen, 1988). Despite this statistical power limitation, which would make effects less likely to be detected as statistically significant, daily situational constraints, abusive supervision, and recovery activity pursuits were all statistically linked to experienced off-job reactivity. However, in the case of the non-supported relations of daily low job control and trait PA to off-job reactivity, the lack of statistical power to detect these effects impedes the determination of any substantive conclusions regarding the nature of the relationships of these variables. In both cases, the potential for Type II error is too high to assert that no relationship exists. Therefore, no conclusions can be drawn from this study about the degree to which daily job control and trait PA are unrelated to the experience of off-job reactivity. Direct or conceptual replications exploring the relations of daily job control and trait PA to state off-job reactivity with larger samples will be needed to assess whether these variables do or do not contribute to the prediction of off-job reactivity.

While all measures of variables involved in specific hypotheses exceeded the minimum thresholds for scale internal consistency and homogeneity, several scales included for exploratory purposes demonstrated unsatisfactory psychometric properties. Specifically, measures of trait compliance, positive spillover from work, segmentation, and compensation failed to meet the specified minimum thresholds for internal

consistency and/or scale homogeneity. Based on these psychometric issues, a decision was made not to include these scales in any subsequent exploratory analyses. Although the measures used to assess these constructs have been psychometrically validated in past research (Goldberg et al., 2006; Sumer & Knight, 2001), the unsatisfactory psychometric properties of these scales in this study emphasizes the need for more validation work on these measures. When considering Five Factor model personality facets, researchers have generally observed lower coefficient α estimates for facet subscales in comparison to superordinate trait scales (e.g., Costa & McCrae, 1992; Goldberg et al., 2006). As coefficient α estimates are influenced by the dimensionality of the underlying construct (Yang & Green, 2011), it is a psychometric paradox that these facets, which are by definition more narrow than superordinate traits, would demonstrate lower internal consistency estimates (when considering that facets and traits are typically measured with the same number of items). As values of coefficient α constrain the maximum possible effect size attainable when using a measure (Reinhardt, 1996), these lower levels of internal consistency are limiting the statistical power to detect statistically significant effects in measures using personality facets (Henson, 2001). As it regards the measures of positive spillover from work, segmentation, and compensation, the low scale homogeneity estimates for each of these scales indicates the potential presence of subscales within these measures (Cooksey & Soutar, 2006). Given that positive aspects of spillover and experiences of segmentation and compensation have undergone far less empirical research than negative spillover, the dimensionality of these constructs is in serious need of future research. Researchers investigating these work – non-work linking mechanisms would benefit from the development of measures designed to assess more focused aspects of positive spillover from work, segmentation, and

compensation, in light of the substantial heterogeneity which may underlie existing measures of these constructs.

Although the predictor and criterion variables in the theoretical model tested were developed from a base of work stressors, personality traits, and outcomes shown in past research to affect employees across a range of occupations, the model was only validated using a single-occupational group in the current study. While nurses have been shown to evidence substantial within- and between-individual variation in daily stressor exposure (e.g., Gross et al., 2011), the degree to which studies of stress in this population approximate studies conducted in other populations is debatable. In addition, given that the entire sample consisted of volunteers who were unlikely to receive compensation, the degree to which this sample is generalizeable to the broader population of registered nurses can be called into question. At a demographic level, a greater percentage of participants in this study were between the ages of 51 and 60, and fewer between the ages of 35 and 50, then is characteristic of the national nursing population (U.S. Department of Health and Human Services, 2010). It is possible that the composition of the sample in terms of age may have attenuated the effects of specific daily stressors on off-job reactivity in comparison to the general population, when considering the results of a recent study demonstrating that older adults experience lower negative affect in response to intrusive thoughts connected to daily stress than younger adults (Brose, Schmiedek, Lövdén, & Lindenberger, 2011). Future research will be needed to establish both the degree to which the theoretical model of off-job reactivity tested in this dissertation generalizes to other occupational groups and whether there are demographic characteristics which influence core components of the off-job reactivity model. Ideally, further validation of the theoretical model developed in this dissertation will follow in the footsteps of theories of job burnout, which were

theoretically developed and validated primarily within specific occupational groups, such as nurses and teachers (see Cordes & Dougherty, 1993 for a review), but have since been expanded into more general models of stress responses (Demerouti et al., 2001; Maslach, Schaufeli, & Leiter, 2001).

Another limitation of the current study is a reliance on self-report measures to assess all trait- and state-level variables, introducing the potential for common-method bias in the obtained results (see Spector & Brannick, 2009 for a discussion of this issue). However, while common-method bias may inflate observed correlations between variables measured with the same method, leading researchers on this topic suggest that this bias can be minimized by temporally and/or spatially distributing measurements of the constructs of interest (Podsakoff et al., 2003). In the current study, both trait and state measurements of key study constructs were differentially distributed across time. Trait-level variables were measured prior to any state-level variables, while state-level variables were measured over the course of four weekdays in which participants were working. Within-day measurements of state level constructs were also temporally distributed, as some state-level variables were measured immediately after participants returned home from work and some state-level variables were measured before participants went to bed. The design of this study minimized the potential for common-method bias by temporally distributing measures of trait and state-level variables across days and by taking repeated state-level measurements within-days.

