

Thriving on Demand:

Challenging Work Results in Employee Flourishing through Appraisals and Resources

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Abstract

Resources theories of occupational stress (e.g., conservation of resources theory) argue that job demands deplete employees' resources, and the challenge-hindrance model of occupational stress proposes that some demands tend to be appraised by employees more as challenges and others more as hindrances. Focusing on challenge demands, we propose and test a model in which work demands influence two resources (employees' sense of self-worth and work meaningfulness) via appraisal processes, and the resources subsequently contribute to employees' flourishing in their lives. Data were collected from U.S. employees at two separate points with a one-month interval. Challenge appraisals of demands had positive effects on the two motivational resources, organization-based self-esteem and perceptions of meaningful work, and hindrance appraisals had negative effects on them. The findings suggest adapting conservation of resources theory to add appraisals as mediators between demands and resources. Overall, the present study shows a spillover effect and extends well-being research by providing evidence that resources created by positive organizational experiences contributed to promoting general positive well-being in employees' lives in the form of flourishing.

Keywords: work demands; appraisals; organization-based self-esteem; meaningful work; flourishing

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In organizational behavior, work stressors or demands are considered harmful based on occupational stress theory, in which stressors create strains (defined as poor employee health or well-being; e.g., Beehr, 2014; Spector & Jex, 1998). It is important to distinguish between hindrance demands and challenge demands as stressors (often labeled stress in other literatures, e.g., ergonomics and engineering; ISO 10075-1, 2017) however, because they may be associated differently with employees' responses (e.g., LePine, Podsakoff, & LePine, 2005; Stiglbauer, 2018). Hindrance demands are considered to be unmanageable barriers thwarting employees' progress toward work achievement, whereas challenge demands are obstacles to be overcome with enough effort and skill (Cavanaugh, Boswell, Roehling, & Boudreau, 2000). According to the transactional theory of stress (Lazarus & Folkman, 1984), employees' primary appraisal involves cognitively evaluating a situation's potential for gain or loss, and employees' appraisals of demands as hindrance lead to losses, but their appraisals of demands as challenges result in possible gains.

Most studies and meta-analyses assume that certain demands are challenging and therefore the nature of the demand causes employees to appraise them as challenging, but that other demands are inherently hindering and cause employees to appraise them as hindering (e.g., Cavanaugh et al., 2000; LePine et al., 2005). Therefore, most research on challenge and hindrance stressors classified stressors *a priori* into demands or hindrances. Yet, Webster, Beehr, and Love (2011) demonstrated that the different demands can be appraised as somewhat demanding and somewhat hindering at the same time, even by the same person; their study showed the appraisals mediated the relationship between the stressors and the strains. Studies

based on the literature on challenge and hindrance demands (Cavanaugh et al., 2000) have indicated that exposure to both types of work demands may make employees feel tired and experience psychological strains (LePine et al., 2005; Widmer, Semmer, Kälin, Jacobshagen, & Meier, 2012). However, challenge demands containing potential gains are sometimes also related to more positive outcomes, such as motivation, work engagement, organization-based self-esteem, and good citizenship behaviors (Crawford, LePine, & Rich, 2010; Kim & Beehr, 2018a; LePine, LePine, & Jackson, 2004).

Flourishing consists of feelings of competence, positive relationships, and having purpose in life (Diener et al., 2010). The present study proposes that challenge demands can lead to good effects in the form of employee flourishing, because challenge appraisals lead more directly to personal and environmental resources that can help employees deal with job situations, which can be motivational. That is, there is a mediational process, with purportedly challenging demands leading to challenge appraisals, which then lead to good outcomes (Figure 1). Resource theories of stress, conservation of resources (COR; Hobfoll, 1989) and job demands-resources (JD-R; Bakker & Demerouti, 2007) theories, maintain that stressful demands can deplete employees' resources.

We propose, however, that appraisals of job demands can explain how resources are affected by demands. Demands leading to challenge appraisals will have a more positive effect on resources, an indirect effect via the challenge appraisals. This accumulation or depletion of resources via appraisals then can result in effects on employees' thriving or flourishing at work. Therefore, the study contributes to resources theories of occupational stress by explaining that the indirect effects of demands on resources occurs through the appraisals they engender.

Research has usually assumed that certain work demands would, on average, be experienced as either challenges or hindrances. One of the rare studies directly measuring

appraisal showed that the same work demand can be appraised as somewhat hindering and somewhat challenging, although the majority of appraisals fit with researchers' *a priori* theoretical judgments, suggesting the job situation is causing the appraisal (Webster et al., 2011). Thus, an employee might appraise a demand primarily in one way (e.g., as a challenge), but also he or she might simultaneously appraise it the other way (e.g., hindrance), but to a lesser extent. Appraisals matter because seeing demands as challenging implies greater opportunities to show one's competence, achieve, and gain meaningful success, which can be positively related to motivation; but seeing demands as hindering implies less motivating states such as futility and unlikely success.

Consistent with theory, but addressing limitations in much previous research, we examine primary appraisal (Lazarus & Folkman, 1984) as an important underlying mediator or mechanism explaining indirect relationships between work demands and outcomes. Specifically, we examine potential mediating roles of individual appraisals in the link between three purportedly challenging demands, workload, responsibility, and learning demands and psychological outcomes (Figure 1). High workload is the degree to which employees have to work very hard (Spector & Jex, 1998). Responsibility is a work demand with high material or nonmaterial consequences that depend on the employee's decisions at work (Schmitt, Den Hartog, & Belschak, 2015). Learning demands require employees to improve the knowledge and skills that are necessary to perform their jobs well (Kubicek, Paškvan, & Korunka, 2015; Loon & Casimir, 2008). Prior research considered these work demands as motivating challenges (e.g., LePine et al. 2005). We test these working conditions simultaneously for their impact on employee appraisals of both challenge and hindrance.

Personal resources are employees' evaluations of their own ability to control their work situation, and they make the employee more resilient to stressful demands (e.g., Bakker & Demerouti, 2014; Hobfoll, Johnson, Ennis, & Jackson, 2003). Environmental resources also help employees to deal with stressful demands, because they are features of the job or work situation that help employees function better to achieve work goals, which can include dealing with challenges and hindrances (e.g., Bakker & Demerouti, 2007, 2014).

Challenge appraisal would be positively associated with a sense of organization-based self-esteem (OBSE, employees' beliefs of their worthiness as an organizational member; Pierce & Gardner, 2004), because employees could show their abilities and success at high levels in challenging work situations. In the model, challenge appraisal would also be positively related to the experience of meaning in work (the degree to which employees view their work as significant and worthwhile; Rosso, Dekas, & Wrzesniewski, 2010). Employees may experience meaningfulness of work by doing challenging jobs that provide opportunities for learning, high achievement, and future career gains and thus increase the intrinsic worth of accomplishing job purposes. In contrast, hindrance appraisals would be expected to show the opposite patterns of relationships with OBSE and meaningfulness of work. Self-esteem and meaning can be conceived as resources (i.e., JD-R, Bakker & Demerouti, 2007; COR, Hobfoll, 1989; Kim & Beehr, 2018b). We propose that employees experiencing these two resources in the workplace, due to appraisals, would then experience more flourishing in their lives. Based on the argument that resources derived from work can be utilized to enhance one's non-work life (Greenhaus & Powell, 2006), we expect that there will be a spillover effect of positive organizational experiences on employees' lives outside of the workplace, in the form of flourishing.

