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Hindrances Are Not Threats: Advancing the Multi-Dimensionality of Work Stress

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Abstract

The challenge-hindrance framework has proved useful for explaining inconsistencies in relationships between work stressors and important outcomes. By introducing the distinction between threat and hindrance to this framework, we capture the potential for personal harm or loss (threat) associated with stressors, as well as the potential to block goal attainment (hindrance) or promote gain (challenge). In Study 1, survey data were collected from 609 retail workers, 220 of whom responded six months later. The results supported a three-factor threat-hindrance-challenge stressor structure and showed that threat stressors are associated with increased psychological distress and emotional exhaustion, and reduced dedication, whereas hindrance stressors undermine dedication **but may not be** related to distress or exhaustion with threats included in the model. Study 2 utilized a diary study design, with data collected from 207 workers over three workdays. Findings revealed that the threat, hindrance, and challenge appraisals of individual workers are statistically distinct, and associated with stressors and well-being as anticipated: threats with role conflict and anxiety, hindrances with organizational constraints and fatigue, and challenges with skill demands and enthusiasm. Overall, moving to a three-dimensional challenge-hindrance-threat framework for stressors and stress appraisals will support a more accurate picture regarding the nature, processes, and effects of stressors on individuals and organizations, and ensure prevention efforts are not misguided.

Hindrances Are Not Threats: Advancing the Multi-Dimensionality of Work Stress

Work stressors are features of jobs or workplaces that trigger the stress process and which can result in employee strain. The ensuing costs for employees, organizations, and society may be as high as \$300 billion per year in the USA (Rosch, 2001), with similar per capita estimates in other Western countries such as Australia (e.g., Medibank Private, 2008). Consequently, a major focus of job design efforts has been the elimination of stressors. Research within the challenge-hindrance framework (Cavanaugh, Boswell, Roehling, & Boudreau, 2000) has, however, revealed that responses to work stressors, and in turn employee and organizational outcomes, differ according to the type of stressor being evaluated. Challenge stressors are “work-related demands or circumstances that, although potentially stressful, have associated potential gains for individuals”, whereas hindrance stressors are “work-related demands or circumstances that tend to constrain or interfere with an individual's work achievement” (Cavanaugh et al., 2000, p.68). Challenge and hindrance stressors show different relationships with key organizational criteria and measures of health and well-being, with the former having mostly positive effects and the latter having mostly negative effects (e.g., LePine, Podsakoff, & LePine, 2005; Podsakoff, LePine, & LePine, 2007).

The impetus for the challenge-hindrance distinction arose largely from an interest in resolving inconsistencies in relationships between work stressors and *positive* individual and organizational outcomes (e.g., development and challenge, Cavanaugh et al., 2000; job satisfaction, Podsakoff et al., 2007; performance, LePine et al., 2005; and work engagement, Crawford, LePine, & Rich, 2010). Perhaps because of this grounding, the potential for future personal harm/loss (i.e., threat to the self), does not feature in the challenge-hindrance framework. In this paper, we draw on this fundamental aspect of the transactional model of stress (Lazarus & Folkman, 1984) to advance knowledge of the dimensionality of work stressors and their appraisal. Specifically, our aims in this paper are: (a) to introduce a distinction between hindrance and threat that captures anticipated negative effects on the self (threats), along with that of obstacles to goal attainment (hindrances); (b) to demonstrate that threat

stressors and threat appraisal can be distinguished from other stressors and appraisals, not just those relating to challenge, but also those relating to hindrance; and finally (c) to reveal how threat and hindrance stressors and appraisals each play a unique role in predicting employee psychological health and well-being.

Expanding the dimensionality of work stressors and appraisal is important for theory and practice. In terms of theory, the challenge-hindrance framework has demonstrated that differentiating stressors can change fundamentally our understanding of the occupational stress process – why, how, and which work stressors contribute to positive and negative outcomes. Distinguishing threats and hindrances will ensure that the key concepts and mechanisms of this parsimonious framework more accurately reflect the processes whereby features of work, and individual responses to them, create strain for employees. In practice, understanding the nature and effects of different types of stressors and appraisals is crucial to ensure that organizational prevention efforts are not misguided, and to reveal intervention strategies wherein employees can be active agents in maintaining their well-being.

Not All Work Stressors Are Equal

The idea that responses to, and the effects of, stress are influenced by perceptions of the nature of the stressor is not a new one. Scott and Howard (1970) proposed that some stimuli are more likely to be problematic than others, by virtue of the unique and shared meanings assigned to the stimuli. Likewise, Selye (1982) recognized that some stressors are perceived as a challenge and linked to feelings of fulfillment, thereby functioning as a positive motivating force ('eustress'), whereas other stressors are damaging, with harmful consequences ('distress'). The process of imbuing stimuli with meaning is the core feature of Lazarus and Folkman's (1984) transactional model of stress, which posits that individuals constantly appraise the environment in terms of its relevance to their own well-being (primary appraisal) and possible coping resources and options (secondary appraisal). Lazarus and Folkman proposed that primary appraisals of stress can take three different forms: *harm* or loss already experienced; *threat* of future harm or loss; or potential for mastery and gain, known as *challenge*.

Subsequently, Lazarus (1991) asserted that frustration was not an emotion but rather an appraisal (similar to but distinct from challenge or threat appraisals). As frustration arises when the pursuit of goals is blocked, this claim suggests that *hindrance* appraisal could also be seen as a form of primary appraisal. While this form of appraisal has attracted little attention, we argue that hindrance appraisal may be critical to distinguishing stressor types and revealing the mechanisms underlying their effects.

When studying the self-reported work stress levels of managers, Cavanaugh et al. (2000) identified differential relationships between work stressors and outcomes depending on the type of stressor: challenge or hindrance. Since this origin of the challenge-hindrance framework, subsequent meta-analyses have demonstrated that challenge stressors share a positive relationship with: job satisfaction and organizational commitment (Podsakoff et al., 2007); performance via increased motivation (LePine et al., 2005); and work engagement and, to a lesser extent, burnout (Crawford et al., 2010). Meta-analysis has also demonstrated that challenges have a negative relationship with turnover intention and behavior (Podsakoff et al., 2007). Overall, challenges are seen to have a net positive effect for organizations even though they may drain energy (Crawford et al., 2010) or lead to a range of strains (LePine et al., 2005). Stressors classified as challenges in existing meta-analyses include job/role demands, job complexity, job responsibility, pressure, time urgency, and workload. Hindrance stressors show the opposite pattern of relationships, except with burnout which nevertheless has a stronger positive association with hindrances than with challenges. Hindrance stressors included in meta-analyses include constraints, hassles, organizational politics, resource inadequacies, role and interpersonal conflict, role ambiguity, role interference, and role overload.

While appraisal is assumed to be central to the challenge-hindrance framework, until recently (e.g., Webster, Beehr, & Love, 2011) work stressor appraisals were not actually measured within this body of literature. Instead, researchers have classified stressors as either challenges or hindrances based on their definitions and previous classifications (a top-down approach; e.g., Crawford et al., 2010), or by generating information about types of stressors from a secondary group of participants to inform the

measures (a bottom-up approach; e.g., LePine, LePine, & Jackson, 2004). Even so, it is evident that the distinction between challenge and hindrance relates to the potential or otherwise for personally meaningful gains, with challenges enhancing opportunities for such gains and hindrances preventing, restricting, or obstructing such opportunities. The potential for stressors to threaten the self does not fit the descriptions of either challenge or hindrance. We argue that this aspect must be included within the differentiation of work stressors and appraisals to form an accurate picture of their nature, effects, and the intermediary processes.

Distinguishing Hindrances from Threats

Lazarus and Folkman's (1984) concept of threat appraisal refers to perceiving that situations or events have the potential to cause *personal* harm or loss (p. 32, emphasis added). Despite the existence of threat appraisal as a central element of stress appraisal in the transactional model, it is absent from theory and methods within the challenge-hindrance framework. Assumptions have been made about the equivalence of threat and hindrance, with the term "threat" or "threatening" sometimes used in relation to hindrance stressors or perception of hindrance (e.g., LePine et al., 2005, pp. 765, 767; van den Broeck, de Cuyper, de Witte, & Vansteenkiste, 2010, pp. 738, 741; Webster et al., 2011, p. 506). The "threat" in each of these instances relates not to harm to the self or personal loss, but instead to obstacles to growth and accomplishment; thus, the term "hindrance" should be used. The omission of threat from the challenge-hindrance framework is problematic when attempting to understand, predict, and prevent occupational stress; stressors that threaten the self are arguably a fundamental facet of stress, distinguishable from those that interfere with goals (Semmer, McGrath, & Beehr, 2005).

Drawing on Lazarus and Folkman's (1984) concept of threat appraisal we introduce the idea of threat work stressors, defined as work-related demands or circumstances that tend to be directly associated with personal harm or loss, as a category distinct from challenge and hindrance stressors. In the organizational context, threat stressors would include varying forms of workplace aggression and victimization, which thwart employees' psychological needs for belonging, trust in others, self-worth,

and influence over the environment (see Aquino & Thau, 2009). In this family are stressors such as workplace bullying and harassment (e.g., Einarsen & Raknes, 1997), customer-related social stressors (Dormann & Zapf, 2004), and abusive supervision (e.g., Tepper, 2000), among others. High levels of job insecurity and other forms of precarious work arguably also represent a threat stressor, with high potential for personal harm or loss (e.g., Elst, Van den Broeck, De Witte, & De Cuyper, 2012; Waenerlund, Virtanen, & Hammarstrom, 2011). Likewise, emotional labor involves suppressing or exchanging true emotions for those that are organizationally desired, which alienates the professional self from felt emotion, leading to inauthenticity and burnout (e.g., Hochschild, 1983). In all of these cases, the associated psychosocial mechanisms linking the stressors to outcomes – mechanisms that are well established within the empirical literature – go beyond preventing employees from achieving work goals or blocking the acquisition of new resources. Rather, they reflect processes whereby the stressors directly contribute to personal harm or loss. In other words, the nature of the stressors and the mechanisms involved correspond with our definition of threats and not with that of hindrances.