5.8 Summary and Conclusion

The theoretical development and empirical examination of the off-job reactivity construct presented in this dissertation has yielded a number of important theoretical and practical contributions to the study of work – non-work relationships. The obtained results of this study provided empirical validation to a three facet, higher-order factor

model of off-job reactivity, aiding in the integration of several strong lines of research which have operated without sufficient overlap to date. This model provides a framework in which to study off-job reactivity to work stress in future research which serves as an alternative to work – family conflict theory (Greenhaus & Beutell, 1985), a perspective which over-emphasizes behavioral aspects of negative spillover. While studies of daily occupational stress have generally focused on the impact of different cross-domain stressors on stress reactivity, this dissertation has provided empirical support to the role of daily negative interpersonal interactions and situational constraints as events within the occupational stressor category that predict elevated immediate post-work off-job reactivity. Previous frameworks for studying personality in the stress process (e.g., Bolger & Zuckerman, 1995) have been extended by both considering the main effects of personality traits on off-job reactivity and the interactive effects of personality facets in altering the relationships between specific categories of stress and off-job reactivity. NA was supported as a main effect predictor of off-job reactivity, while trait tender-mindedness was shown to be associated with elevated off-job reactivity to negative interpersonal stressors. This dissertation also represents one of the first comprehensive examinations of the criterion space of the off-job reactivity construct, providing empirical evidence for the practical significance of this construct to outcomes of subjective well-being, work to non-work conflict, recovery activity pursuit, and somatic complaints. The theoretical model developed and empirically tested in this dissertation provides a comprehensive framework to facilitate future research and applications of the off-job reactivity construct.

APPENDIX A

RECOVERY ACTIVITIES MEASURED

Work-Related Activities

1. Driving
2. Finishing work tasks from today
3. Preparing for work tasks tomorrow

Domestic Activities

4. Household chores
5. Grocery shopping
6. Childcare activities

Low-Effort Activities

7. Listening to the radio
8. Watching television
9. Surfing the Internet
10. Taking a nap

Social Activities

11. Dinner with family/friends
12. Talking on the phone
13. Talking with family or friends (in person)

Physical Activities

14. Going for a walk
15. Exercising

Creative Activities

16. Playing music
17. Engaged in a hobby
18. Writing
19. Art project

APPENDIX B

TRAIT LEVEL CORRELATES OF AVERAGE OFF-JOB REACTIVITY

Inter-correlations of personality traits, work characteristics, and trait-level outcomes with average state off-job reactivity across the four day study were examined for exploratory purposes. Regarding the predictor space of the construct, higher levels of average off-job reactivity were associated with elevated NA, $r = .40$, $p < .01$, and greater perceived abusive supervision, $r = .41$, $p < .01$. In contrast, lower levels of average off-job reactivity were linked to greater trait trust, $r = -.24$, $p < .05$, and perceptions of transformational leadership, $r = -.26$, $p < .05$. Regarding the criterion space of the construct, elevated levels of average state off-job reactivity were associated with a plethora of potentially maladaptive outcomes, including greater perceived job stress, $r = .56$, $p < .01$, elevated negative spillover from work, $r = .67$, $p < .01$, greater perceived work to non-work conflict, $r = .63$, $p < .01$, more frequent somatic complaints, $r = .54$, $p < .01$, and diminished subjective well being, $r = -.29$, $p < .01$.

APPENDIX C

DESCRIPTIVE AND CORRELATIONAL DAILY STRESSOR ANALYSES

At a descriptive level, it is useful to examine exposure to different sources of daily stress, within-category stressor breadth, within-category stressor frequency, and average perceived stressfulness ratings for each category of daily stress. To accomplish these goals, a series of analyses were conducted. First, the percentage of days in which participants reported encountering at least one instance of each daily stressor category was examined. Second, for days on which stressors were encountered, the average number of different sources of daily stress encountered within each category was assessed as a gauge of stressor breadth. Third, the total number of daily stressors participants reported within each category per day was evaluated as a gauge of stressor frequency. Finally, the average perceived stressfulness rating for each category of daily stress was examined.

The results of these descriptive analyses are presented in Table 12. In terms of daily stressor exposure, participants reported encountering at least one instance of low job control in a given day most often (84.75%), followed by situational constraints (61.70%) and negative interpersonal interactions (33.22%). Similar patterns were found for mean stressor breadth and frequency, with participants reporting both a greater variety of and more frequent exposure to low job control stressors, in comparison to both negative interpersonal interactions, t (69) = 13.40, $p < .01$, d = 1.74 and t (73) = 7.46, $p < .01$, d = 1.17 for breadth and frequency, and situational constraints, t (71) = 6.64, $p < .01$, d = 1.02 and t (67) =8.16, $p < .01$, d = 1.09 for breadth and frequency. Regarding stressor breadth, more items assessing low job control (nine items) were contained in the checklist than items assessing situational constraints and negative interpersonal

Table 12. *Descriptive Statistics Quantifying Daily Stressor Exposure, Breadth, Frequency, and Perceived Stressfulness as a Function of Stressor Type.*