Only a few recent studies have measured primary appraisal and its effect on work outcomes in the field (LePine et al., 2016; Liu & Li, 2018; Prem, Ohly, Kubicek, & Korunka,

2017). Additionally, the influence of work demands on general positive well-being (flourishing) rather than on work-specific negative effects has not been well-explored, although it would be consistent with recommendations from the positive organizational behavior movement (e.g., Luthans, 2002; Simmons & Nelson, 2007) to examine the potential positive outcomes of demands. We studied purportedly challenging demands as having their effects through challenging appraisals but also examined their potential hindering appraisals in order to determine the overall effects of appraisals on the positive outcome of employee flourishing.

The contributions of the present study are therefore as follows. We extend resources theories of occupational stress (i.e., JD-R, Bakker & Demerouti, 2007; COR, Hobfoll, 1989) by integrating resources propositions with appraisal constructs from the challenge-hindrance framework (e.g., Cavanaugh et al., 2000). We do this by adding two important resources variables—OBSE and meaningful work—as consequences of demand appraisals; the JD-R model in particular helped us to identify relevant resources, as OBSE is listed as a personal resource, and work characteristics related to meaning (e.g., job autonomy and variety) are job resources (Schaufeli & Taris, 2014). In doing so, we demonstrate that, despite their conceptual differences, all three work demands exert their favorable effects on employees' resources through the challenge-hindrance appraisal framework. The model in Figure 1 proposes that both cognitive appraisals and resources (OBSE and meaningful work) are serial mediators in the links of work demands with flourishing, a positive potential result of demanding work. In so doing, we also show spillover effects in which positive work-related resources, OBSE and meaningful work, can influence employees' general psychological well-being in life (flourishing).

Work Demands, Cognitive Appraisals, Motivational Resources, and Well-Being

Bakker and Demerouti (2014) noted the lack of integration of occupational stress and motivational theories in spite of a natural link between them. In Figure 1, well-being in the form

of flourishing is predicted by work demands because the demands lead to cognitive appraisals and motivational resources.

Challenge appraisals. We propose that particular types of demands may be positively related to employees' well-being, consistent with concepts such as eustress (e.g., Selye, 1976). The present study focuses on three supposedly challenging demands (Cavanaugh et al., 2000): high workload, responsibility, and learning demands. Many employees are required to work very hard, make decisions independently with increased responsibility, and have new learning demands (Kubicek et al., 2015). We test them simultaneously for employee appraisals of them as both challenge and hindrance, which can lead to different outcomes; we note that based on past theoretical categorizations, these three work demands should, on average, result in challenge appraisals more than hindrance appraisals (e.g., Cavanaugh et al., 2000; LePine et al., 2005).

In Figure 1, we propose that challenge appraisals would have positive effects on OBSE and meaningful work, and that hindrance appraisals would have negative effects on these resources. OBSE inspires a sense of being capable of dealing with challenging work situations (Pierce & Gardner, 2004); employees' confidence in their abilities is a form of motivation, because it is the effort-to-performance expectancy in expectancy theory of motivation (Vroom, 1964). The challenge demand of workload gives opportunities to show one's competence and to achieve high success, which consequently lead to favorable attitudes toward oneself. High responsibility causes employees to work harder, because doing so, they can experience a sense of personal accomplishment and sometimes formal recognition, which in turn contributes to developing their self-esteem at work. By coping with learning demands, employees have opportunities for personal growth because of the acquired skills and increased knowledge related to their tasks. We propose, however, that these three demands affect the OBSE motivational

resource through the challenge-hindrane appraisal process. Taken together, by coping with challenge demands, employees demonstrate their competence and success at high levels, which in turn leads to favorable evaluations of themselves in the workplace, the essence of OBSE.

Challenging appraisals may also affect employees' sense of meaningfulness in their work. Such job meaningfulness is a part of intrinsic motivation (Hackman & Oldham, 1980), because work demands seen as meaningful are worth the time and energy investment required for their accomplishment. Challenge demands allow employees to see the opportunity for a sense of purpose and personal growth as a result of successfully coping with these challenges. Greater responsibility leads to employees' psychological identification with the work by encouraging them to take charge of their work outcomes, so that their contribution is more personally meaningful. Hence, perceptions that their work is meaningful and significant are motivational resources that would be strengthened by challenge appraisals.

Hindrane appraisals. The three demands in the present study are purported to be challenges (e.g., LePine et al., 2005) and so should be appraised as more challenging than hindering. The limited past research directly on employees' appraisals suggests a single demand can be appraised on both a challenge and hindrance (e.g., Webster et al., 2011). In contrast to challenge demands, hindrance demands are appraised as having the potential to block task accomplishment, personal growth, and achievement. Therefore, individuals may have few opportunities to successfully show their abilities in relation to the work task, and their self-value in the organization (OBSE) would be less. Hindrance appraisals also would discourage seeing the work as meaningful, because hindrances are inherently discouraging. Based on hindrance appraisals, employees will be unwilling to invest themselves and their energy in efforts to meet demands that they appraise as being obstacles. Even if employees deal successfully with the

hindrances, they only achieve normal job performance. They are thus less likely to obtain benefits such as experiencing exceptional OBSE and meaningfulness of work.

Flourishing: A Case of Positive Spillover

The two resources—OBSE and meaning of work—are partial forms of motivation based on expectancy theory (e.g., Vroom, 1964) and work design theory (Hackman & Oldham, 1980), and in the model they are derived from being challenged. We hypothesize that there is a potential spillover effect of positive evaluations of work as meaningful and of a good work self-concept; these positive states will spill over from employees' work to their general (non-work) psychological well-being (flourishing; Diener et al., 2010). Spillover effects are the transfer of one's functioning (e.g., attitudes and emotions) from one domain to another, in this case functioning in life in general is proposed to be influenced by a person's functioning in the work domain. Previous research shows that such spillover from work to non-work lives can generally occur (e.g., meta-analysis by Erdogan, Bauer, Truxillo, & Mansfield, 2012), and we propose spillover specifically from employees' OBSE and meaningful work to their flourishing in life.

The positive self-view of OBSE in the workplace spills over to times when the employee is not in the workplace, so that he or she develops a personal sense of well-being in non-work domains with increased self-competence. That is, high OBSE employees are likely to be better able to control stressful conditions in their non-work life as well as in the work life, showing more adaptive coping behaviors and seeking ways of enhancing their well-being. This assumption is consistent with prior studies demonstrating that OBSE had negative associations with general depression and unpleasant affect (Bowling, Eschleman, Wang, Kirkendall, & Alarcon, 2010; Pierce, Gardner, & Crowley, 2016) and a positive association with favorable attitude toward life (Widmer et al., 2012).

We also expect meaning formed around work to positively influence employee flourishing. Important, meaningful work can be a key source of a purposeful life in general, given the fact that work is a large part of people's lives. Some studies argued that meaningful work is related to overall positive experience and judgement about one's life (Judge & Watanabe, 1994; Steger & Dik, 2010; Steger, Dik, & Duffy, 2012). Similarly, we posit that employees experiencing purpose and meaning in their work should hold an optimistic outlook on their future (optimism is one of components of flourishing), because those who enjoy their work and feel happy at work may develop positive attitudes and judgement about their future lives. According to career research, one's career can provide meaningful and purposeful experiences, as well as serve a greater good (calling, Dik & Duffy, 2009; Hall & Chandler, 2005), and people feeling that their work is a calling view their lives as more meaningful, leading to well-being (Duffy, England, Douglass, Autin, & Allan, 2017; Duffy & Sedlacek, 2007). Therefore, meaningful work should result in global-level life meaning and functioning (flourishing).