We acknowledge that personal harm might indirectly arise when growth and accomplishment are blocked by hindrance stressors. For example, self-esteem and self-efficacy might be undermined when bureaucratic red tape constrains employee action. Likewise, role ambiguity could interfere with progress towards task goals and thereby stimulate a fear of negative evaluation. However, the outcome of successfully avoiding threats compared with resolving hindrances (or meeting challenges) is qualitatively different: if hindrances can be overcome (or challenges negotiated successfully) then positive outcomes can be obtained; when faced with threat stressors, however, the prevention of negative outcomes is the best possible outcome (cf. Semmer et al., 2005). Moreover, while appraisal of a stressor as a threat, as well as a hindrance, is conceivable, this possibility does not indicate that a single category is sufficient for threat and hindrance; similar processes (i.e., self-evaluations or fear of negative other-evaluations) could turn challenge stressors such as workload or time pressure into threat stressors. This reasoning is consistent with Lazarus and Folkman's (1984) assertion that challenge and

threat appraisal are independent and that it is possible to appraise a situation as both challenging and as threatening.

In sum, we propose that hindrance and threat are not only different, but that as categories of stressors they have different effects on psychological health (in the longer-term), and as types of appraisal they have different associations with affect (in the shorter-term). The threat-hindrance distinction is important and not yet captured in the existing literature. To date no study has differentiated these as either stressors or appraisals.

Study 1

Our first study looks at the shared meaning of salient stressors for a group of retail workers to categorize them as threats, hindrances, or challenges. Using data from a two-wave survey, we distinguish these three types of stressors empirically, and develop and test predictions linking them to three important but unique employee health and well-being outcomes: psychological distress (a non-specific indicator of mental health problems; Kessler, Andrews, Colpe, Hiripi, Mroczek, et al., 2002), emotional exhaustion (a component of burnout that reflects chronic physical and emotional depletion; Maslach & Jackson, 1984), and dedication (a component of work engagement that represents the extent to which employees experience their work as meaningful; Bakker, Schaufeli, Leiter, & Taris, 2008).

Development of Hypotheses

Threat stressors. Threat work stressors are those that (by definition) are associated with ongoing exposure to the likelihood for personal harm and loss. So far research framed within the transactional model of stress indicates that threat appraisal is associated with negative emotions, specifically anxiety, fear, and worry (e.g., Folkman & Lazarus, 1985; Skinner & Brewer, 2002), consistent with Lazarus' original propositions (Lazarus, 1991; Lazarus & Folkman, 1984). These findings are not surprising given that threats are linked with negative implications for the future (Lazarus & Folkman, 1984). Over the longer term, significant distress is likely to arise from experiencing these negative emotions (cf., Folkman & Lazarus, 1986). In Study 1 we focus not on

individual-level appraisals or emotions, but on commonly held (or socially derived) meanings of stressors that pose a threat to the self. Given that stressors of this nature jeopardize the basic psychological need to maintain a positive self-image and the fundamental desire to feel positively regarded by others, they are likely to be particularly distressing (Semmer et al., 2005).

Hypothesis 1a: There will be a positive association between threat stressors and levels of psychological distress.

Another meta-theme of the transactional model is that people will strive to change what is distressing (Lazarus & Folkman, 1987). If resource investment is needed to offset loss (Hobfoll, 2001), threat stressors should require the mobilization of resources in an attempt to avoid anticipated harm. Over time as resources are depleted in the attempt to avoid the threats, workers are likely to experience strains such as emotional exhaustion (Halbesleben, 2006). The negative emotions associated with threat appraisal represent a second-order problem (cf. Scott & Howard, 1970) which requires the investment of additional energy and resources to manage, and can therefore also contribute to emotional exhaustion.

Hypothesis 1b: There will be a positive association between threat stressors and levels of emotional exhaustion.

Finally, context plays an important role in shaping responses to stressors (Lazarus & Folkman, 1987). According to Christopher (2004), one of the conditions that determine whether stress is adaptive is the availability of cognitive schemata to guide people to transform stress into learning, meaning, and adaptive behavior. If there are socially-shared understandings about stressors (Semmer et al., 2005) along with universal views about the distressing nature of harm and loss (cf. Hobfoll, 2001), workers are likely to find it difficult to inject energy into changing the nature of the threat. Instead, energy would probably be directed towards managing the emotional fallout and avoiding further harm. In this way, one of the core ingredients for transforming stress into learning and adaptation is missing for threat stressors (cf. Christopher, 2004). As a consequence, rather than engaging in problem-solving

strategies (which might occur in the face of a challenge), workers would probably disengage in response. This process should result in reduced dedication to work.

Hypothesis 1c: There will be a negative association between threat stressors and work dedication.

Hindrance and challenge stressors. Considerable research culminating in the results of various meta-analyses has linked hindrances and challenges to indicators of employee attitudes, performance, and psychological health. While these relationships are not our primary focus they are important for differentiating the effects of threats from those of hindrances (in particular) and challenges. Accordingly, we briefly develop hypotheses for hindrance and challenge stressors.

Previous research has linked hindrance stressors with negative emotions and attitudes (e.g., Boswell, Olson-Buchanan, & LePine, 2004; Rodell & Judge, 2009). However, such research has failed to distinguish hindrances from threats. In response to hindrances, efforts need to be directed towards removing or overcoming the blockages and constraints that are preventing positive outcomes. This process should consume energy, as would managing the associated negative emotions. Hence, there is evidence that hindrances have a positive relationship with emotional exhaustion (e.g., Crawford et al., 2010), and also with psychological distress (e.g., Ruchman & Wolchik, 1988) and sub-components such as anxiety (e.g., Rodell & Judge, 2009). In turn, as employees experience the frustration of these blockages, they are less likely to feel motivated at work (LePine et al., 2005) or experience meaningful work outcomes, which should undermine work dedication (e.g., Crawford et al., 2010).

Hypothesis 1d: There will be a positive association between hindrance stressors and psychological distress.

Hypothesis 1e: There will be a positive association between hindrance stressors and emotional exhaustion.

Hypothesis 1f: There will be a negative association between hindrance stressors and work dedication.

Alternatively, when situations hold the potential for personal gain, employees are likely to strategically invest resources to strive towards positive experiences (Halbesleben & Wheeler, in press). In turn, when workers have the opportunity to learn and grow, they are likely to experience higher levels of intrinsic motivation (cf. Ryan & Deci, 2000), which should promote a sense of meaning and inspiration in the work (i.e., dedication) (e.g., Crawford et al., 2010). We expect these positive effects even though energy is required to meet challenges, suggesting that challenges may also contribute to emotional exhaustion (e.g., Crawford et al., 2010). Challenges have also been linked in meta-analytic research to an amalgamation of different strains, including anxiety and depression (LePine et al., 2005), suggesting that they will be positively associated with psychological distress.

Hypothesis 1g: There will be a positive association between challenge stressors and psychological distress.

Hypothesis 1h: There will be a positive association between challenge stressors and emotional exhaustion.

Hypothesis 1i: There will be a positive association between challenge stressors and work dedication.

Method

Design, participants, and procedure. Ethics approval was obtained from the university ethics committee. A random sample of 4000 members of the local state branch of the national retail workers' union in Australia was invited to complete a two-wave survey study. Selection was limited to employees who worked in frontline customer service roles in major supermarkets and large chain variety stores. At both waves of data collection, spaced six months apart, each employee was sent a survey via mail. Participants were advised that participation was voluntary and confidential, and were free to withdraw at any time. They could opt into a draw for one of five prizes valued at AUD \$140 to \$530 upon returning their completed survey. To preserve member confidentiality, completed survey packages were returned, unopened, to the research team for processing. Individual union membership

numbers were used to match participants across the two waves of data collection.

A total of 609 employees responded to the first survey (response rate = 15%). They were aged between 19 and 69 years ($M = 33.83$, $SD = 13.48$), employed mostly in supermarkets ($n = 450$, 74%), and 69% ($n = 421$) were female. Approximately half ($n = 295$, 48%) worked part-time (under 30 hours per week), 22% ($n = 136$) worked full-time, and 24% ($n = 143$) on a casual basis (i.e., with irregular hours). Employment status differed by gender: a higher percentage of female (57%) than male (39%) workers were part-time, and a higher percentage of males (39%) than females (20%) were casual employees. Female employees were older ($M = 36.15$ years, $SD = 13.61$), on average, than males ($M = 28.97$, $SD = 11.71$), $t(566) = 6.07$, $p < .001$.

At Wave 2, 404 employees returned useable surveys, of whom 220 had also responded at Wave 1 (response rate = 36 % of the initial sample). Employees who responded at both time-points were significantly older ($M = 36.17$ years, $SD = 13.91$) than those who responded only at the first wave ($M = 32.49$ years, $SD = 13.91$), $t(572) = 3.16$, $p < .01$, and contained a higher proportion of women (77%), $\chi^2(1, n = 609) = 10.07$, $p < .01$. However, there were no significant differences between these two groups on levels of the stressors or outcomes at Wave 1.

Pilot interviews and focus groups. Prior to designing the survey we conducted a series of pilot interviews and focus groups. Interviews were conducted with occupational health and safety (OHS) representatives recruited from the local branch of the retail workers' union ($n = 7$, 6 females, 1 male, age range 25-60 years) during breaks in mandatory OHS training sessions. Along with demographic information, the interview schedule asked participants to describe: (1) their perceptions of the causes of job stress among retail workers; (2) aspects of their work that helped them cope with job stress; and (3) aspects of their job that they found particularly rewarding.

Focus group discussions were conducted with 25 customer service employees from diverse sections of the retail industry (8 male, 17 female; average age = 27 years). There were three groups, each with eight to nine participants and characterized by a different work profile: (1) a group consisting

of employees who worked in petrol stations, liquor stores, fast food outlets, or supermarkets along with late night workers; (2) department and discount store employees; and (3) fashion store employees. The focus group protocol asked questions about the stressors encountered in retail work and their impact on workers, the most stressful specific situation experienced by the workers, and resources provided at work that can be used to manage stress and the effects of utilizing them.

