1 **Subjective Experience of Demands and Resources across O*NET Job Elements**

Abstract

Much of our understanding of job demands and resources rests on an assumption that some aspects of jobs are resources and some are demands. This study documents variability in subjective ratings of job characteristics with respect to interpretation as resource and demand. Next, we quantify the degree to which perceptions match the literature-implicated resources/demands of job characteristics and also document associations with stress, burnout, and engagement. Job characteristics were not commonly categorized as solely resource or demand. Rather, job resources were also frequently viewed as challenging demands. OUTCOME VARIABLE INFORMATION HERE. These findings have implications for job design and management particularly with regard to resource-laden elements that may also be experienced as demanding.

Keywords: O*Net, challenge-hindrance framework, job demands-resources, job characteristics

Word count: 4,942

Subjective Experience of Demands and Resources across O*NET Job Elements

While we have accumulated a vast literature on how job demands and resources relate to and influence key organizational outcomes, recent work has called into question some of our basic assumptions regarding the experience of demands in particular. We build on the work of a small, but growing number of researchers who argue that work elements may be appraised simultaneously as resources and demands (Webster et al., 2011) or that appraisals may change over time (Rosen et al., 2020). Our primary aims explore whether: 1) variability exists in subjective ratings of job characteristics with respect to how much they serve as resources and demands, 2) some characteristics are more likely than others to vary across demand and resource, 3) whether subjective appraisals are differentially related to positive and negative outcomes, and lastly, 4) if resources buffer the relationships between stressors (challenge and hindrance) and outcomes. To illuminate these questions, we consult the O*Net database, which provides a rich source of information about occupational requirements (i.e., work activities and context). We retain O*Net terminology of working condition elements throughout this paper (e.g., personal, contextual, or task-related conditions or elements of one's work).

The Job Demands-Resources Theory and Challenge-Hindrance Stressor Framework

Two related theories serve as the foundation for the current study: the job demands-resources theory (e.g., Bakker & Demerouti, 2014, 2017) and Cavanaugh et al. (2000)'s challenge-hindrance stressor framework. The job demands-resources theory (e.g., Bakker & Demerouti, 2014, 2017) highlights the importance of demands and resources on the experience of motivation and strain as well as other, more distal outcomes. *Resources* include physical, psychological, social, or organizational aspects of the job that may help an employee achieve work goals, reduce job demands, or promote personal growth and development (e.g., Bakker & Demerouti, 2014, 2017). In contrast, demands include components of a job that require sustained effort, and as such, produce psychological or

physiological strain (high work pressure, for example, is commonly cited as a demand, e.g.,

Demerouti et al., 2001). The perception of an element of one's job as a resource or demand

activates one of two distinct processes: either health impairment (resulting from demands) or

motivation (resulting from resources; Bakker and Demerouti (2014)).

Cavanaugh et al. (2000) proposed the idea that not all demands are equal with her

challenge-hindrance stressor framework, which draws from Lazarus and Folkman (1984)'s

perspectives on stress and coping. The challenge-hindrance stressor framework distinguishes

between *two forms* of demands – *challenges* and *hindrances.* Both are considered stressors

(e.g., Cavanaugh et al., 2000). Challenge demands promote mastery, personal growth, and

future gains – these stressors should lead to coping strategies that facilitate achievement.

Work characteristics consistent with this definition, for example, include time pressure and

responsibility (M. A. LePine, 2022). Hindrance demands, in contrast, inhibit growth,

learning and goal achievement. Example hindrance stressors in a work context include role

conflict and role ambiguity (M. A. LePine, 2022).

The original work on this topic suggests that challenge stressors are typically

associated with positive outcomes and hindrance stressors are associated with negative

outcomes (e.g., Cavanaugh et al., 2000). Meta-analytic explorations of this the

challenge-hindrance stressor framework have generally been supportive of the framework's

propositions (see, for example, J. A. LePine et al. (2005) regarding performance and

Crawford et al. (2010) regarding engagement).

M. A. LePine (2022) explain the mechanisms by which demands are related to

performance and wellbeing outcomes. First, stressors appraised as challenges typically result

in a more positive appraisal, and engagement is likely to happen as a result. Engagement, in

turn, is positively related to motivation, performance, growth, and wellbeing. Of note is that

this energy may be depleted eventually, leading to strain. Stressors appraised as hindrances

elicit a different process. Disengagement is likely to result from a hindrance appraisal, which

69 in contrast, negatively impacts motivation, performance, growth and wellbeing. This

70 happens because resources are depleted via frustrations and other affectively negative

71 reactions (M. A. LePine, 2022).