In summary, we develop a mediation model explaining how work demands can result in employee flourishing through the serial mediators of appraisals (challenge and hindrance) and resources (OBSE and meaningful work). Therefore, by integrating appraisal constructs from transactional theory (Lazarus & Folkman, 1984; adapted as challenge-hindrance appraisal by Cavanaugh et al., 2000) and resource-based theories of stress (i.e., JD-R, Bakker & Demerouti, 2007; COR, Hobfoll, 1989), we propose that particular types of demands can lead to resource gain via their effects on individual appraisals, and these resources are more proximal predictors of psychological well-being in the form of flourishing (Figure 1). The overall mediation hypothesis depicted in the model and the sub-hypotheses that are inherently a part of it are as follows:

Overall Mediation Hypothesis. Challenge appraisal, hindrance appraisal, OBSE, and meaningful work mediate the relationships of work demands with flourishing.

1a. Because the work demands in the present study are theoretically challenge demands, we expect them to be more positively related to challenge appraisal than to hindrance appraisal.

1b. Challenge appraisal will be positively, and hindrance appraisal will be negatively related to OBSE and meaningful work.

1c. OBSE and meaningful work will be positively related to flourishing.

Method

Participants and Procedure

Participants were recruited through Amazon's Mechanical Turk, an online marketplace connecting researchers and survey respondents. Several studies indicated MTurk workers are highly educated and read survey instructions carefully, and they are diverse in age, education, and work experience (Paolacci & Chandler, 2014; Ramsey, Thompson, McKenzie, & Rosenbaum, 2016). Recent meta-analytic research showed that results from MTurk and other online data platforms have reliability and validity (i.e., correlations with criteria) similar to other sources of data for occupational and organizational studies (Walter, Siebert, Goering, & O'Boyle, 2018). To ensure high-quality data, we also surveyed only MTurk workers with a 95% approval rating from their previous assignments and conducted multiple screening tests, as is recommended (e.g., Buhrmester, Kwang, & Gosling, 2011; Mason & Suri, 2012).

Data were collected at two time points with a four-week interval to measure the outcomes at a different time from the predictors, to help reduce common method bias

(Podsakoff, MacKenzie, & Podsakoff, 2012). This amount of time between measurement events has been successful in previous studies of occupational stress and therefore should be an appropriate time interval between data collections (e.g., Daniels & Guppy, 1994; Dawson, O'Brien, & Beehr, 2016). Initially, 439 participants completed the first survey. Of these, 382 (87%) employees completed the second survey four weeks later. To control data quality, we followed the recommended data screening process and attention check filter methods (Cheung, Burns, Sinclair, & Sliter, 2017; DeSimone, Harms, & DeSimone, 2015; Peer, Vosgerau, & Acquisti, 2014); only 16 responses were deleted due to failed attention checks, suspected low effort responding (80% above the same answers overall on the survey), quick response time (less than 3 minutes to complete the survey), and extreme outliers ($\pm 3.0 SD$ from the mean). Therefore, our models were tested with a resulting sample of 366 responses: 54.8% were male, 79.7 % white, and 68.1 % had a bachelor's degree. Their mean age was 35.41 years ($SD = 9.58$), and they worked 40.69 hours per week ($SD = 7.74$) and in their organization for an average of 6.47 years ($SD = 5.54$). The sample consisted of full-time U. S. employees in a variety of industries (e.g., education, technology, health, and manufacturing); and 60.1% were line employees, 16.9% supervisors, 15.3% managers, and 5.7% executives.

Measures

The first survey (Time 1) included measures of the three types of work demands, the challenge and hindrance primary appraisals, and demographics. The Time 2 survey measured the resources of OBSE and meaningful work, and the outcome of flourishing.

Workload (T1). Workload was assessed using three items, $\alpha = .88$, from the *Quantitative Workload Inventory (QWI)* (Spector & Jex, 1998). An example item is "How often does your job require you to work very hard?" rated on a 5-point frequency scale from 1 (less than once per month) to 5 (several times per day).

Responsibility (T1). Responsibility was measured with three items, $\alpha = .91$, adapted from the production responsibility measure developed by Jackson, Wall, Martin, and Davids (1993). This scale was also used to measure outcome responsibility as a job demand in a study by Schmitt et al. (2015). An example item is “An error on my part can cause expansive damage to my company” rated on a 7-point Likert scale from 1 (strongly disagree) to 7 (strongly agree).

Learning demands (T1). Learning demands were measured with six items, $\alpha = .94$, adapted from the *Intensification of Job Demands Scale (IDS)* (Kubicek et al., 2015). An example item is “I have to familiarize myself with new work processes” rated on a 5-point Likert scale from 1 (strongly disagree) to 5 (strongly agree).

Primary appraisal (T1). Primary appraisals were the first mediators in the model and were assessed with two three-item measures for challenge appraisals and hindrance appraisals based on prior theory and research (Cavanaugh et al., 2000; LePine et al., 2005). Specifically, items measuring challenge appraisal are “I view my tasks as challenging,” “My work brings me closer to the accomplishment of personal goals,” and “I feel challenged” (Ohly & Fritz, 2010). The three items for hindrance appraisal are “My work restricts my capabilities,” “My work hinders me from attaining personal goals,” and “Working to fulfill the demands of my job thwarts my personal growth.” They were taken from measures of hindrance appraisal in prior studies (LePine et al., 2016; Searle & Auton, 2015). Respondents rated appraisal items on a scale from 1 (strongly disagree) to 5 (strongly agree). Reliability was .87 for challenge appraisal and .92 for hindrance appraisal.

OBSE and meaningfulness (T2). Two resources, OBSE and meaningful work, were the secondary mediators. OBSE was assessed with ten items, $\alpha = .92$, developed by Pierce, Gardner,

Cummings, and Dunham (1989). A sample item is “I am valuable in this organization” rated on a 7-point Likert scale from 1 (strongly disagree) to 7 (strongly agree).

Meaningful work was measured with Steger et al.'s (2012) ten-item, $\alpha = .97$, *Work as Meaning Inventory (WAMI)*. It has three dimensions: positive meaning (e.g., “I have found a meaningful career”), meaning making via work (e.g., “I view my work as contributing to my personal growth”), and greater-good motivations (e.g., “The work I do serves a greater purpose”). Items were rated on a 1 (absolutely untrue) to 7 (absolutely true) scale.

Flourishing (T2). Flourishing was operationalized with Diener et al.'s (2010) eight-item, $\alpha = .91$, flourishing scale, which measures the unidimensional structure of the flourishing (Diener et al., 2010; Silva & Caetano, 2013). The scale captures important aspects of human functioning, such as feelings of competence, having positive relationships, and leading a meaningful life, providing an overall picture of well-being (Hone, Jarden, Schofield, & Duncan, 2014). A sample item is “I lead a purposeful and meaningful life” rated on a 7-point Likert scale from 1 (strongly disagree) to 7 (strongly agree).

Analyses

We first conducted a confirmatory factor analysis using LISREL 8.8 (Jöreskog and Sörbom, 2006) to calculate fit and parameter statistics as well as test the factor structure of our measures. The confirmatory factor analysis or overall measurement model including all of the study variables (hypothesized 8-factor model) showed an acceptable fit to the data, $\chi^2(674, N = 366) = 2126.70, p < .01$; SRMR = .08; CFI = .96; NFI = .94; IFI = .96. For CFAs, items of each variable were used as indicators except for meaningful work—its three dimensions served as indicators. Then, we tested the overall mediation hypothesis as well as Hypotheses 1a to 1c

simultaneously using path analysis with manifest variables. The fit statistics tested the overall mediation model and provided estimates of indirect effects.