The responses of retail worker participants in our pilot research revealed some of the shared meanings held by this group associated with specific occupationally-salient stressors, particularly threat stressors. For example, we found that descriptions of customer-related stressors and role conflict reflected workers' common underlying expectations that they were likely to be the target of customer or supervisor hostility and disapproval if they were perceived not to have met competing role expectations (e.g., serving individual customers well versus serving many customers quickly), and that this would have emotionally painful consequences for the self. Emotional labor demands (e.g., having to suppress one's own negative emotions when dealing with impatient customers or angry supervisors) were also perceived to threaten the self because they undermined a sense of choice over emotional expression (i.e., felt authenticity; see Brotheridge & Lee, 2002; Hochschild, 1983; Sheldon, Ryan, Rawsthorne, & Ilardi, 1997) and were sometimes seen as an unjust job requirement. Hence, customer-related social stressors, role conflict, and emotional demands were treated as threat stressors in the present research.

Hindrance stressors were not as frequently discussed in the pilot interviews and focus groups. In discussion with our retail union collaborative partner, and bearing in mind the nature of our sample (most of whom had several years of service and were in secure employment), we selected role ambiguity as a hindrance (e.g., Crawford et al., 2010; Le Pine et al, 2005; Podsakoff et al., 2007).

Finally, consistent with previous literature we selected quantitative workload as our challenge stressor. It has been shown to have positive links with both job performance on the one hand and psychological stress on the other (Gilboa, Shirom, Fried, & Cooper, 2008), consistent with the view

that it is a challenge stressor (e.g., Crawford et al., 2010; LePine et al., 2005; Podsakoff et al., 2007). Quantitative workload challenges one's ability to apply resources of time, energy, and skill efficiently in order to fulfill role expectations and thus offers opportunities for mastery and success. Our pilot work indicated that, although experienced as stressful, successfully juggling multiple demands at the retail frontline to fulfill role expectations was linked with feelings of competence and satisfaction.

Measures. Unless otherwise specified, for each of the measures the response alternatives ranged from 1 = *Strongly disagree* to 5 = *Strongly agree*. Our measure of *threat stressors* comprised three dimensions: extreme customer-related social stressors (CSS), emotional demands, and role conflict. For CSS, three items were taken from Dormann and Zapf's (2004) measure (e.g., "I have to deal with customers who personally attack us verbally"). For emotional demands we utilized two items from the emotional subscale of the Demand Induced Strain Questionnaire (DISQ 2.1; de Jonge et al., 2009) that captured emotional labor (e.g., "I have to control my emotions to complete tasks within the time available"). Role conflict was measured using Firth, Mellor, Moore, and Loquet's (2004) three-item measure (e.g., "To satisfy some people at my job, I have to upset others"). Cronbach's alpha for all items at Wave 1 was high, $\alpha = .84$. To assess *hindrance stressors* we used Firth et al.'s (2004) three-item measure of role ambiguity (e.g., "My job responsibilities are clear to me"). Items were reverse scored so that high scores indicated high ambiguity ($\alpha = .74$). *Challenge stressors* consisted of two psychological demands items from Karasek et al.'s (1998) Job Content Questionnaire: "My job requires working very hard and fast" and "My job requires doing a lot of things at once." These items were chosen as conveying both pressure and task complexity, and requiring mobilization of individual resources while potentially offering a sense of task accomplishment ($r = .56$).

We used five items from the Maslach Burnout Inventory (Maslach, 1984) to capture the extent to which participants experience *emotional and physical job-related exhaustion* (e.g., "I feel used up at the end of the workday"; 1 = *Never*, 5 = *Always*). The short-version (three-item; $\alpha = .86$) *dedication* measure, a core component of work engagement from the Utrecht Work Engagement Scale (Schaufeli

et al., 2006), captured participants' feelings of enthusiasm, pride, and inspiration towards their work (e.g., "I feel proud of the work I do"; 1 = *Never*, 5 = *Always*). Finally, eight items ($\alpha = .92$) from Kessler's ten-item measure (Kessler et al. 2002) were used to measure *psychological distress* (depressed affect, anxiety, and agitation). The remaining two items (which referred to feeling "tired out for no good reason" and like "everything was an effort") were excluded to avoid overlap with our exhaustion measure. The response scale end-points were 1 = *None of the time*, 5 = *Most of the time*.

Analytical strategy. After preliminary calculation of descriptive statistics and variable inter-correlations, we carried out confirmatory factor analyses (CFA) to develop a measurement model. To isolate and clarify the individual effects of challenge, hindrance, and threat stressors on employee psychological health and well-being, it is important to evaluate the hypothesized relationships simultaneously. We therefore used structural equation modeling (SEM) to test the predicted relationships among latent variables, both cross-sectionally (at Wave 1 and Wave 2 separately) and longitudinally. To evaluate model fit, we examined commonly used indices: the chi-square to degrees-of-freedom ratio (χ^2/df ; values of 2 or less indicate excellent fit); the comparative fit index (CFI; $\geq .95$); the Tucker Lewis index (TLI; $\geq .90$); and the root mean square error of approximation (RMSEA; $\leq .07$). The relative fit of nested models was evaluated using the chi-square difference ($\Delta \chi^2$) test. Analyses were conducted using SPSS and AMOS (versions 20) statistical software packages.

Results

Development of the measurement model. Means, standard deviations, alpha coefficients, and bivariate correlations for Study 1 variables are presented in Table 1. Exploratory factor analysis of all stressor items provided initial support for a three-factor model corresponding to the proposed threat, challenge, and hindrance constructs, with no item loading at $< .49$ on its theoretical construct. Consistent with the approach proposed by Anderson and Gerbing (1988), we then tested the three-factor threat-hindrance-challenge model against a series of alternative models (e.g., Holtz & Harold, 2009), as shown in Table 2. With this approach, evidence of discriminant validity is provided when

chi-square difference tests show a reduction in model fit either when items are loaded onto a latent construct other than the proposed theoretical construct, or else the model is constrained. We compared a constrained model (Model 1), in which all three pairs of factor covariances (threats-hindrances, threats-challenges, challenges-hindrances) were set to equal 1, against a series of models in which these parameters were successively freed (Models 2-4). Allowing the covariance between challenge and hindrance stressors to be freely estimated in Model 2 improved the fit relative to Model 1. In Model 3 the covariance between threat and challenge stressors was also estimated, which fit better than Model 2. The fit of Models 1-3 was, however, very poor. Finally, removal of the final threat—hindrance constraint in Model 4 vastly improved model fit, and this unconstrained model fit the data very well. The inter-correlations between the factors were: threats-challenges, $r = .55$; challenge-hindrances, $r = .37$; and threats-hindrances, $r = .24$. Overall these results support the distinctiveness of the three factors.

[Insert Tables 1 and 2 about here]

Concerning the dependent measures, CFA supported the predicted two-factor structure for pooled exhaustion and dedication items. The eight K-10 items yielded a three-factor structure (depression, anxiety, and agitation), so the relevant item scores were averaged to form three item-parcel indicators. When all dependent variable indicators were combined, the resulting fit indices supported the three-factor model of distress, exhaustion, and dedication. We tested discriminant validity of exhaustion and distress by comparing an unconstrained model with one in which the covariance between the two latent variables was set to equal 1. Fit indices confirmed the superiority of the unconstrained version, $\Delta\chi^2(1) = 71.25, p < .001$.

To summarize, the final measurement model consisted of six latent variables (three predictors and three outcomes). Threat stressors comprised three item-parcel indicators (CSS, emotional demands, and role conflict) and psychological distress comprised three (depression, anxiety, and agitation). The remaining latent variables were composed of item-level indicators, as previously described. The

measurement model provided a good fit to the data (as indicated by the fit indices) and all path loadings from the items to their latent factors were significant.

Hypothesis testing. We initially tested our proposed model in cross-sectional analyses, separately at Wave 1 and 2. The results are presented in Table 3. For the entire sample at each wave, the proposed causal model fit the data well. Consistent with our predictions, the paths from threats to psychological distress (H1a), exhaustion (H1b), and dedication (H1c) were significant and in the expected directions. Results for hindrances were, however, mixed. Consistent with Hypothesis 1f, the path from hindrances to dedication was significant and negative at both time-points. In partial support of Hypotheses 1d and 1e, the paths from hindrance stressors to psychological distress and emotional exhaustion were significant only at Wave 2. Finally, the paths from challenges to exhaustion and dedication were significant in the expected directions at both Wave 1 and Wave 2 (H1h and H1i, respectively). In addition, there was a small, but significant negative path from challenges to psychological distress at Wave 1 but not Wave 2. Hypothesis 1g (which proposed a positive relationship) therefore received no support. The cross-sectional models are depicted in Figure 1.

[Insert Table 3 and Figure 1 about here]

Multiple group analyses at Wave 1 to determine model equivalence between participants who continued in Wave 2 ($n = 220$) and those who had taken part at Wave 1 only ($n = 389$) revealed no significant differences between the unconstrained and constrained models, $\Delta\chi^2(9) = 8.67, p > .05$. Likewise, at Wave 2 there were no significant differences between those who took part at Wave 2 only ($n = 180$), and those who had also participated at Wave 1 ($n = 224$), $\Delta\chi^2(9) = 8.15, p > .05$. Further, at both waves pairwise comparisons identified no significant differences in parameter estimates between the two groups. Therefore it was concluded that the model fit both groups equally well at both time-points.

Next, we tested the model in the longitudinal sample to determine whether our hypotheses were supported by lagged, as well as cross-sectional, effects (see Table 3). After controlling for stability,

there were significant lagged paths from Time 1 threats to Time 2 psychological distress ($\beta = .17, p < .05$) and exhaustion ($\beta = .32, p < .001$). Thus, Hypotheses 1a and 1b were again supported. None of the other lagged effects were significant; hence the other hypotheses were not supported in the analysis of longitudinal data. Additional analyses identified a significant negative reversed causal effect of Time 1 dedication on Time 2 hindrances ($\beta = -.22, p < .01$). In other words, high dedication at Time 1 was associated with lower hindrances at Time 2. The final lagged model is depicted in Figure 2.