72   Recent work affirms these appraisal processes. Pindek et al. (2024) meta-analyzed

73 diary studies of dynamic stressors (i.e., short-term daily experiences of stressors) and

74 concluded that daily challenge stressors had a positive *direct* association with performance,

75 but a negative *indirect* association with performance through strain (as described by M. A.

76 LePine (2022) above). As expected, hindrance stressors had both direct and indirect

77 (through strain) associations with performance (Pindek et al., 2024).

78 **Are Perceptions of Job Resources, Challenge Demands, and Hindrance Demands**

79 **Universal?**

80   Interestingly, much of our existing knowledge regarding the way these relationships

81 between resources/demands and outcomes (e.g., stress, engagement) function is grounded in

82 the assumption that certain job characteristics can generally be considered to be (positive)

83 resources while others can be considered demands. Even Pindek et al. (2024) notes this

84 limitation of a priori classification of characteristics as demands, challenges, or hindrances, as

85 do Horan et al. (2020). In fact, although much of our research on job demands based on a

86 priori classifications (Searle & Auton, 2015), we contend that the classification of a work

87 characteristic as a demand or resource is largely subjective by nature (e.g., an employee

88 could most certainly perceive public speaking as a resource or as a demand).

89   Horan et al. (2020) and M. A. LePine (2022) specifically call out the need for

90 additional research to incorporate the appraisal process described by Lazarus and Folkman

91 (1984) into the challenge-hindrance stressor framework, which aligns with other calls to

92 capture subjective ratings of demands and resources. In fact, Horan et al. (2020) state that

93 "...stressors are only challenge or hindrance stressors to the extent that they are perceived as

94 such by employees" (p. 3). They go on to suggest future research continue to move away

95   from *a priori* classifications of stressors, as doing so can be problematic for theoretical and

96   empirical reasons. Theoretically, *a priori* classifications run counter to the original

97   transactional theory of stress on which the challenge-hindrance stressor framework was based

98   for which appraisals are a central component. Empirically, as shown above, we have some

99   evidence suggesting people can appraise a work characteristic as both a hindrance and

100 challenge at the same time (e.g., Searle & Auton, 2015).

101   As such, the first question we ask is whether people distinguish between resources,

102 challenges, and hindrances, and whether a job characteristics might even be considered

103 simultaneously as more than one of these (e.g., both a challenge and a resource). Evidence

104 suggests the employees do, in fact, differentiate between challenge and hindrance stressors

105 (e.g., Bakker & Sanz-Vergel, 2013; Gerich, 2017; Webster et al., 2011), at least. For example,

106 Bakker and Sanz-Vergel (2013) found that work pressure was perceived as a hindrance

107 demand, and emotional demands as more of a challenge demand. Webster et al. (2011)

108 approached this question with three common workplace demands: workload, role ambiguity,

109 and role conflict. They found while that each could be appraised primarily as a challenge or

110 hindrance demand, they could also simultaneously be perceived as being both a challenge

111 and hindrance demand to different degrees. We aim to both replicate the above findings and

112 extend them to include resources.

113   Hypothesis 1: Job characteristics differ in consistancy regarding subjective

114   worker perception as a challenge or hindrance demand, or resource.

115   Hypothesis 2: Job characteristics are not exclusively categorized as a resource or

116   demand, but rather, some job characteristics are viewed as both a resource and a

117   demand.

Connecting Appraisals to Workplace Outcomes

The second set of analyses focuses on predicted associations without relevant work-relevant outcomes frequently studied across via job demands-resources- (Bakker & Demerouti, 2017) and challenge-hindrance stressor-frameworks (Cavanaugh et al., 2000). Here, we specifically explore appraisals of O*Net-derived work characteristics as resources, challenges, and/or hindrances in association with engagement, strain and burnout. As argued above, appraisals are predicted to be associated with different forms of coping, and subsequently, outcomes. See Figure 1 for proposed associations.