In addition, in order to test the specific mediation effects predicting flourishing, alternative models were tested. The first alternative model tested whether the three work demands would directly predict flourishing in spite of the inclusion of the mediators. Therefore, alternative Model 1 added three direct paths, one each from workload, responsibility, and learning demands, to flourishing. The second alternative model tested whether the challenge and hindrance appraisals would directly predict flourishing in spite of the inclusion of the mediating effects of OBSE and meaningful work. Therefore, alternative Model 2 added two direct paths, from OBSE and meaningful work, to flourishing. Testing these models thus represented attempts to disconfirm the mediation hypotheses.

Results

Means, standard deviations, reliabilities, and correlations of all the variables are presented in Table 1. Correlations corresponding to the paths in the hypothesized model were significant. The three work demands, the predictors in the model, were significantly related to the first two mediators, challenge appraisals, $r = .45$ to $r = .48$, $p < .01$, and hindrance appraisals, $r = -.11$, $p < .05$ to $r = -.26$, $p < .01$. The first two mediators were also related to the two secondary mediators: challenge appraisal was positively related to OBSE, $r = .31$, $p < .01$, and meaningful work, $r = .50$, $p < .01$, whereas hindrance appraisal was negatively related to OBSE, $r = -.42$, $p < .01$, and meaningful work, $r = -.38$, $p < .01$. The two secondary mediators were both positively related to the criterion, flourishing, $r = .56$ for OBSE and $r = .47$ for meaningful work, both $p < .01$.

Hypotheses

Overall mediation hypothesis. The overall mediation hypothesis, regarding the fit of the model with challenge appraisal, hindrance appraisal, OBSE, and meaningful work mediating the

relationships of work demands with flourishing, was supported. The hypothesized path model fit the data moderately well, $\chi^2(13, N = 366) = 84.09, p < .01$; SRMR = .08; CFI = .94; NFI = .93; IFI = .94, and the standardized path coefficients were all significant (Figure 2). Additionally, Table 3 shows the indirect standardized effects of work demands on employee flourishing via two the appraisals (challenge and hindrance) and two resources (OBSE, and meaningful work); the indirect effects are equal to the total effects, suggesting only indirect effects exist.

Next, the alternative models were examined to further test the overall mediation hypothesis. They tested the potential direct effects of the demands (alternative Model 1) and of the appraisals (alternative Model 2) on flourishing. Table 2 shows that none of the new paths added was significant, and overall fit indices were not improved, $\Delta\chi^2[3] = .55, p = .91$ for alternative model 1; $\Delta\chi^2[2] = 4.60, p = .10$ for alternative Model 2. Therefore, the hypothesized serial mediations model was the ideal and most parsimonious model for predicting flourishing, compared to the alternative models. Taken together, regarding the study's overall hypothesized model as illustrated in Figure 1, the model fit statistics and the comparative fit statistics of alternative models both supported the indirect effects of work demands on employee flourishing via two appraisals and resources. Finally, several additional, more specific mediation analyses were run with PROCESS, and the results are presented in Appendix A.

Hypothesis 1a. Regarding hypothesis 1a, workload was positively related to challenge appraisal, $\beta = .21$, but it was not significantly related to hindrance appraisal, $\beta = .06$. The other two demands, responsibility and learning demands, were positively associated with challenge appraisal, $\beta = .27$ and $\beta = .29$, and negatively with hindrance appraisal, $\beta = -.14$ and $\beta = -.24$. Regarding Hypothesis 1a, not only were all of the coefficients from these demands more positive for challenge than for hindrance, but for two demands (responsibility and learning demands) the

coefficients with hindrance were actually negative. For further support for Hypothesis 1a, comparing the correlations in Table 1, all three correlations of the demands with challenge appraisals were more positive than the corresponding correlations of demands with the hindrance appraisal. Tests of the differences between dependent correlations (McNemar, 1969) were significant, for workload, $t(364) = 7.59, p < .01$; for responsibility, $t(364) = 8.25, p < .01$; and for learning demands, $t(364) = 9.76, p < .01$.

Hypotheses 1b and 1c. Results also supported Hypothesis 1b, because challenge appraisal was positively related to OBSE, $\beta = .19$, and meaningful work, $\beta = .42$, and hindrance appraisal was negatively related to OBSE, $\beta = -.35$, and meaningful work, $\beta = -.23$. Hypothesis 1c, that OBSE, $\beta = .45$, and meaningful work, $\beta = .29$, would be positively related to flourishing, was supported too.

Discussion

Based on COR theory (Hobfoll, 1989), demands or stressors can deplete employees' resources, but demands can be appraised as challenging and/or hindering (Cavanaugh et al., 2000; based on transactional stress theory, Lazarus & Folkman, 1984) and therefore can lead to either greater or fewer resources. Although demands can lead to harmful effects on employees (strains) because of the appraisals and their effects on resources, employees could also be better off, thriving or flourishing in the lives. The overall model and its specific links based on these propositions were largely supported: Appraisals and resources together mediate the relationship between work demands and employee flourishing. The study thus contributes to the resources theories of occupational stress (i.e., JD-R, Bakker & Demerouti, 2007; COR theory, Hobfoll, 1989) by explaining that challenging demands can result in primarily in challenging appraisals,

creating increased resources, an indirect effect outlined by the transactional theory of stress (e.g., Lazarus & Folkman, 1984).

The demands chosen in the present study were purported to be challenge demands in earlier studies, studies that did not, however, assess employees' actual appraisals of them (e.g., Cavanaugh et al., 2000; LePine et al., 2005; Stiglbauer, 2018). The present results showed that actual appraisals are important in determining effects of demands, because if demands led to challenge appraisals versus hindrance appraisals, there was a positive effect on the amount of resources available to the employee. Challenge appraisals (positively) and hindrance appraisals (negatively) mediated effects of work demands in relation to employees' motivational resources (sense of self-worth and work meaningfulness). This occurred even though the appraisals were of the whole job rather than of the specific demands being studied (workload, responsibility, and learning). Other, unmeasured, characteristics of the jobs could also have influenced these appraisals; therefore future research is encouraged to use appraisal measures that are more specific to the demands being studied.

Our results also supported the idea of a spillover effect from work to life in general (Erdogan et al., 2012; Pierce et al., 2016). Resources created by positive organizational experiences, OBSE and meaningful work, were linked to employees experiencing more flourishing in their lives. Thus, we extended well-being research by providing evidence that some work demands perceived as challenges contributed to employees' flourishing. No previous studies had specifically examined how challenge demands affected employees' flourishing through appraisal and motivation processes, but the examination of flourishing is consistent with recommendations from positive psychology for research on positive human outcomes regarding stress in the workplace (e.g., Luthans, 2002; Simmons & Nelson, 2007). Our study showed that

motivational resources developed from appraisals contributed to obtaining other life resources, namely the features of flourishing: rewarding relationships, having optimism, and leading a purposeful life (Diener et al., 2010).

Some previous research found demands like those in the present study, which are purportedly challenges, are sometimes seen as hindrances to a lesser extent (e.g., Webster et al., 2011). In the present study, however, they actually tended to be appraised as *less* hindering; there was a negative relationship between the demands and hindrance appraisal. We interpret these negative relationships as strong evidence for our prediction that the demands would be less positively related to hindrance than to challenge demands, because a negative coefficient is certainly less positive than a positive one. We only know of one previous study that found such a negative relationship of one demand (responsibility) with hindrance appraisal, but it was very weak (Webster et al., 2011). Future research could seek to identify conditions under which the relationship of a demand with challenge versus hindrance appraisals actually has opposite signs.