[Insert Figure 2 about here]

Discussion

Study 1 provides initial support for the proposed three-dimensional threat-hindrance-challenge structure through factor analysis, and via the findings that support our hypotheses regarding the distressing and exhausting nature of threat stressors and their potential to undermine dedication. As anticipated, we observed that challenge stressors are associated with increased dedication. Challenges may have the potential to reduce distress when their effects are considered simultaneously with threats and challenges, supporting the net positive effect noted by Crawford et al. (2010). Although we found that hindrance stressors were associated with reduced dedication, **it remains unclear whether hindrances influence psychological distress and emotional exhaustion when threat stressors are taken into account.** Overall, Study 1 suggests that threat work stressors are conceptually and empirically distinct from challenges and hindrances and play a unique role in the occupational stress process.

Study 2

Study 1 took an industry-level approach, classifying stressors as threats, hindrances, or challenges based on shared meanings associated with the nature of retail work. This is the most direct approach to applying categories meaningfully to an industry sample. However, the appraisal process highlights limitations to categorizing stressors. Lazarus and Folkman (1984) argued that different people can appraise the same event or stressor in different ways, suggesting that one person's challenge might be another's threat. Lazarus and Folkman also suggested that threat and challenge appraisals are

not mutually exclusive, so a stressor could be appraised as high in both challenge and threat.

Furthermore, even if a stressor is consistently associated with only one kind of appraisal, only a relatively small proportion of variance in appraisal may be due to variance in the stressor (e.g., less than 20% shared variance in Webster et al., 2011). Measurement of appraisal therefore represents a different, more individual-centered approach for differentiating challenge, hindrance, and threat, one which we hoped would verify our case for distinguishing between hindrance and threat.

In Study 2 we measured appraisals of challenge, hindrance, and threat to determine their distinctiveness. In recognition of the fact that appraisals reflect individual experiences that vary within a person from one day to the next (Ohly & Fritz, 2010), and to address the concern that appraisals can be influenced by stable individual differences (Lazarus & Folkman, 1984), Study 2 used an experiential (diary-style) design to examine relations between stressors, appraisals, and well-being at the within-person level as well as the between-person level. Below we list our hypotheses about within-person relations between variables, although all hypotheses were tested at both levels.

The few studies to investigate stressors and appraisal reveal many stressors (e.g., time pressure, workload, or role ambiguity) that can be appraised both as challenges and as hindrances (Searle & Auton, in press; Webster et al., 2011). However, as in Study 1, we suggest that role conflict is particularly likely to create a sense of threat to the self. Difficulties meeting expectations of different stakeholders with different priorities impacts on one's sense of personal identity and increases risk of personal evaluation and criticism, which may explain why role conflict has long been associated with job-related threat and anxiety (e.g., Hamner & Tosi, 1970). By contrast, organizational constraints (e.g., bureaucratic requirements, funding limitations or procedural barriers; Peters & O'Connor, 1980) are typically expressed as obstacles to tasks and goals, so they should primarily be appraised as hindrances. Finally, demands involving skill utilization and problem-solving tend to be strongly associated with intrinsic motivation and creativity (e.g., Zhou, Hirst, & Shipton, 2012), and the opportunities for

growth and achievement present in these activities suggest they should primarily be appraised as challenges.

Hypothesis 2a: There will be a positive association between skill demands and challenge appraisal.

Hypothesis 2b: There will be a positive association between role conflict and threat appraisal.

Hypothesis 2c: There will be a positive association between organizational constraints and hindrance appraisal.

While a common theme of previous studies is that challenges are associated with positive outcomes while threats or hindrances are associated with negative outcomes, close examination provides some indication of the affective consequences of each of the three appraisals. Lazarus and Folkman (1984; Folkman & Lazarus, 1985) discussed affective states as immediate consequences of primary appraisal. They expected the opportunity for personal growth and achievement surrounding a challenge appraisal to stimulate states of activated positive affect, such as excitement and enthusiasm, a prediction supported by Searle and Auton (in press). Searle and Auton also observed challenge appraisal to be associated negatively with anger, suggesting that when we anticipate a stressor could be beneficial, we find it less frustrating. However, challenge is not a uniformly positive phenomenon. Challenge stressors have often been linked to anxiety (e.g., Rodell & Judge, 2009), and if this is due in any part to uncertainty about anticipated gains, challenge appraisals may also enhance anxiety. Furthermore, consistent with Study 1 and other studies (e.g., Crawford et al., 2010), there is evidence to suggest that challenges contribute to greater exhaustion. If this occurs in part due to the additional energetic resources invested towards goal accomplishment, it may also be true of challenge appraisal.

Hypothesis 2d-g: Challenge appraisal will be associated positively with activated positive affect (H2d), anxiety (H2e), and fatigue (H2f), but negatively with anger (H2g).

Lazarus and Folkman (1984) expected threat appraisal to induce activated negative affect, specifically anxiety or fear. This prediction has been supported in numerous studies, including one by

Skinner and Brewer (2002) which also found threat appraisal to be negatively associated with activated positive affect. In addition, it has been suggested that the experience of personal threat can stimulate anger as part of a defensive reaction (e.g., Beck, 1976; Kuppens, Van Mechelen, Smits, De Boeck, & Ceulemans, 2007). Finally, as threat appraisal may deplete energetic resources mobilized from an evolutionary survival instinct (e.g., Selye, 1982; Melamed, Ugarten, Shirom, Kahana, Lerman, & Froom, 1999), threat appraisal is likely to enhance fatigue.

Hypothesis 2h-k: Threat appraisal will be associated negatively with activated positive affect (H2h), and positively with anxiety (H2i), anger (H2j) and fatigue (H2k).

Lazarus (1991) described frustration as the appraisal that one's goals have been obstructed or thwarted, suggesting that emotions similar to anger are likely responses to a hindrance appraisal. This link between hindrance appraisal and anger was observed by Searle and Auton (in press), who also found no association between hindrance appraisal and activated positive affect. Webster et al. (2011) found that hindrance appraisal was consistently associated with emotional exhaustion, usually to a greater degree than with other strain measures such as physical symptoms or turnover intention. Other research has similarly observed strong links between hindrance stressors and exhaustion (e.g., Van den Broeck et al., 2010). It follows that on days with more hindrances, workers must expend energy on overcoming obstacles as well as completing their tasks, and would therefore be likely to experience more fatigue. Finally, as hindrance stressors have been associated with anxiety (e.g., Rodell & Judge, 2009), hindrance appraisals may trigger anxiety about how to handle obstructed goals.

Hypothesis 2l-n: Hindrance appraisal will be positively associated with anxiety (H2l), anger (H2m), and fatigue (H2n).

Presenting the hypotheses as relations from stressors to appraisal, and from appraisal to well-being, also allowed us to explore indirect effects indicative of mediation.

Method

Design and Participants. Invitations were sent to 445 Australian employees through student

networks, requesting completion of a daily online survey for three days, with the incentive of eligibility for one of three \$50 gift cards. To maximize data integrity, alternative activities were provided to any student who found recruitment difficult, and contact details and IP addresses were used to eliminate potential student participants. The first survey was completed by 268 people, 77% of whom ($n = 207$) completed the survey on all three days and were included in the final analysis. They were aged between 18 and 65 years ($M = 33.34$, $SD = 13.02$), and 62% ($n = 129$) were female. Most worked full-time (30 or more hours per week; $n = 143$, 69%), with the others evenly divided between part-time work (i.e. in a relatively secure position but working fewer than 30 hours per week; $n = 32$, 15.5%) and casual work (i.e., with irregular hours and less job security; $n = 32$, 15.5%).

Measures. All measures were self-report, were administered daily, and unless stated otherwise used response options from 1 = *Strongly disagree* to 5 = *Strongly agree*. Internal consistencies (Cronbach's alpha) were calculated separately for within- (α_w) and between-person (α_b) levels using procedures described by Geldhof, Preacher, and Zyphur (2013).

We measured *challenge appraisal* and *hindrance appraisal* with scales developed by Searle and Auton (in press), who found them to converge with other appraisal measures and related constructs over three studies. The scales were developed from descriptions of challenge appraisal (Lazarus & Folkman, 1984) and frustration (hindrance) appraisal (Lazarus, 1991). They were informed by definitions of challenge and hindrance stressors (e.g., Cavanaugh et al., 2000) and focus on potential impacts on personal growth and/or achievement. Four items each were used to measure challenge appraisal (e.g. "will help me to develop my skills"; $\alpha_w = .84$, $\alpha_b = .97$) and hindrance appraisal (e.g. "will restrict my capabilities"; $\alpha_w = .86$, $\alpha_b = .99$), respectively. To measure *threat appraisal* in a comparable manner, we used a three-item scale (e.g. "is going to have a negative impact on me"; $\alpha_w = .85$, $\alpha_b = .98$) developed by Feldman, Cohen, Hamrick, and Lepore (2004). For all of these scales, participants indicated the anticipated impact of stressful situations and events experienced at work on the day of measurement. Confirmation of the independence of these scales, and the measurement

model, is described in the Results section.

Job stressors were measured using scales by Rodell and Judge (2009), which aim to capture daily experiences of a range of stressors categorized as challenges (8 items) or hindrances (8 items). Multi-level CFA (MCFA) showed that a two-factor structure did not fit the data, $\chi^2(208) = 1313.34$, $p < .000$; CFI = .64, TLI = .58, RMSEA = .093, SRMR = .179 to .427, but did fit well ($\chi^2(12) = 18.86$, $p = .092$; CFI = .99, TLI = .98, RMSEA = .030, SRMR = .02 to .09) for the three distinct stressors listed in our hypotheses. These were: (1) *skill demands* (“my job has required a lot of skill” and “my job has required me to use a number of complex or high-level skills”, $\alpha_w = .79$, $\alpha_b = .98$); (2) *role conflict* (“I have received conflicting requests from two or more people” and “I have worked with two or more groups who operate quite differently”, $\alpha_w = .58$, $\alpha_b = .71$); and (3) *organizational constraints* (“I have received assignments without adequate resources and materials to execute them” and “I have had many hassles to go through to get projects/assignments done”, $\alpha_w = .63$, $\alpha_b = .91$).