Both the job demands-resources model and the challenge-hindrance stressor framework have been associated with a wide variety of organizational outcomes ranging from affective variables like job satisfaction, to motivation commitment, and performance (e.g., J. A. LePine et al., 2005). We provide only a sampling of associated outcome examples here for context but note that the current project will focus on three outcomes: engagement, strain, and burnout. Beginning with resources, Hakanen et al. (2008) found job resources influenced future work engagement. Moreover, in a sample of teachers and dentists, Bakker et al. (2007) found that resources were most predictive of engagement when job demands were especially high.

The findings regarding demands are more complex, presumably because the way challenge vs. hindrance appraisal influence coping strategies. Appraising a demand as a challenge has been positively associated with sources of motivation (i.e., sense of self-worth and work meaningful (Chen et al., 2021), engagement (Crawford et al., 2010), and strain and turnover intentions (e.g., Abbas & Raja, 2019), for example. Challenge appraisals have been negatively associated with job search behaviors (e.g., Cavanaugh et al., 2000).

Hindrance demands (appraisals) are largely related to outcomes as the job demands-resources model predicts. When a demand was appraised as a hindrance – it was

¹⁴³ negatively associated with motivational resources (Kim & Beehr, 2020), engagement

¹⁴⁴ (Crawford et al., 2010), job search behaviors and job satisfaction, (Cavanaugh et al., 2000).

¹⁴⁵ Chen et al. (2021) found that daily hindrance demands were negatively associated with

¹⁴⁶ cognitive wellbeing and work family enrichment. Further, turnover intentions, turnover and

¹⁴⁷ withdrawal behaviors are negatively related to hindrance stressors (Podsakoff et al., 2007)].

¹⁴⁸ Interestingly, both challenges and hindrances have been shown to positively predict strain

¹⁴⁹ ((Abbas & Raja, 2019 Abbas & Raja, 2019; J. A. LePine et al., 2005; Podsakoff et al., 2007;

¹⁵⁰ Webster et al., 2010), which further highlights the complex association between appraisals

¹⁵¹ and subsequent outcomes. Given the differential relationships described above, we make the

¹⁵² following predictions:

¹⁵³ Hypothesis 3a: Engagement is predicted by resources and challenges.

¹⁵⁴ Hypothesis 3b: Strain and burnout are differentially predicted by challenges and

¹⁵⁵ hindrances. **Take a look at significant difference between slope**

¹⁵⁶ **coefficients (b's) of, for example, challenge–>strain &**

¹⁵⁷ **hindrance–>strain**

¹⁵⁸ In addition to the these direct relationships, we aim to extend work suggesting that

¹⁵⁹ resources can act as a buffer between job demands and strain (e.g., Bakker et al., 2005) and

¹⁶⁰ burnout (e.g., Xanthopoulou et al., 2007). Bakker and colleagues (2005) were the first to

¹⁶¹ report empirical evidence to support the idea job resources could potentially buffer the

¹⁶² negative impact of job demands on stress reactions like burnout. Bakker et al. (2005)

¹⁶³ explored the interaction between 4 demands (e.g., work overload, physical demands) and 4

¹⁶⁴ resources (e.g., social support, feedback) and three dimensions of burnout (exhaustion,

¹⁶⁵ cynicism, and professional efficacy), and found some support for the prediction that high

¹⁶⁶ demands with low resources predicted greater levels of cynicism and exhaustion among

¹⁶⁷ employees in higher education. Similarly, Xanthopoulou et al. (2007) also found some

¹⁶⁸ support for this interaction (high demands + low resources leads to greater burnout) among

home healthcare employees. They concluded that a variety of resources, including autonomy, social support, performance feedback, and opportunities for professional development buttered the connection between demands (i.e., patient harassment, workload, physical and emotional demands) and burnout. We extend the established job demands-resources model buffer proposition to both challenge and hindrance stressors (demands) as follows:

Hypothesis 4a:Resources moderate the relationship between challenge stressors and the outcomes of strain and burnout such that these relationships become weaker as workers perceive more resources.

Hypothesis 4b:Resources moderate the relationship between hindrance stressors and the outcomes of strain and burnout such that these relationships become weaker as workers perceive more resources.

Method

Participants

Of the 785 individuals who initially accessed the survey link, 112 indicated that they were not interested, had more than 200 missing responses, or had 20 or more identical consecutive sequential responses (Yentes & Wilhelm, 2021). Applying a further screen regarding attention checks (there were four attention checks embedded throughout, asking respondents to indicate a specific answer) resulted in the retention of 568 respondents who constitute the current sample. Regarding tenure, 13.57% had been in their referent job less than 6 months, 19.20% between 6 months and a year, 49.12% between one and five years, 13.27% between 5 and 10 years, and 4.87% more than 10 years. Respondent ages ranged from 18 to 65 with an average of 28.18 years old ($SD = 7.53$). The survey offered a free-field gender identity category, although the sample predominantly self-identified as female (52.58%) or male (46.83%).