Overall, the study's results supported the view that some work demands tend to be appraised as challenges and have positive consequences, highlighting the role of individual appraisals and resources in achieving a higher level of flourishing. Accordingly, organizations should understand the significance of shaping work conditions to enhance meaningful work and self-worth. One way could be to assign challenging tasks that encourage employees' experiences of high self-value and competence, as well as a sense of meaningfulness. In some industries or specific jobs, it may be difficult to increase the positive types of challenge in the work, but in those situations, other ways of increasing the meaning of work or OBSE could be attempted. Based on previous research for example, meaningfulness tends to be related not only to job resources in motivating job designs (e.g., autonomy and variety; Hackman & Oldham, 1980; Taris & Schaufeli, 2014) but also to specific forms of leadership (e.g., empowering leadership;

Kim & Beehr, 2018). If job design cannot be altered, organizations can select, train, and reward supervisors for empowering behaviors toward subordinates, such as encouraging subordinates' participation in decision-making, taking charge of their jobs, and development of employee skills. Regarding improving employees' OBSE, other people, including supervisors, coworkers, and mentors, tend to be related to favorable self-esteem for employees (e.g., Ghosh, Reio, & Haynes, 2012; Haggard & Park, 2018; Liu & Jian-Min, 2017; Siu & Wang, 2014; Yang, Zhang, Kwan, & Chen, 2018). Organizations can try to promote OBSE by not only improving supervision, but also promoting team building and cooperative work behaviors. In addition, organization-level variables such as organizational justice and organizational support are related to favorable OBSE (e.g., Aryee, Chu, Kim, & Ryu, 2013; Liu, Luksyte, Zhou, Shi, & Wang, 2015; Minibas-Poussard, Le Roy, & Erkmen, 2017), so that managers also can work to be sure fairness and supportive policies are in place.

Limitations and Directions for Future Research

We used a time-lagged study design to examine the potential effects of work demands and appraisals on employees' motivational resources and flourishing; this research design helped to reduce common method effects (Podsakoff et al., 2012), and measurement of the variables in their theoretical causal order helped strengthen support for the proposed model. The use of cross-time data lessens the likelihood that reverse-causation could account for the study's results, but still stronger causal inference could be gained from experimental designs.

Additionally, because the correlation between demands and appraisals was not perfect, there may be additional factors affecting the appraisals, including factors moderating the relationship between demands and challenge-hindrane appraisals. Such boundary effects might be found by examining environmental variables that are often proposed to moderate between

stressors and strains, such as control or social support (e.g., Semmer & Beehr, 2014). The reason they might moderate this relationship is that they might affect appraisals. Supportive others can offer advice and perspective on demanding situations, which can influence appraisals, and having control in a work situation can help the employee take charge and figure out ways to solve problems caused by specific demands. Future studies are also encouraged to explore other contextual factors, such as fairness and leadership styles for their potential effects in the appraisal process. As an example, Lepine et al. (2016) found charismatic leadership moderated the relationship between hindrance appraisals and outcomes among soldiers. Furthermore, empowering leadership focusing on motivational support, autonomy, and evoking positive emotions (Kim, Beehr, & Prewett, 2018) may affect subordinates' reactions to challenge and hindrance appraisals, but these are also forms of potential resources that might help in coping with the potentially aversive effects of stressors.

Individual differences could also be boundary conditions affecting the relationship between demands and appraisals. One study found that types of efficacy may moderate relationships between demands and their appraisals (Liu & Li, 2018). Other personal moderators may also exist. Regarding workload for example, employees with greater job skills might not appraise the same heavy workload to be as challenging as employees with weaker skills. Future research examining demands and appraisals should include theoretically important individual differences.

Finally, we note that the approach to measuring appraisals in the present study was to ask for appraisals of the general tasks of the employee. Some research has asked employees to appraise the specific demands in the job (e.g., appraise the workload; Webster et al., 2011), which is a more specific appraisal and is consistent with the background of demand-hindrance theory. Nevertheless, as in previous studies using the more general appraisal method (e.g., Ohly

& Friz, 2010), the present results were interpretable. A recent review (O'Brien & Beehr, in press) argues that past research indicates appraisals may not usually be necessary for research testing demand-hindrance issues, because demands tend to be appraised similarly within any single culture, where the idiographic differences are small. Nevertheless, we propose that the results might have been even stronger if more specific appraisals were obtained.

Conclusion

We proposed and examined the mediating role of individuals' appraisals in the link of three supposedly challenging demands with work-related resources and the positive life outcome of flourishing. The three demands, which previous literature tended to assert were challenges, were serially linked to flourishing through more challenge appraisal and less hindrance appraisal, followed by more of the resources OBSE or meaningful work. Drawing on resources theories of occupational stress, we also showed that although the stressors or demands are usually thought to result in loss of energy and resources, some particular types of demands (workload, responsibility, and learning demands), tend to be indirectly linked to more rather than less of the two resources in the study.

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Table 1

Descriptive Statistics and Correlations

Variables	Mean	SD	α	1	2	3	4	5	6	7
1. Workload (T1)	3.47	1.17	.88							
2. Responsibility (T1)	4.21	1.28	.91	.41**						
3. Learning Demands (T1)	3.33	1.08	.94	.50**	.32**					
4. Challenge Appraisal (T1)	3.71	0.97	.87	.47**	.45**	.48**				
5. Hindrance Appraisal (T1)	2.24	1.03	.92	-.11*	-.19**	-.26**	-.37**			
6. Organization-Based Self-Esteem (T2)	5.49	0.95	.92	.07	.25**	.07	.31**	-.42**		
7. Meaningful Work (T2)	4.92	1.53	.97	.15**	.24**	.27**	.50**	-.38**	.43**	
8. Flourishing (T2)	5.62	0.91	.91	.09	.17**	.11*	.31**	-.36**	.56**	.47**

Note. $N = 366$. * $p < .05$. ** $p < .01$.

Table 2

Summary of Model Fit Indices

Model Test	χ^2	<i>df</i>	SRMR	CFI	NFI	IFI	$\Delta\chi^2$	Δdf	Δp
Measurement Model	2126.70	674	.08	.96	.94	.96			
Hypothesized Model	84.09	13	.08	.94	.93	.94			
Alternative Model 1: Adding 3 direct paths, one from each predictor to flourishing	83.54	10	.08	.94	.93	.94	.55	3	.91
Alternative Model 2: Adding 2 paths, one each from challenge and hindrance appraisal to flourishing	79.49	11	.08	.94	.93	.94	4.60	2	.10

Note. χ^2 -values for the path models are significant at $p < .01$. $\Delta\chi^2$ refers to comparisons with the hypothesized model.

Table 3

Direct, Indirect, and Total Standardized Effects of the Three Work Demands on Flourishing

Effect from	to	Direct Effects	Indirect Effects	Total Effect
Workload	→ Challenge Appraisal	.21***		.21***
	→ Hindrance Appraisal	.06		.06
	→ OBSE		.02	.02
	→ Meaningful Work		.08	.08
	→ Flourishing		.03	.03
Responsibility	→ Challenge Appraisal	.27***		.27***
	→ Hindrance Appraisal	-.14***		-.14***
	→ OBSE		.10***	.10***
	→ Meaningful Work		.15***	.15***
	→ Flourishing		.09***	.09***
Learning Demands	→ Challenge Appraisal	.29***		.29***
	→ Hindrance Appraisal	-.24***		-.24***
	→ OBSE		.14***	.14***
	→ Meaningful Work		.18***	.18***
	→ Flourishing		.11***	.11***
Challenge Appraisal	→ OBSE	.19***		.19***
	→ Meaningful Work	.42***		.42***
	→ Flourishing		.21***	.21***
Hindrance Appraisal	→ OBSE	-.35***		-.35***
	→ Meaningful Work	-.23***		-.23***
	→ Flourishing		-.22***	-.22***
OBSE	→ Flourishing	.45***		.45***
Meaningful Work	→ Flourishing	.29***		.29***

Note. If the indirect effect is equal to the total effect, only an indirect effect exists. *** *t*-value > 3.29 (*p* < .001).