For affective states we followed Rodell and Judge’s (2009) approach, whereby participants indicate how *anxious* (“nervous” and “anxious”, $\alpha_w = .76$, $\alpha_b = .93$) and how *angry* (“angry” and “hostile”, $\alpha_w = .70$, $\alpha_b = .90$) they feel that day on a scale from 1 = *Not at all* to 5 = *Extremely*. For consistency, we used the same response options for two items (“enthusiastic” and “excited”, $\alpha_w = .79$, $\alpha_b = .96$) from Warr, Bindl, Parker and Inceoglu’s (2014) *activated pleasant affect* (APA) scale. We measured *fatigue* with the empirical fatigue scale (Bailes, Libman, Baltzan, Amsel, Schondorf, & Fichten, 2006), which distinguishes fatigue from non-fatigue sleepiness. The three fatigue items (e.g. “I lack energy”, $\alpha_w = .57$, $\alpha_b = .86$), which were also framed as daily experiences, had response options from 1 = *Strongly disagree* to 6 = *Strongly agree*.

Analytical strategy. After preliminary calculation of descriptive statistics and correlations, data were analyzed in MPlus (v6.12) using multi-level modeling (MLM). MLM separates variation in participants’ day-to-day responses (Level 1; the daily level) from variation attributable to consistent differences between participants across workdays (Level 2; the person level). By analyzing the data at

both day and person levels, insight can be gained into dynamic or transitory phenomena while also managing common method variance (Podsakoff, MacKenzie, Lee, & Podsakoff, 2003).

MCFAs were performed to test the fit of items to the anticipated factor structures. A full measurement model with all items was constructed next to confirm the divergence of latent constructs. Multilevel SEM was then used to examine relations between study variables.

Results

Development of the measurement model. MCFA demonstrated that the appraisal items reflected the predicted three-factor structure differentiating challenge, threat, and hindrance. Using Wald tests we compared a series of nested models equivalent to those in Study 1. Model 1, where all covariances between latent appraisal variables were fixed at a value of 1 to test a one-factor model, did not fit as well as Model 2, in which covariance was freely estimated between challenge and hindrance appraisals, $\Delta\chi^2(2) = -694.71, p < .001$. Model 3 was identical to Model 2 except that covariance was also estimated between threat and challenge appraisals; this fit better than Model 2, $\Delta\chi^2(2) = 2568.22, p < .001$. Model 4 did not constrain covariances between any of the latent appraisal variables, and comparing it to Model 3 tested the extent to which distinguishing between threat and hindrance appraisals improved model fit. Model 4 fit better than Model 3, $\Delta\chi^2(2) = -795.44, p < .001$, with excellent fit indices, $\chi^2(82) = 189.17, p < .001$; CFI = .97, TLI = .95, RMSEA = .046, SRMR = .047 (within), .036 (between).

Despite better fit for a three-factor model, we observed strong correlations between threat and hindrance appraisals (as shown in Table 4). The correlation was significantly weaker ($z = 6.14, p < .001$) at the within-person level ($r = .50$) than at the between-person ($r = .78$) level, indicating that hindrance and threat appraisals are more distinct at the within-person level, while the between-person variance may be due to stable characteristics of individuals and situations. To determine whether threat and hindrance genuinely diverged, we used tools by Gaskin (2014) to calculate their average variance extracted (AVE, the mean of squared factor loadings) and maximum shared variance (MSV, the largest

covariance with another variable). For two scales to be distinct, each scale's AVE must exceed the variance shared by the two scales (Hair, Black, Babin, & Anderson, 2010). This condition was met both at the within-person level (Hindrance AVE = .60, Threat AVE = .67; MSV = .37) and at the between-person level (Hindrance AVE = .97, Threat AVE = .95, MSV = .74).

[Insert Table 4 here]

The three stressors, three appraisals, and four affective states were all included in a measurement model, which fit the data well, $\chi^2(508) = 854.59, p < .001$; CFI = .95, TLI = .94, RMSEA = .033, SRMR = .046 (within), .058 (between). At both within- and between-person levels of analysis, the AVE exceeded the MSV, indicating that the variables were all distinct from one another.

Hypothesis Testing. As shown in Table 4, latent factors varied not only between-participants but also within-participants (indicated by ICC values; 57%-86%) making them suitable for MLM (Snijders & Bosker, 2012). A series of multi-level SEMs was then constructed (shown in Table 5), starting at a complex model and progressing through to simpler, more parsimonious models for testing study hypotheses.

[Insert Table 5 about here]

In the first model tested (M1), effect paths were modeled from each stressor to all three appraisals, and from each appraisal to all four affective states. As shown in Table 5, M1 fitted the data well. Only the hypothesized relations between stressors and appraisals were significant or near significant at the within-person level (from skill demands to challenge appraisal, $\beta = .30, p < .001$; from role conflict to threat appraisal, $\beta = .44, p = .002$; and from organizational constraints to hindrance appraisal, $\beta = .25, p = .082$) with $p > .1$ for all other stressor \rightarrow appraisal effects at both levels.

Model M2 fixed at zero the paths from skill demands to threat and hindrance appraisals; as shown in Table 5, this did not significantly affect model fit. Model M3 also fixed at zero the paths from role **conflict** to hindrance **and challenge** appraisals; this did not significantly affect model fit either. Model M4 went on to fix at zero the paths from **organizational constraints** to threat and **challenge**

appraisals; again, this did not significantly affect model fit. These three analyses showed that modeling non-hypothesized paths from stressors to appraisals did not improve the fit of the model, indicating that on days when each of these stressors was high, this corresponded with a higher level of only one appraisal: skill demands with challenge appraisal, role conflict with threat appraisal, and organizational constraints with hindrance appraisal.

We turn now to the paths from appraisal to affective states. Consistent with findings by Searle and Auton (in press), model M4 showed a non-significant association between hindrance appraisal and APA at both levels of analysis ($\beta = .06, p > .50$). When this path was removed so that the analysis model (M5) matched all our hypotheses, this did not affect model fit, as shown in Table 5, and this final model also fit the data well. The final model is shown in Figure 3.

[Insert Figure 3 about here]

Results from the hypothesized model mostly supported our hypotheses, particularly at the within-person level but often at both levels of analysis, as was the case with our first set of hypotheses. As shown in Table 6, higher levels of skill demands were associated with higher challenge appraisals consistent with H2a, higher levels of role conflicts were associated with higher threat appraisals consistent with H2b, and higher levels of organizational constraints were associated with higher hindrance appraisals consistent with H2c. This pattern suggests that, as hypothesized, some stressors are consistently associated primarily with challenge, primarily with hindrance, or primarily with threat.

More differences were seen between analysis levels for associations between appraisals and affective states. We focus first on the within-level analyses, most pertinent to testing the hypotheses. On days when workers felt particularly challenged at work, they reported higher-than-usual APA (consistent with H2d), as shown in Table 6. There was also a marginally-significant trend indicating that more challenge was associated with less anger ($\beta = -.13, p = .077$, providing limited support for H2g), but challenge appraisals were unrelated to anxiety or fatigue at the day-level. On days when they felt particularly threatened at work, they reported higher-than-usual anxiety (consistent with H2i) and

higher-than-usual anger (consistent with H2j). There was also a trend indicating that more threat was associated with less APA ($\beta = -.13, p = .090$, providing limited support for H2h), but threat appraisal was unrelated to fatigue at the day-level. Finally, on days when they felt particularly hindered at work, participants reported higher-than-usual fatigue (consistent with H2m). There was also a trend indicating that more hindrance was associated with more anger ($\beta = .18, p = .056$, providing limited support for H2l), but hindrance was unrelated to anxiety at the day-level. These results show a different pattern of results for most affective states: challenge appraisal with APA, threat appraisal with anxiety and anger, and hindrance appraisal with fatigue, although if we take trends into account there were multiple influences on anger and APA.

At the between-person level, many direct effects were similar to those seen at the within-person level, as shown in Table 6. Some key differences were that those participants with consistently high challenge appraisals reported more anxiety, and a marginally significant trend suggested they may have also felt angrier ($\beta = .21, p = .067$). In addition, those who consistently reported higher hindrance appraisals were not more fatigued than other participants ($\beta = .14, p = .562$).

With our hypothesized model we examined indirect effects of stressors on affective states via appraisals. At the within-person level, daily skill demands appeared to enhance APA via challenge appraisal ($0.15, p = .008, 95\% \text{ CI: } .04 \text{ to } .26$) while daily role conflict appeared to enhance anger via threat appraisal ($0.08, p = .048, 95\% \text{ CI: } .001 \text{ to } .16$). Two marginally-significant indirect effects suggested daily role conflict may enhance anxiety ($0.05, p = .056, 95\% \text{ CI: } -.001 \text{ to } .11$) and reduce APA ($-0.05, p = .079, 95\% \text{ CI: } -.10 \text{ to } .005$) via threat appraisal. Similar results were seen at the between-person level: aggregated role conflict influencing APA ($-0.15, p = .032, 95\% \text{ CI: } -.29 \text{ to } -.01$), anger ($0.40, p = .047, 95\% \text{ CI: } .01 \text{ to } .79$), and anxiety ($0.29, p = .082, 95\% \text{ CI: } -.04 \text{ to } .61$) via threat appraisal, and aggregated skill demands influencing APA via challenge appraisal ($0.27, p < .001, 95\% \text{ CI: } .14 \text{ to } .41$). Between-person results also suggest aggregated skill demands can enhance anxiety via challenge appraisal ($0.18, p < .001, 95\% \text{ CI: } .08 \text{ to } .28$).