Materials

The Occupational Information Network (O*Net) contains a comprehensive description of occupations (Peterson et al., 2001). This widely accessed database houses hundreds of standardized and occupation-specific descriptors of occupations in the US and these descriptions are continually updated. We focused on 98 work activity and context statements which O*Net groups into *activity* categories of information input (e.g., where and how are the information and data gained that are needed to perform this job?), interacting with others (e.g., what interactions with other persons or supervisory activities occur while performing this job?), mental processes (e.g., what processing, planning, problem-solving, decision-making, and innovating activities are performed with job-relevant information?) and work output (e.g., what physical activities are performed, what equipment and vehicles are operated/controlled, and what complex/technical activities are accomplished as job outputs?). Work *context* statements are grouped into interpersonal relationships (e.g., the context of the job in terms of human interaction processes), physical work conditions (e.g., the work context as it relates to the interactions between the worker and the physical job environment), and structural job characteristics (e.g., the relationships or interactions between the worker and the structural characteristics of the job).

O*Net collects information about these categories by periodically asking workers job characteristic questions, which often have unique response categories. For example, "How responsible is the worker for work outcomes and results of other workers?" has response options ranging from *no responsibility* to *very high responsibility*, while the question, "How often do you use electronic mail in this job?" has options ranging from *never* to *every day.* We retained O*Net's response scales while asking for statement relevance, all of which shared the same 5-point scale regardless of semantic label difference. Other than minor grammatical editing (for example, changing "the worker" to "you"), we also retained the O*Net wording for our item stems.

Procedure

Data were collected through Prolific, an online data collection platform. An email was sent to a random subset of all eligible participants in the Prolific respondent pool, notifying them about their eligibility for the study based on demographic information. Eligibility requirements included being 18 or older and holding either a full-time or part-time job. Participants then voluntarily chose to respond to the online survey after reading an informed consent. Participants were asked to think about their primary job, and the items they were presented with depended on the specific job characteristics they initially specified. Thus, if a respondent indicated that a characteristic was not part of their job, they were not subsequently asked to rate the level of resource (. . . this aspect of your job is a resource that can be functional in achieving work goals, reduce job demands, or stimulate personal growth/development), challenge (. . . this aspect of your job is a challenge that can promote mastery, personal growth, or future gains), or hindrance (. . . this aspect of your job is a hindrance that can inhibit personal growth, learning, and work goal attainment) in randomized order. The total number of items on the survey was less than 392 (98 characteristics x 4 repeated measurements) because we did not ask for demand and resource evaluations for 14 O*Net characteristics that we projected would have very low frequency of endorsement across respondents (one excluded characteristic, for example, was . . . *the extent to which the worker is exposed to radiation on the job*). Participants were compensated for their participation in this study estimated to require 45 minutes' time in the amount of six dollars through Prolific.

Results

H1 posits that static job characteristics are not necessarily always experienced similarly across workers - as hindrances, challenges, or resources. We explore this hypothesis first at the job characteristic level before presenting a broader perspective. Figures 2 and 3 present only extreme snapshots of characteristic variability in the form of the 8-most

consistently rated and *inconsistently rated* resources, challenges, and demands.[1] These figures

present average item ratings, but the central elements of interest are the standard deviations,

which reflect the characteristics with the relative greatest and least consistency. Figure 2

presents the resources, challenges, and hindrances that are *most consistently agreed on* as

indexed by (relatively) low standard deviations, while Figure 3 presents the characteristics

with the greatest amount of *disagreement* across workers. The figures demonstrate that what

is widely seen as a resource and challenge tends to be somewhat agreed upon (the range of

the "lowest 8" resource standard deviations is 0.70 to 0.88 and the range of lowest 8

challenge standard deviations is 0.79 to 0.86). However, there is considerably less relative

agreement regarding the degree to which job elements should be considered to be hindrances,

with the 8 elements showing the *greatest agreement* still ranging in fairly large standard

deviations (ranging from 1.12 to 1.16).