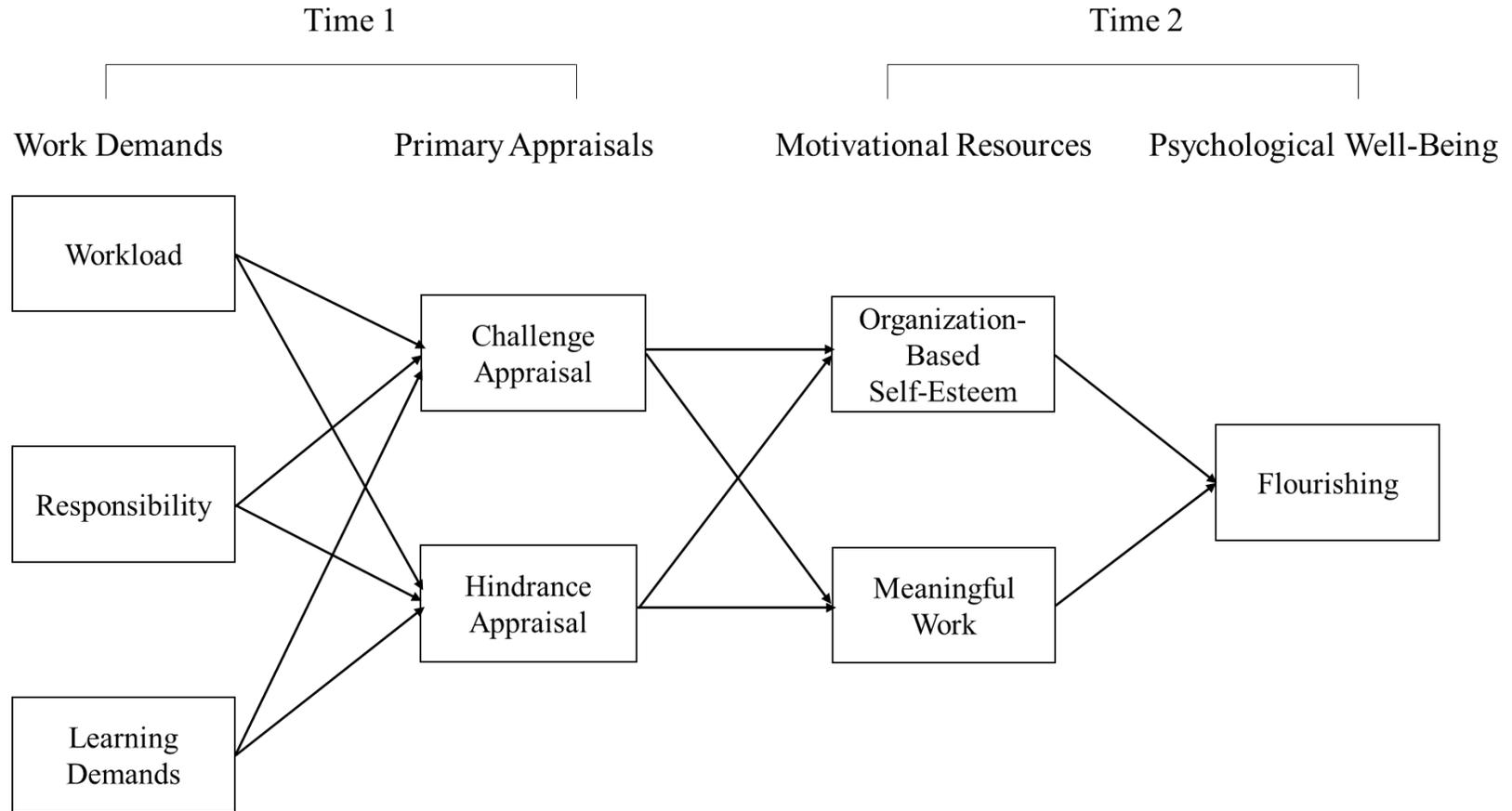


Figure 1. Hypothesized model

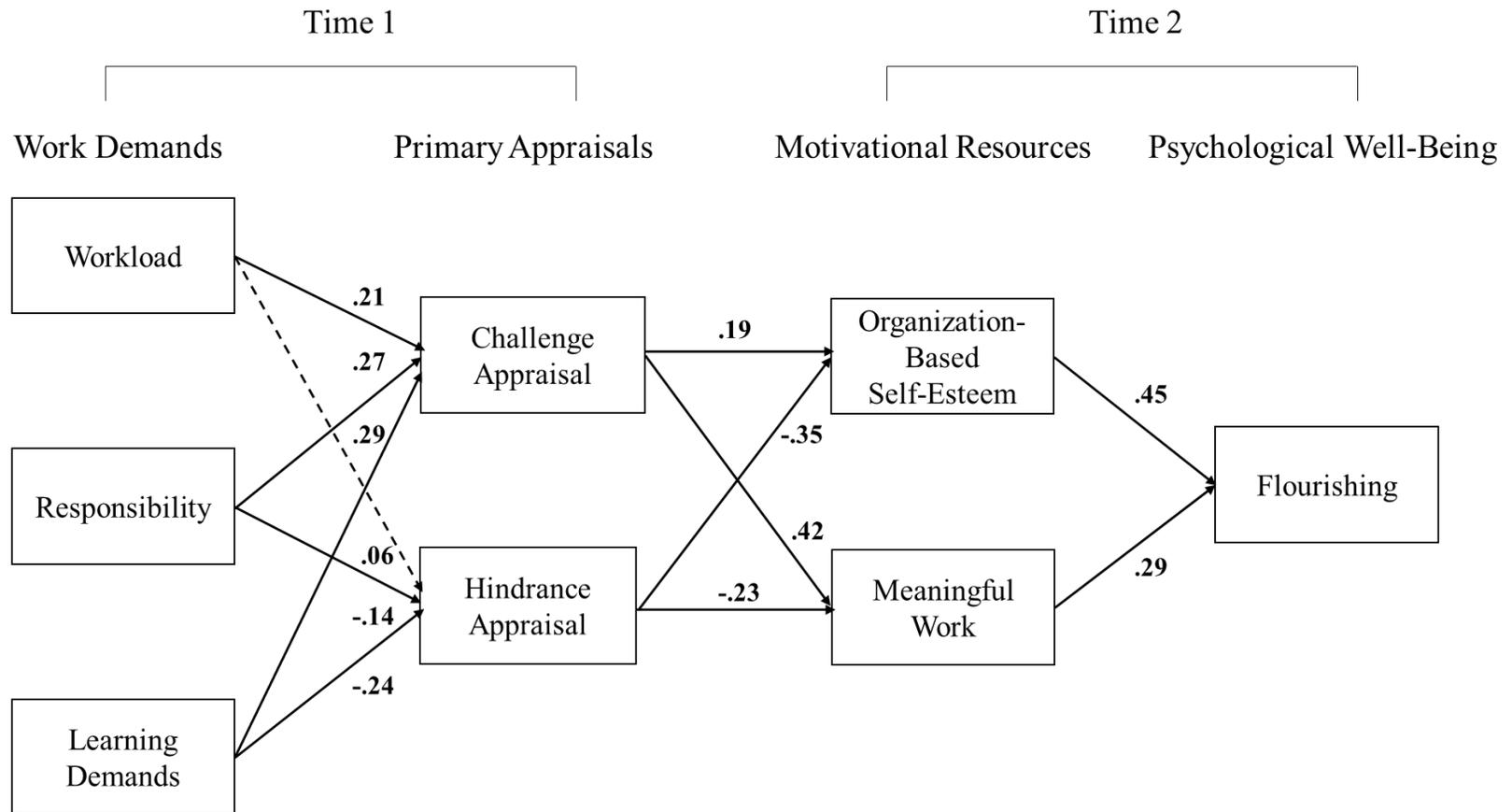


Figure 2. Path diagram with standardized coefficients

Note. All paths were significant at $p < .01$ except the path with a dotted line from workload to hindrance appraisal, $\beta = .06$, *ns*.