Discussion

Study 2 differentiated threat appraisal from hindrance and challenge appraisals, a finding that supports our argument that hindrances are not threats. Hypotheses linking specific stressors each to a single appraisal type were supported, indicating that role conflict is primarily experienced as a threat, whereas organizational constraints are primarily experienced as a hindrance. The hypotheses linking discrete appraisal types to distinct affective outcomes at work were also generally supported at the within-person levels, indicating that when people feel particularly threatened, their affective response (of anxiety and defensive anger/hostility) is different from their response to feeling particularly hindered (tired and depleted). The results of Study 2 therefore support our view that three categories (challenge, hindrance, and threat) are superior to two and that the distinction between hindrance and threat is important for understanding the causes and effects of occupational stress.

There were even indications that stressor effects on affective states were mediated by threat and challenge appraisals, although not for hindrances. The dominance of threat as a mediator of effects at the within-person level may reflect the power of threat appraisals to impact affective experiences. It may be that threat appraisal, rather than hindrance appraisal, is more useful for predicting and managing distress and strain.

General Discussion

Research within the challenge-hindrance framework has revealed that the effects of work stressors on employees and organizations differ according to the type of stressor. To date, this body of literature has assumed that hindrances and threats are conceptually and empirically equivalent, despite the differences implied by their respective definitions. We built upon this foundational work by theorizing, and finding support for, a three-dimensional structure that captures the risk of personal loss and harm to the self (i.e., threat), as well as the potential for promoting or blocking personal gain (i.e., hindrance), of both work stressors and stress appraisals. In this paper we responded to calls (e.g., Cavanaugh et al., 2000; Podsakoff et al., 2007) for further research and theorizing regarding the

dimensionality of work stress. Together, the results of our two studies – which utilized longitudinal and daily diary survey designs – achieved the aims set out at the start of the paper to: distinguish between hindrance and threat; differentiate challenge, hindrance, and threat in terms of both stressors and appraisals; and demonstrate the differential relationships that threat, hindrance, and challenge stressors and appraisals have with affective states and important health and well-being outcomes.

Theoretical Implications

Demonstrating that hindrances are not threats is the major contribution of this research. To date, the notions of challenge, threat, and harm/loss have been widely accepted within the broader stress literature (Semmer et al., 2005). At the same time, parallel research on occupational stress has focused on challenge and hindrance stressors (with emerging interest in appraisals). While these two bodies of research have been loosely connected, the inconsistencies have largely been ignored. Our paper helps to integrate these two important areas of research to improve our understanding of the multi-dimensionality of work stress.

We conceptualized threats as work-related demands or circumstances that tend to be, or are anticipated to be, associated with personal harms or losses; in other words, posing a direct threat to the self. Conceptually we argued that threats differ from challenges, which are associated with potential gain, and hindrances, which block gain and goal achievement. Empirically, we found support for the proposed three-dimensional threat-hindrance-challenge structure through factor analysis: Study 1 demonstrated this in terms of stressors and Study 2 in terms of appraisals at both within- and between-person levels. Taking the results of Studies 1 and 2 together, our research suggests that there is utility in the threat-hindrance distinction.

In Study 1 we classified stressors as threats, hindrances, or challenges based on pilot interviews and focus groups, which illuminated the shared meaning ascribed to certain occupationally-salient stressors. Our hypotheses in this study regarding the distressing and exhausting nature of threat stressors, and their potential to undermine dedication, were supported. Further evidence for the utility

of the threat stressor construct comes from the longitudinal analysis in Study 1, in which the positive associations between threats and both psychological distress and emotional exhaustion were the only significant paths remaining when stabilities were controlled.

It is important to note the potential parallel between threat and challenge. In both studies, all stressors were correlated positively; in Study 1, the correlation between threat and challenge stressors was moderately high. Like threat, challenge implies the possibility of a negative outcome if the employee cannot rise to the challenge. However, the focus of threats compared with challenges is very different: threats imply the need to avoid negative outcomes, whereas challenges imply striving towards positive outcomes. As outlined by Semmer et al. (2005), this is a crucial distinction that can produce drastically different effects for individuals and organizations. These ideas are also relevant when interpreting the results for challenge stressors in Study 1: while the zero-order correlation with psychological distress was positive, when the effects of the other stressors were taken into account via SEM, the relationship of challenge stressors to psychological distress was negative. In other words, when the parallel aspects of threats and challenges are taken into account, the unique challenging aspect of stressors may have positive effects for individuals (in terms of their psychological health and well-being), not just for organizations (in terms of motivation and performance). This is somewhat borne out in Study 2, where challenge stressors (skill demands) were associated positively with anxiety and anger, but they were also associated positively with challenge appraisal, which was in turn associated with beneficial outcomes (at least at the within-person level).

When individual appraisal was taken into account in Study 2, we saw that some stressors may be experienced consistently as hindering (specifically organizational constraints, a classic hindrance stressor), others as challenging (skill demands), and still others as threatening (in this case role conflict, in line with Study 1). We also observed differential effects of individual employees' judgments of the potential for harm and loss in the daily work situation relative to judgments about blocking or aiding progress towards personally-relevant goals in terms of the consequences for affect. Specifically, on

days where employees perceived greater threats in their work situation, they experienced more anxiety. Conversely, days when employees perceived more hindrances also saw reports of greater fatigue, and when greater challenges were perceived in the work situation employees also reported more enthusiasm.

Taken together, our findings challenge current understanding regarding how different types of work stressors affect workers and organizations, formed from the results of high quality meta-analyses. Prior to this study, hindrances were considered a major detrimental influence on individual and organizational outcomes. When the hindrance-threat distinction is included, the picture may be different. Extrapolating from our three-factor threat-hindrance-challenge model, there may be different outcomes for different parties from different types of stressors. As shown in our results, threats appear to be particularly salient for individuals in terms of their health and well-being as they fundamentally threaten core psychological needs. Hindrances, on the other hand, may be more salient for organizationally-relevant outcomes, as hindrances fundamentally relate to motivational processes. To confirm these ideas, more empirical research using the three-dimensional structure is needed.

In the transactional model of stress, emotions are thought to be formed after the secondary appraisal process (Lazarus & Folkman, 1984). Evaluation of the resources that can be used to cope with stressors is therefore important for understanding their effects. It is possible that job and personal resources may be ineffective for dealing with threats as compared with hindrances, or contribute to the appraisal of stressors as threats or hindrances. Future research should also therefore reconsider the mechanisms underlying the erosive effects of work stressors in terms of how precise emotional responses and both job and personal resources influence the appraisal of work stressors, coping responses, and ultimately health and well-being outcomes.

Finally, the longitudinal data from Study 1 also revealed the potential for a gain spiral wherein dedication is positively associated with self-reports (and possibility appraisal, though it was not measured) of fewer hindrances over time. It appears that dedication enables workers to create more job

resources (e.g., Bakker & Bal, 2010) or allows workers to mobilize existing job resources more effectively (e.g., Xanthopoulou, Bakker, Demerouti, & Shaufeli, 2009) which in turn results in (perceptions of) fewer job hindrances. It would be interesting to further explore the antecedents of objectively assessable and perceived hindrance stressors and appraisal (and those of threat and challenge stressors and appraisals) using repeated measures designs.

Practical Implications

Considered together our findings have important practical implications. The implications of the challenge-hindrance framework to date are to optimize challenges and reduce or eliminate hindrances. Given their positive effect on work dedication and potential to reduce distress when hindrances and threats are also taken into account, we concur with previous calls for organizations to promote challenges, so long as the means to succeed (e.g., training, job control, information) are also provided. However, without adequate resources, the negative affective reactions surrounding long-term exposure to demanding challenges (seen in the between-person results of Study 2, which are consistent with the meta-analysis by LePine et al., 2005) could develop into chronic distress problems (Karasek, 1979; Demerouti et al., 2001). Other aspects of the context, such as the presence of threats and hindrances, may also limit the benefits of enhancing work challenges. Based on our research, we instead recommend a new focal point for risk management efforts – threat work stressors in addition to hindrances. Classically, threat perceptions can be reduced in their damaging psychological health impacts through two main pathways: (a) informational and emotional support from relevant others in the workplace (likely to be immediate supervisors and also co-workers); and (b) coping skills training, of which examples here might be reappraisal training (to reassess the threatened harm or loss more adaptively), or specific communication skills (e.g., how to respond effectively to abusive customers in the case of retail workers). A better strategy is to prevent or reduce the threat stressors altogether, if possible. Whereas employees may utilize job crafting to increase challenges or reduce hindrances (e.g. Tims, Bakker & Derks, 2012), threats may require more organizational support as they tend to provoke

avoidance behaviors (e.g., King & Gardner, 2006). Customer-related social stressors and emotional demands could, for example, be prevented or minimized through adequate staffing and appropriate training. Training would also be useful to prevent or minimize role conflict, as would clear information flow.

It is clear from the literature that treating damaged workers is less effective and sustainable than improving employment policies and management skills (Michie & Williams, 2003; Noblet & LaMontagne, 2006). Nevertheless, while the notion of threat and hindrance stressors provides a starting point for primary stress interventions, some attention could also be given to managing how employees appraise work events and situations. Greater capability for positive stress appraisals would enable workers to take additional control over their own work situation and reactions to it, to become more active agents in stress prevention and management thereby sharing responsibility with the organization to safeguard their health and well-being. However, while the merits of developing skills in positive reappraisal (e.g., Folkman et al., 1986; Garland, Gaylord, & Fredrickson, 2011) are well known among clinicians, clinical intervention usually only follows the development of significant distress. A more productive avenue to explore may be the role of organizational leaders in learning how individual employees uniquely perceive different stressors, and in helping to create shared meanings amongst workgroups about workplace challenges.

Strengths and Limitations

The strengths of our research stem from utilizing two different approaches to distinguishing hindrances and threats – through classification of stressors and measurement of individual stress appraisals – in two different research designs, both of which involved repeated measurements. Together the converging evidence provides strong support for the value of differentiating hindrance and threat to yield a three dimensional challenge-hindrance-threat framework.