In addition to highlighting extremely agreed- or disagreed-upon items, Figure 4

presents our standard deviation indices across all rated items. Here, the Figure 2

discrepancies receive greater context, with the *spread* of difference exhibiting wider

distributions of agreement for challenge and resource ratings (and relatively *bunched* levels of

disagreement for hindrances; note the spread of the challenge and resource histograms

relative to the hindrance histogram). Some characteristics are largely agreed upon as being

challenges and resources, while all hindrance perceptions exhibit a relatively higher level of

disagreement. This points to *hindrances*, in particular, as being likely amenable to future

probing regarding moderating conditions. A Bartlett's test for homogeneity of variance

across the challenge, hindrance, and resource ratings confirms this difference ($\chi^2 = 76.83$, p

$< .01$). In sum, these results provide some collective support for H1, and particularly so for

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[1] A full list of item characteristic ratings, along with summary averages and standard deviations is available
in supplementary online resources. The Figures 2 and 3 presentations are only limited to 8 characteristics per
perceived category because of space restrictions (there are 252 individual characteristic ratings in the online
resources).

268 hindrances, which are differently experienced across our raters.

269   The second hypothesis stated that job characteristics would not be uniquely

270 categorized as a resource or demand. Table 1 provides the correlations among the O*Net

271 "scale"-level groupings across ratings of resource, challenge, and hindrance. We would expect

272 to see minimal correlations if job characteristics *were* uniquely categorized. First, the

273 average correlation within all resource categories (variables 1 through 7 in Table 1) was .43

274 (SD = .13, range from .15 to .64), and challenge categories exhibited similar associations

275 (ranging from .12 to .70, M = .43, SD =.16). Hindrance categories, however, had less

276 differentiation across categories, with relatively elevated correlations ranging from .33 to .86,

277 M = .62, SD = .17. When people perceived hindrances, these seem to be shared across

278 different types of job activities, whereas challenges and resources exhibit greater

279 differentiation. Taken with the Figure 5 takeaway, this hints that workers are likely either

280 generally experiencing hindrances at work or they are not.

281   The mean resource to challenge correlations within the same dimension ranged from

282 .62 to .66 (M = .64, SD = .02; for example, the association between information input

283 ratings as a resource and as a challenge was .62). The correlations between resources and

284 challenges *across* dimensions (for example, the correlation between mental processes and

285 work output was .42 and .39) ranged from .08 to .50, M = .32, SD = .12. The

286 resource-hindrance correlations within the same dimension ranged from -.16 to -.30 (M =

287 -.24, SD = .05), while the correlations between resources and hindrances *across* dimensions

288 ranged from .05 to -.27, M = -.14, SD = .08. The mean challenge to hindrance correlations

289 within the same dimension ranged from -.04 to -.27 (M = -.21, SD = .08). The correlations

290 between challenges to hindrances across dimensions ranged from .12 to -.26, M = -.11, SD =

291 .09. In summary, correlations were larger when what was being rated was the same type of

292 characteristic. Challenge and hindrance demands demonstrated smaller relationships, but

293 mostly negative. Challenges and resources within the same O*Net dimensions are strongly

²⁹⁴ and positively related. These results provide support for H2, suggesting that there is overlap

²⁹⁵ in how employees perceive job characteristics - particularly regarding what is perceived as a

²⁹⁶ *resource* being also perceived as a *challenge*. Stated another way, job characteristics are not

²⁹⁷ uniquely categorized as a resource or as a demand.

²⁹⁸   We next explored whether there was statistical support for the hypothesis that the

²⁹⁹ relationship between the challenge stressors and outcomes (i.e., engagement, stress, and

³⁰⁰ burnout) were moderated by resources. In order to test for the presence of an interactive

³⁰¹ effect, a series of hierarchical regressions were conducted with challenge stressors and

³⁰² resources added in step one of the model and an interaction term, challenge

³⁰³ stressors*resources, added in step two of the model.