Appendix A

For additional tests of the mediation hypotheses, PROCESS modeling (Model 6 allowing up to four mediators operating in serial; Hayes, 2013) was used to simultaneously test for mediation through the two primary appraisals and two resources independently, as well as for serial mediation through both variables. Because of many instances of mediation in the model (12 cases), we ran many separate analyses with 10,000 bootstrap samples. Table I presents the direct effects and estimates for the indirect effects with 95% confidence intervals. Graphical depictions of the mediation models are also provided in Appendix A, showing the 12 two mediator models in which the predictor variable (X) is modeled as influencing criterion (Y) through four pathways. One pathway is indirect and runs from X to Y through the first mediator (M1) only; a second indirect pathway passes through both M1 and M2 sequentially, with M1 influencing M2; and a third indirect path runs through the second mediator (M2) only (see the right column named “*path*” in Table I. A bias-corrected 95% CI for the product of these paths that does not include zero supports evidence of a significant indirect effect (Preacher & Hayes, 2008).

The results of the serial mediation analyses largely supported the hypothesized model. Firstly, note that 10 of the 12 indirect effects from each of the three demands through the four mediators were significant (i.e., the indirect path did not include zero; see the entries for the rows labeled “*Ind2*” in Table I). This means that the two mediators fully accounted for the effects of the demand on flourishing for all but two instances, both involving workload to flourishing through hindrance appraisals. Secondly, the direct link between each of the three predictors (work demands) and the criterion (flourishing) was not significant after the serial mediators were entered in the model (see the entries for the column “*Direct effects $\beta(p)$* ” in Table I). This means

that there were no direct effects of the demands on flourishing. The model's mediation effects were therefore largely supported by PROCESS analyses.

In addition to the key effects noted above, the results include all other links in the models, a total of 60 links. As an example, the first row of Table I tests the path from workload leading to challenge appraisal (M1) and then to flourishing; note that this ignores both the model's second set of mediators, the resources (M2) and hindrance appraisal (M1). In the first row of Table I, the direct effect from workload to flourishing was not significant, $c' = -.01, p = .73$, but the indirect effect of workload on flourishing through challenge appraisal alone (ind1) was significant, $ab = .06, CI (95\%): LL = .01, UL = .11$. We summarize only a few of these 60 effects here, in addition to the key ones already noted. Each of the three work demands showed different indirect effects depending on the four mediators, but some main conclusions are as follows: Indirect effects of workload on flourishing were mediated through challenge but maybe not through hindrance appraisals. Indirect effects of both responsibility and learning demands were mediated through both challenge and hindrance appraisals. Although there were significant and positive relations of OBSE and meaningful work with flourishing, there was no evidence that either OBSE or meaningful work *alone* served as a mediator between two demands (responsibility and learning demands) and flourishing (the 95% confidence intervals include zero; see Table I).

Table I
Direct and Indirect Effects of the Three Work Demands on Flourishing through Multiple Mediators

X	M1	M2	Y	Direct effects		Indirect effects					
				β (p)		<i>ab</i>	<i>SE</i>	<i>CI 95%</i>	<i>ab_{cs}</i>	<i>path</i>	
Workload	Challenge Appraisal	OBSE	Flourishing			.06	.02	.01, .11	.07	Ind1	
						-.01(.73)	.07	.01	.04, .10	.09	Ind2
							-.04	.02	-.09, .01	-.05	Ind3
							.04	.02	-.01, .09	.05	Ind1
		Meaningful Work	Flourishing								
	Hindrance Appraisal	OBSE	Flourishing			.01	.01	.00, .04	.02	Ind1	
		Meaningful Work	Flourishing								

Note. X = a predictor; M1 and M2 = mediators; Y = an outcome. $\beta = c'$ (direct effect). *ab* = estimated indirect effect. *SE* = bootstrap standard error. *ab*, *SE*, and *CI 95%* were obtained from 10,000 bootstrap samples. *ab_{cs}* = completely standardized indirect effect. Ind1 = X → M1 → Y; Ind2 = X → M1 → M2 → Y; Ind3 = X → M2 → Y

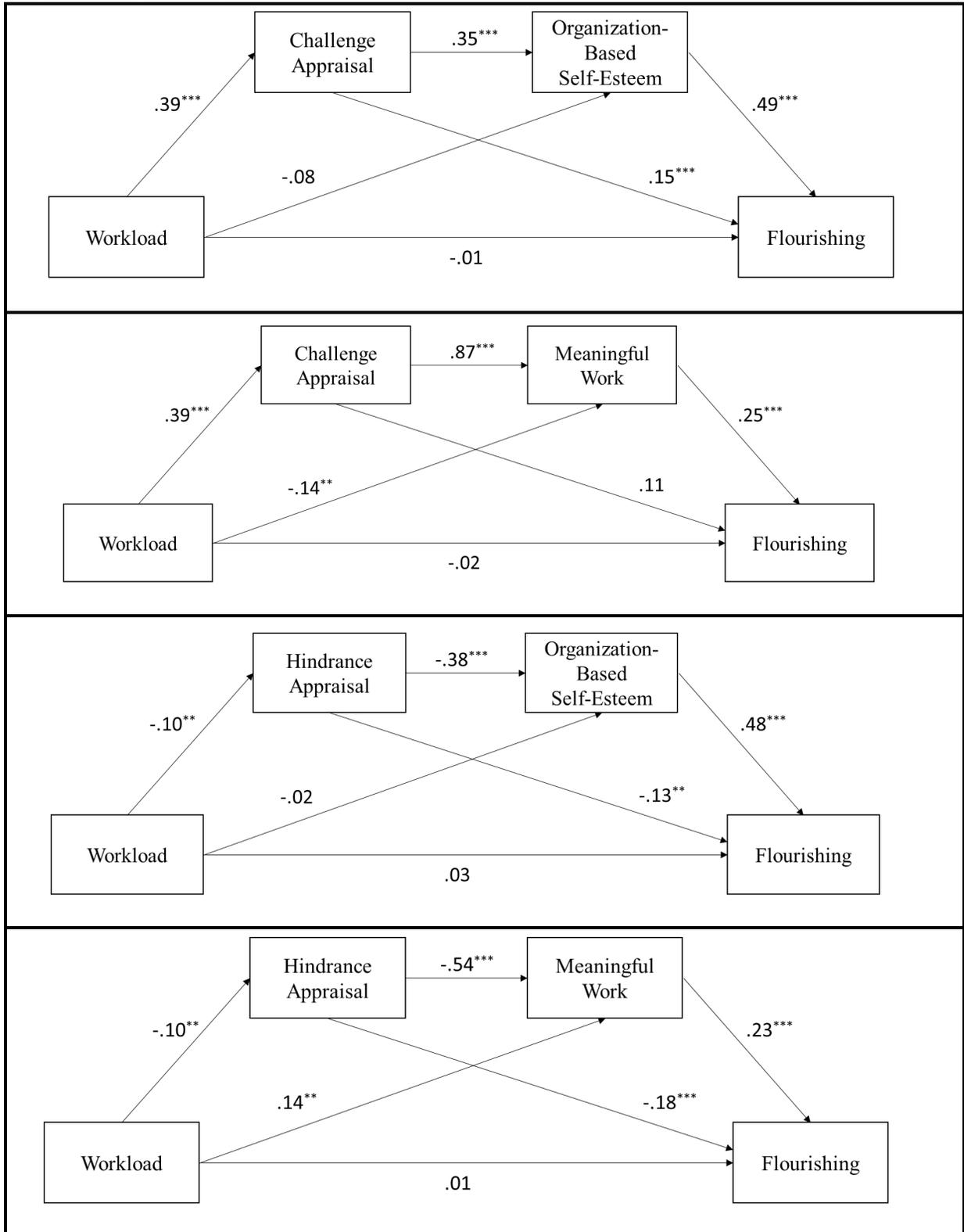
Table I (continued)