A limitation of Study 1 was the low response rate. We cannot rule out that the workers who responded were those who faced the most numerous or intense threats, perhaps to have a voice.

Conversely, participants may have been those with more time, energy, or self-confidence because they faced fewer or less intense threats. We also examined workers from just one occupational sample in the first study. Accordingly, the stressors that we identified as threats, hindrances, and challenges may be different for different occupational groups. A new meta-analysis of primary empirical data using a three- rather than two-dimensional stressor framework would offer a robust test of the theory developed here for a greater range of stressors and occupations, and could clarify the effects of threat, hindrance, and challenge stressors on employee health and well-being along with other outcomes like job satisfaction, work performance, learning, and turnover. Another productive line of enquiry would be to explore whether different industries or occupations classify stressors differently, and why.

In Study 2, the sample size and collection approach may limit generalizability. Location and socioeconomic status of those responsible for recruiting participants may have restricted, for example, the range of participants' occupations. A larger sample would be useful for replicating these findings. However, the relative importance of within-person effects in Study 2 reduced the importance of job-level factors, since the analysis focused on change in stressors, appraisals, and affective states from one day to the next. That the appraisal measurement methodology focused on the whole work situation (as in Ohly & Fritz, 2010) rather than appraisal of specific stressors (as in Webster et al., 2011) highlighted how daily variation in stressors was associated with day-level stress appraisals, and was more useful for examining relations between appraisals of one's situation and affective states experienced in that situation. Yet this approach may have also reduced interpretability of between-person effects, so we believe that more work is still needed to investigate the factors governing how specific stressors are appraised.

Conclusion

In conclusion, introducing the distinction between threats, which capture potential harm and loss, and hindrances represents an important expansion of the dimensionality of work stress. Our two studies support the idea threat stressors and threat appraisal are conceptually and empirically distinct

from challenge and hindrance stressors and appraisals. Investigating threats, along with challenges and hindrances, should provide a more accurate picture regarding the nature and effects of stressors and stress appraisals on individuals and organizations. This knowledge is important to enable a finer-grained understanding of the core processes within structural models of work stress and to guide effective stress prevention and management efforts.

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Table 1

Study 1: Descriptive Statistics and Variable Inter-correlations for the Wave 1 Sample (n = 609)

	M	SD	1	2	3	4	5	6	7	8	9
1. Age	33.83	13.48									
2. Gender (0 = male, 1 = female)	—	—	.25								
3. Role conflict	3.37	0.90	.01	-.09							
4. Customer-related social stressors	3.00	0.90	-.02	.16	.41						
5. Emotional demands	3.15	0.97	-.08	.03	.62	.63					
6. Role ambiguity	2.16	0.82	.08	.04	.34	.14	.26				
7. Workload	3.94	0.75	.08	.05	.41	.29	.40	.18			
8. Emotional exhaustion	2.95	1.07	-.08	-.03	.47	.36	.57	.24	.40		
9. Psychological distress	1.97	0.90	-.23	-.02	.38	.33	.49	.16	.22	.64	
10. Work dedication	2.95	1.07	.30	.15	-.29	-.18	-.30	-.30	.00	-.35	-.34

Note. All correlations at $r > .08$ are significant at $p \leq .05$.

Table 2

Study 1: CFA of the Three-Factor Model of Threats, Hindrances, and Challenges

Model	Description	χ^2	<i>df</i>	χ^2/df	<i>SRMR</i>	<i>CFI</i>	<i>TLI</i>	<i>RMSEA</i>	Model comparison	$\Delta\chi^2$	$\frac{\Delta}{df}$	<i>p</i> ≤
M1	All factor covariances constrained to equal 1	664.19	20	33.21	.43	.60	.44	.23				
M2	M1 minus Challenge—Hindrance constraint	605.62	19	31.88	.38	.64	.46	.23	M1 – M2	58.57	1	.001
M3	M2 minus Challenge—Threat constraint	598.45	18	33.25	.36	.64	.44	.23	M2 – M3	7.17	1	.01
M4	M3 minus Threat—Hindrance constraint (unconstrained)	43.60	17	2.57	.04	.98	.97	.05	M4 – M3	554.85	1	.001

Table 3

Study 1: Summary of SEM Analyses for the Structural Model for the Wave 1 Sample (n = 609), Wave 2 sample (n = 404), and Longitudinal Sample (n = 220)

Model description	χ^2	<i>df</i>	χ^2/df	CFI	TLI	RMSEA	Model comparison	$\Delta\chi^2$	Δdf	<i>p</i>
<i>Wave 1 sample</i>										
M1 Hypothesized	200.85	89	2.26	.98	.97	.04				
<i>Wave 2 sample</i>										
M1 Hypothesized	160.09	89	1.79	.98	.97	.05				
<i>Longitudinal sample</i>										
M0 Stability	603.32	421	1.43	.962	.955	.04				
M1 Hypothesized causal	584.79	414	1.41	.964	.957	.04	M0 – M1	18.55	7	.01
M2 Reciprocal	569.75	406	1.40	.966	.958	.04	M1 – M2	15.04	8	.06
M3 Final. T1 Threats → T2 Distress, T1 Threats → T2 Exhaustion T1 Dedication → T2 Hindrances	563.32	417	1.35	.969	.964	.04	M3 – M2	6.43	11	<i>ns</i>

Table 4

Study 2: Descriptive Statistics and Inter-Correlations at Within- and Between-Person Levels.

Variable	M	SD	ICC	1	2	3	4	5	6	7	8	9	10
SD (within-person)				.53	.59	.54	.48	.49	.43	.59	.54	.43	.50
1. Skill demands	3.54	0.80	.66		.15***	.23***	.28***	.09*	.03	.15***	.05	.08*	.08*
2. Role conflict	2.64	0.86	.63	.15*		.39***	.15***	.25***	.17***	.05	.13**	.18***	.06
3. Org. constraints	2.48	0.88	.75	.17*	.69***		.08*	.12**	.23***	-.01	.21***	.21***	.17***
4. Challenge app.	3.44	0.77	.69	.40***	-.05	-.06		-.09*	-.15***	.42***	.03	-.14***	-.08*
5. Threat app.	2.10	0.75	.57	.12	.50***	.59***	-.24***		.50***	-.16***	.17***	.30***	.14***
6. Hindrance app.	2.10	0.73	.66	.01	.47***	.55***	-.26***	.78***		-.11**	.07	.25***	.17***
7. APA	2.90	0.97	.57	.40***	-.10	-.17*	.60***	-.30***	-.27***		-.03	-.18***	-.16**
8. Anxiety	1.73	0.78	.71	.19**	.28***	.29***	.19**	.33***	.30***	.18**		.32***	.11**
9. Anger	1.42	0.61	.49	.07	.38***	.48***	-.04	.53***	.51***	-.11	.44***		.13**
10. Fatigue	2.77	1.10	.86	.00	.26***	.32***	-.12	.37***	.36***	-.28***	.23**	.33***	

Notes: Between-person correlations ($n = 207$) are shown below the diagonal, within-person correlations ($n = 621$) are shown above.

Org. = organizational, app. = appraisal, APA = activated positive affect.

* $p < .05$, ** $p < .01$, *** $p < .001$.

Table 5

Study 2: Summary of Multilevel SEM Analyses (n = 207)

	Model description	χ^2	<i>df</i>	χ^2/df	SRMR w/b	CFI	TLI	RMSEA	Model comparison	$\Delta\chi^2$	Δdf	<i>p</i>
M1	All stressor → appraisal paths and appraisal → affect paths	914.45	532	1.72	.053/.064	.948	.937	.034				
M2	Modification 1: Removing Skill demands → Threat / Hindrance appraisals	922.31	536	1.72	.053/.065	.948	.937	.034	M2 - M1	3.82	4	.431
M3	Modification 2: Removing Role conflict → Hindrance / Challenge appraisals	925.41	540	1.71	.054/.069	.948	.937	.034	M3 - M2	5.32	4	.256
M4	Modification 3: Removing Organisational constraints → Threat / Challenge appraisals	928.30	544	1.71	.054/.082	.948	.938	.034	M4 - M3	5.19	4	.268
M5	<i>Hypothesized model</i> : Removing Hindrance → Activated positive affect	928.43	546	1.70	.054/.082	.948	.939	.034	M5 - M4	0.67	2	.717

Note. SRMR w = within, b = between.

Table 6

Study 2: Standardized Direct and Indirect Effects from Structural Equation Model M5 (Hypothesized).

Variable	Challenge appraisal	Threat appraisal	Hindrance appraisal	APA	Anxiety	Anger	Fatigue
<i>Within-person effects</i>							
Skill demands	.31 **						
Role conflict		.34 ***					
Organizational constraints			.32 ***				
Challenge appraisal				.49 ***	-.02	-.13 †	-.08
Threat appraisal				-.13 †	.15 *	.23 *	.04
Hindrance appraisal					.03	.18 †	.20 *
Within-person R ²	.09 †	.12 *	.10 †	.28 ***	.03	.17 †	.06
<i>Between-person effects</i>							
Skill demands	.47 ***						
Role conflict		.73 ***					
Organizational constraints			.66 ***				
Challenge appraisal				.59 ***	.39 ***	.21 †	-.02
Threat appraisal				-.21 *	.39 †	.54 *	.34
Hindrance appraisal					.10	.18	.14
Between-person R ²	.21 **	.53 ***	.43 ***	.43 ***	.32 **	.48 ***	.22 *

Notes: † $p < .10$, * $p < .05$, ** $p < .01$, *** $p < .001$.