Stressor Type	Time Points with At Least 1 Stressor Encountered (% of Time Points)	Mean Stressor Breadth (*S.D.*)	Mean Stressor Frequency (*S.D.*)	Mean Perceived Stressfulness (*S.D.*)
Negative Interpersonal Interactions	98 (33.22%)	.59 (.78)	.72 (1.25)	4.91 (1.91)
Low Job Control	250 (84.75%)	2.34 (1.27)	13.25 (14.49)	3.08 (2.04)
Situational Constraints	182 (61.70%)	1.20 (1.00)	2.91 (3.46)	5.31 (1.94)

Note. *N* = 75. Total number of daily stressor time point measurements for the total sample = 295. Stressor breadth refers to the number of different individual sources of stress encountered within each stressor category. Stressor frequency refers to the total number of stressors reported within each stressor category. Perceived stressfulness ratings were made on a scale ranging from 1 (*not at all stressful*) to 8 (*extremely stressful*).

interactions (seven and four items, respectively). However, the greater stressor breadth of low job control held even when scaling mean ratings by the total number of items corresponding to each category (Low Job Control *Mean* =.26, *S.D.* = .14; Situational Constraint *Mean* = .17, *S.D.* = .14; Negative Interpersonal Interaction *Mean* = .15, *S.D.* = .20). Although low job control had the greatest stressor exposure, breadth, and frequency, this source of stress was rated as the least disruptive when considering average perceived stressfulness, with a mean rating of 3.08 (approximating a value of "slightly stressful" on the severity scale). In contrast, both negative interpersonal interactions and situational constraints were typically rated as more stressful than

instances of low daily job control, t (42) = 6.52, p < .01, d = 1.28 and t (59) = 9.03, p < .01, d = 1.36, respectively. There was no evidence to indicate greater average perceived stressfulness ratings for experienced negative interpersonal interactions, in comparison to encountered situational constraints, t (38) = -.16, n.s.[3] Mean ratings of negative interpersonal interactions approximated a rating of "moderately" stressful, while mean situational constraint ratings were approximately rated as being between "moderately" and "quite" stressful.

Personality Trait, Work Characteristic, and Trait-Level Outcome Correlates of Average Daily Stressor Frequency

Given the dearth of knowledge regarding personality and work characteristic predictors of stressor exposure frequency for *specific* categories of daily stress, intercorrelations of all personality traits, work characteristics, and work stress outcomes included in the AHQ with average daily stressor frequency were assessed for each category of daily stress. Statistically significant correlations with average negative interpersonal, low job control, and situational constraint stressor frequency across the four day study are presented in Table 13. Of the included personality traits, modesty was linked to greater low job control frequency. Regarding work characteristics, greater perceptions of transformational leadership were affiliated with diminished low job control and situational constraint frequency. In line with past evidence suggesting negative interpersonal interactions to be the most disruptive form of daily stress (e.g., Bolger et al., 1989), higher frequency of this form of stress was associated with greater trait off-job reactivity, perceived job stress, negative spillover from work, somatic complaints, and work to non-work conflict. Situational constraint frequency was statistically significantly correlated with elevated perceptions of general work stress, negative spillover from work

[3] The difference in *d.f.* between these statistical tests stems from some participants not having matched pairs of stressfulness ratings for both categories of stress included in a given dependent *t* test, resulting in their data not being included in these matched-pair analyses.

and home, and non-work to work conflict, while low job control frequency was only positively correlated with negative spillover from work.

Table 13. *Personality Facet, Work Characteristic, and Trait-Level Outcome Correlates of Negative Daily Interpersonal Interaction, Low Daily Job Control, and Situational Constraint Frequency (Stressor Frequency Averaged across Days).*

Trait Level Variable	Negative Interpersonal Interactions	Low Job Control	Situational Constraints
Off-Job Reactivity	.30**	.12	.15
General Stress	.30**	.22	.32**
Modesty	.03	.28*	.18
Negative Spillover from Work	.33**	.28*	.25*
Somatic Complaints	.30**	.20	.15
Transformational Leadership	-.06	-.24*	-.28*
Work to Non-Work Conflict	.34**	.17	.14
Non-Work to Work Conflict	.09	-.02	.25*
Negative Spillover from Home	.15	.03	.25*

N = 75.
* $p < .05$. ** $p < .01$.

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VITA

Charles Calderwood was born in Rockport, Maine to Terry and Susan Calderwood. When he was 13, his family moved from Camden, Maine to Brentwood, Tennessee. Several years later, he attended Brentwood High School, where he became interested in a career in psychology while taking an AP psychology class. This interest carried through to his undergraduate studies at Tulane University in New Orleans, Louisiana, where he graduated summa cum laude with departmental honors in psychology in 2006. Following graduation, Charles moved to San Francisco, where he spent a year stocking magazines at a bookstore and realizing that graduate school would likely yield more promising career options. He enrolled in the industrial – organizational psychology program at Georgia Tech in 2007, graduating with a Ph.D. in 2012. He currently lives in Lausanne, Switzerland with his lovely wife, Jenny Munson, and their two cats, Bean and Pie.