X	M1	M2	Y	Direct effects	Indirect effects				
				β (<i>p</i>)	<i>ab</i>	<i>SE</i>	<i>CI</i> 95%	<i>abcs</i>	<i>path</i>
					.05	.02	.01, .09	.07	Ind1
		OBSE		-.02(.54)	.04	.01	.02, .07	.06	Ind2
	Challenge Appraisal		Flourishing		.05	.02	.00, .10	.07	Ind3
					.03	.02	-.02, .07	.04	Ind1
		Meaningful Work		.02 (.52)	.07	.01	.04, .10	.09	Ind2
Responsibility					.00	.02	-.03, .04	.01	Ind3
					.02	.01	.01, .04	.03	Ind1
		OBSE		.01(.63)	.02	.01	.01, .05	.04	Ind2
	Hindrance Appraisal		Flourishing		.06	.02	.03, .10	.09	Ind3
					.03	.01	.01, .05	.04	Ind1
		Meaningful Work		.03(.36)	.02	.01	.01, .04	.02	Ind2
					.05	.02	.02, .08	.07	Ind3

Table I (continued)

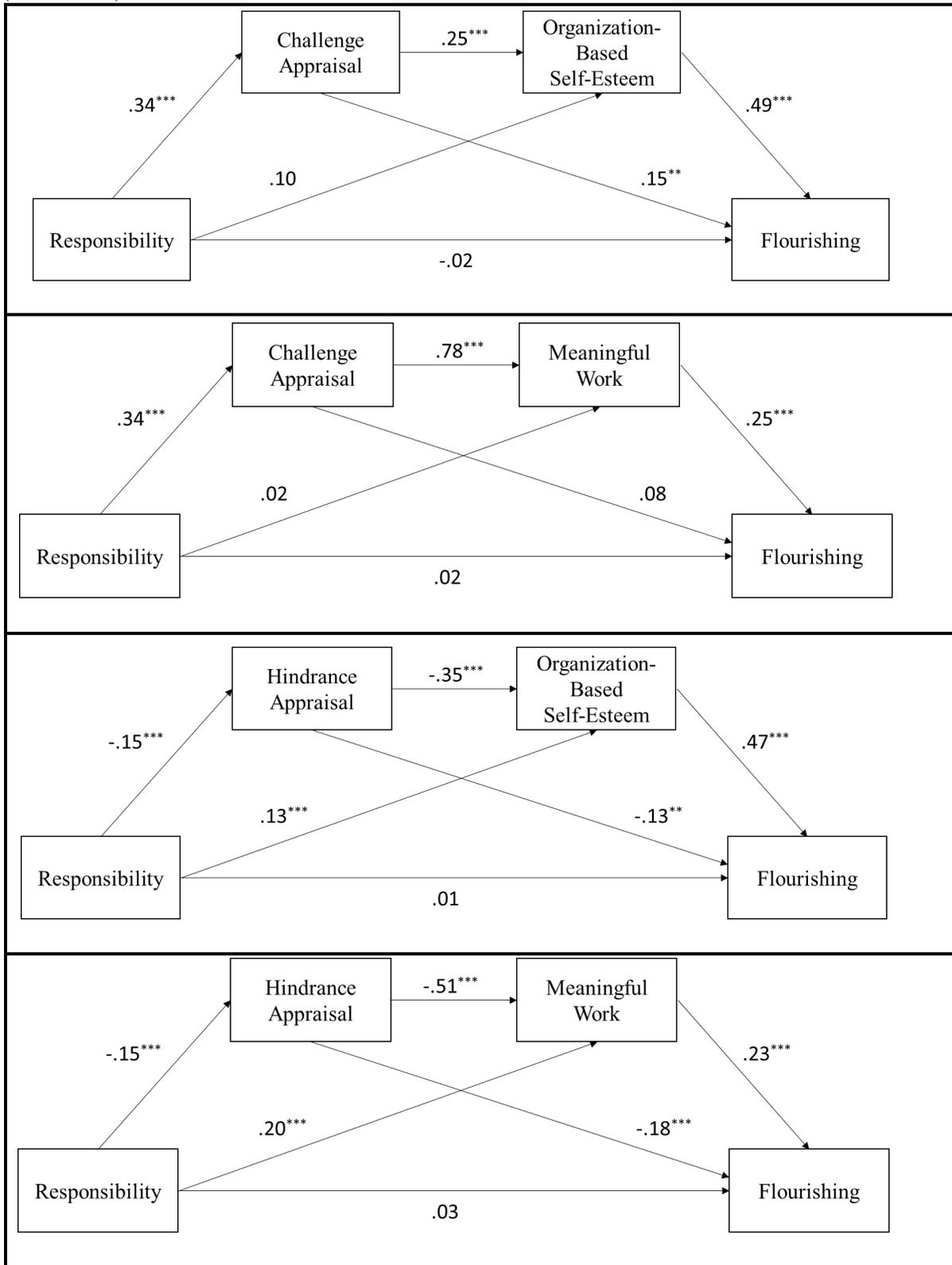
X	M1	M2	Y	Direct effects	Indirect effects				
				β (<i>p</i>)	<i>ab</i>	<i>SE</i>	<i>CI</i> 95%	<i>abcs</i>	<i>path</i>
Learning Demands	Challenge Appraisal	OBSE	Flourishing		.06	.03	.01, .12	.07	Ind1
				.00(.94)	.08	.02	.05, .11	.09	Ind2
				-.05	.03	-.10, .00	-.05	Ind3	
				.05	.03	.00, .11	.06	Ind1	
		Meaningful Work		-.06(.21)	.08	.02	.05, .12	.10	Ind2
				.01	.02	-.02, .05	.01	Ind3	
	Hindrance Appraisal	OBSE	Flourishing		.03	.01	.01, .06	.04	Ind1
				.03(.36)	.05	.01	.02, .08	.06	Ind2
				-.02	.02	-.06, .03	-.02	Ind3	
				.05	.01	.02, .08	.06	Ind1	
		Meaningful Work		-.04(.27)	.03	.10	.01, .05	.03	Ind2
				.06	.02	.02, .11	.07	Ind3	

Graphical Depiction of the OLS Mediation Model Using PROCESS Model 6, Bootstraps= 10000



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

(Continued)



(Continued)