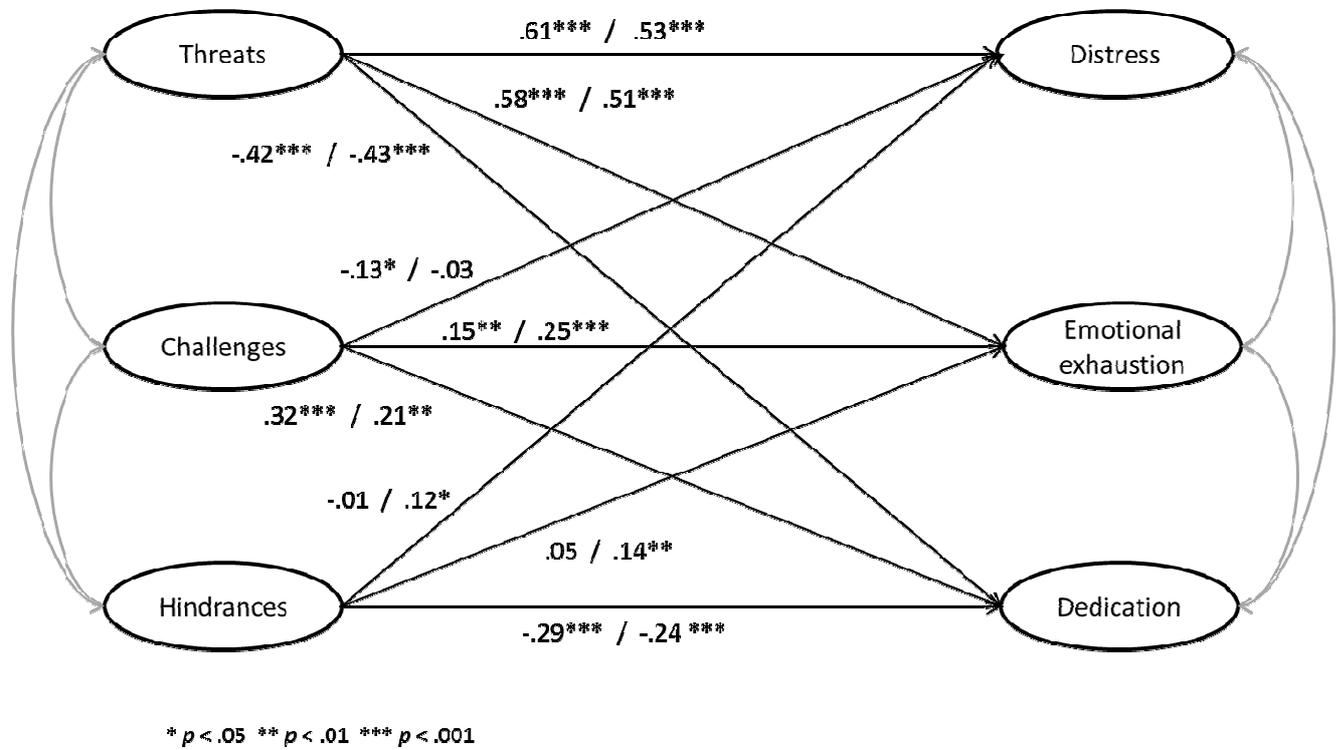


Figure 1. Study 1: Results of cross-sectional SEM at Wave 1 ($n = 609$) / Wave 2 ($n = 404$).

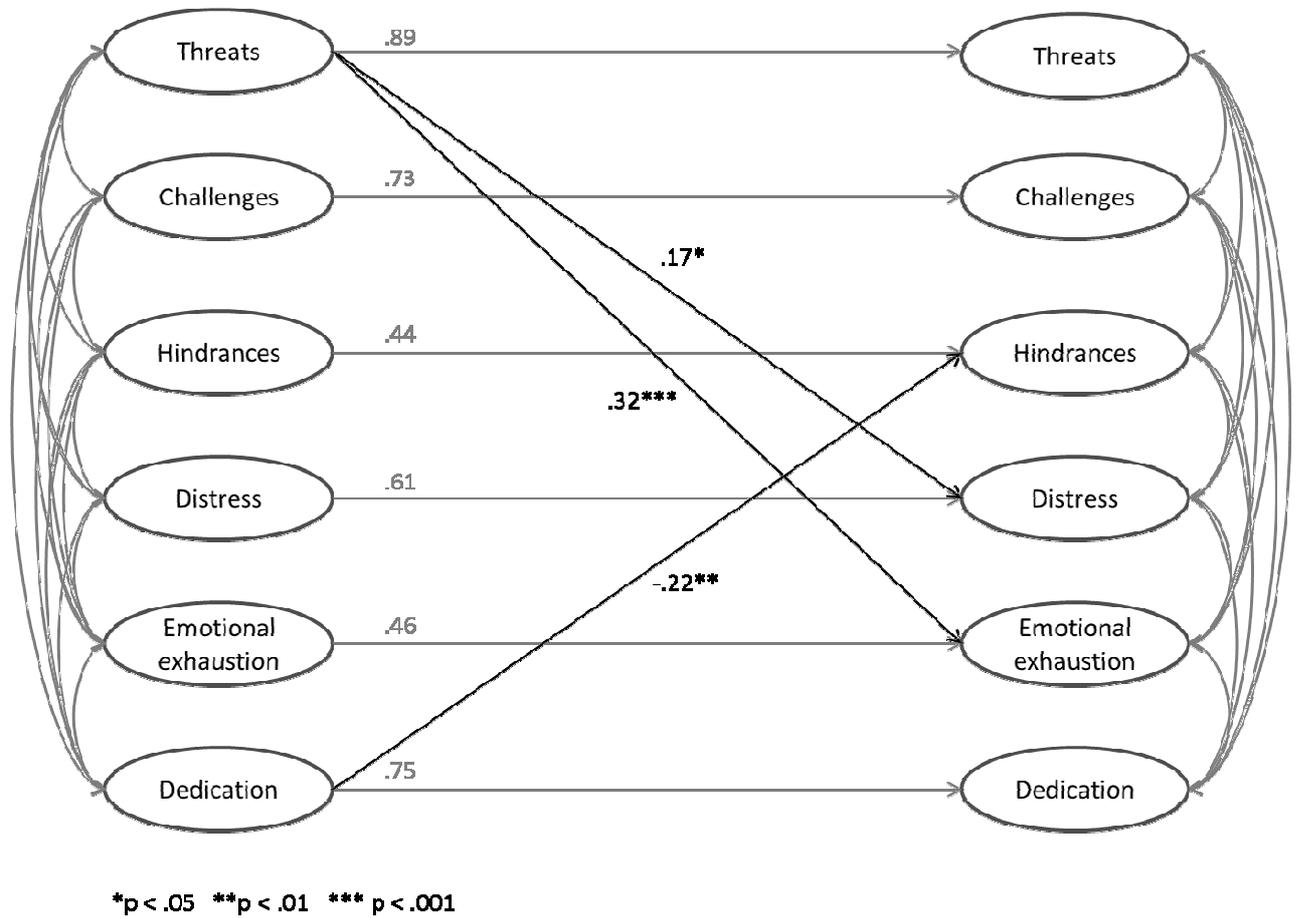


Figure 2. Study 1: Results of longitudinal SEM: Significant causal and reversed causal paths, controlling for stability effects ($n = 220$).

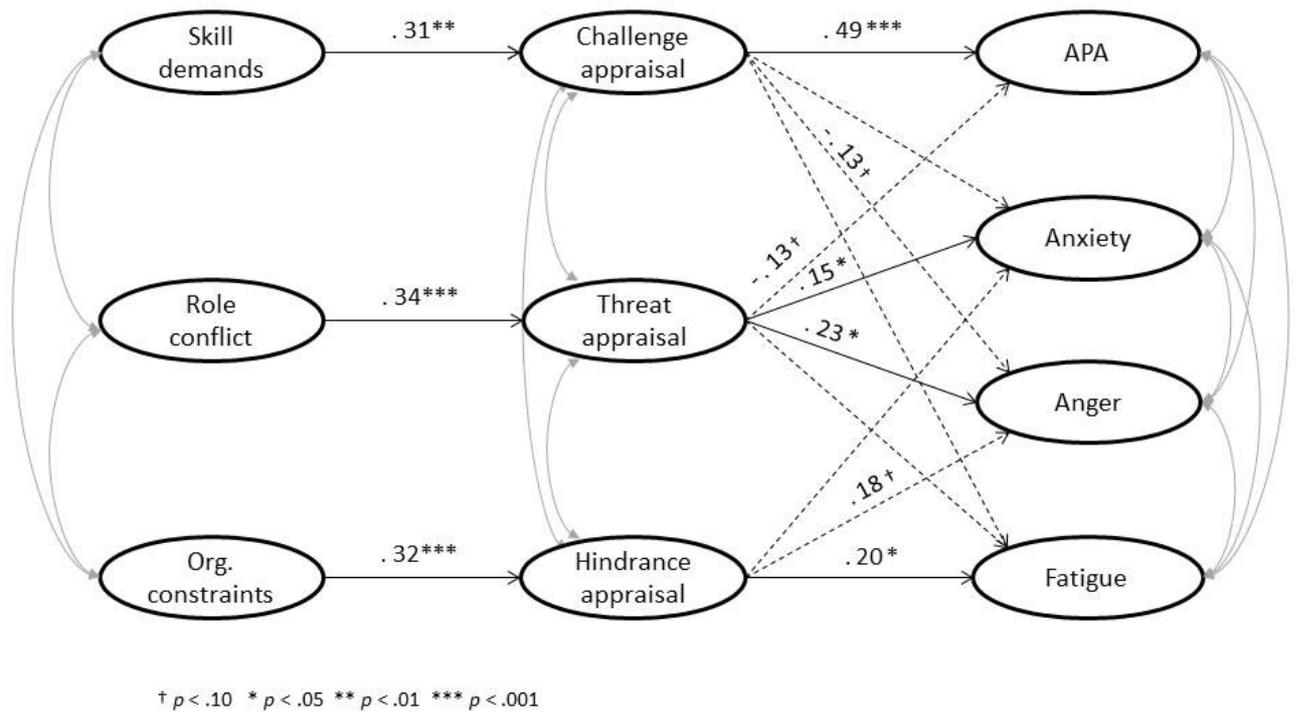


Figure 3. Study 2: Within-person results of SEM (M5: hypothesized model). Non-significant effects modelled but not shown ($n = 207$). *Note:* Org. = Organizational, APA = Activated positive affect.