³⁰⁴   Table 3 summarizes the results. Sum scores for the predictors were used here, and

³⁰⁵ predictor variables were mean centered prior to running the following regressions. First,

³⁰⁶ challenges and resources explained a statistically significant amount of the variability in

³⁰⁷ engagement, $R^2 = 0.15$, Adj. $R^2 = 0.15$, $F(2, 565) = 50.09$, $p < .001$. H3A DESCRIPTION

³⁰⁸ HERE: resource slope is significant, challenge is not significant. The inclusion of the

³⁰⁹ interaction term in step two of the model contributed a significant addition to the model,

³¹⁰ $F(3, 564) = 35.62$, $p < .001$, $\Delta R^2 = 0.01$, $\Delta F (1, 564) = 5.82$, and thus provides statistical

³¹¹ support for the presence of moderation. Figure 6 illustrates the interaction. With low levels

³¹² of resources, the relationship between challenges and engagement is relatively flat and

³¹³ engagement is comparatively low. With more resources, the relationship between challenges

³¹⁴ and engagement is negative, but engagement still remains higher with greater reported

³¹⁵ challenge when more resources are perceived.

³¹⁶   Next, challenge stressors and resources did not explain a significant amount of the

³¹⁷ variance in stress, $R^2 = 0.01$, Adj. $R^2 = 0$, $F(2, 565) = 1.67$, $p = .189$. The inclusion of the

³¹⁸ interaction term in step two of the model did not contribute a significant addition to the

³¹⁹ model, $F(3, 564) = 1.17$, $p = .320$, $\Delta R^2 = 0.00$, $\Delta F (1, 564) = 0.17$, and thus does not

support the presence of moderation.

Finally, challenge stressors and resources explained a statsically significant amount of the variability in burnout, $R^2 = 0.04$, Adj. $R^2 = 0.04$, $F(2, 565) = 1.67$, $p = .189$. The inclusion of the interaction term in step two of the model did not contribute a significant addition to the model, $F(3, 564) = 1.17$, $p = .320$, $\Delta R^2 = 0.00$, $\Delta F (1, 564) = 2.25$, and thus failing to provide statistical support for the presence of moderation. In sum, these findings do not provide support for the assertion that resources would moderate the relationships between challenge stressors and the outcomes of strain and burnout.

We also explored whether there was an interaction between hindrance stressors and resources on the outcomes (i.e., engagement, stress, and burnout). A second group of hierarchical regressions were conducted with hindrance stressors and resources added in step one of the model and an interaction term, hindrance stressors x resources, added in step two of the model. See Table 4.

Sum scores for the predictors were used here, and predictor variables were mean centered prior to running the following regressions. First, hindrance stressors and resources explained a statistically significant amount of the variability in engagement, $R^2 = 0.17$, Adj. $R^2 = 0.16$, $F(2, 565) = 55.90$, $p < .001$. The inclusion of the interaction term in step two of the model did not contribute a significant addition to the model, $F(3, 564) = 37.25$, $p < .001$, $\Delta R^2 = 0.00$, $\Delta F (1, 564) = 0.13$. An interaction between hindrances and resources was not found.

Next exploring stress, hindrance stressors and resources explained a statistically significant amount of the variability in stress, $R^2 = 0.01$, Adj. $R^2 = 0.01$, $F(2, 565) = 3.13$, $p = .045$. The inclusion of the interaction term in step two of the model contributed a significant addition to the model, $F(3, 564) = 6.89$, $p < .001$, $\Delta R^2 = 0.03$, $\Delta F (1, 564) = 14.28$, supporting the presence of a moderated effect. See Figure 7. As expected, the

345 relationship between hindrance stressors and strain becomes weaker as workers perceive more

346 resources.

347   Similarly, hindrance stressors and resources explained a statistically significant

348 amount of the variability in burnout, $R^2 = 0.04$, Adj. $R^2 = 0.03$, $F(2, 565) = 10.68$, $p < .001$.

349 The inclusion of the interaction term in step two of the model contributed a significant

350 addition to the model, $F(3, 564) = 9.49$, $p < .001$, $\Delta R^2 = 0.01$, $\Delta F(1, 564) = 6.89$,

351 supporting the presence of a moderated effect. Again, see Figure 8. As expected, the

352 relationship between hindrance stressors and burnout becomes weaker as workers perceive

353 more resources.

354   Summatively these findings provide support for the assertion that resources would

355 moderate the relationships between hindrance stressors and the outcomes of strain and

356 burnout.

357   In addition to the two hypotheses, two sets of exploratory analyses were also pursued:

358 1) do literature-implicated resources materialize as perceived resources and 2) do

359 literature-implicated demands materialize as perceived demands? To answer these questions,

360 authors first categorized O*Net items into the elements listed in the JD-R literature. For

361 example, autonomy is frequently described as a resource. An O*Net item is, "How much

362 decision making freedom, without supervision, does your job offer?". This O*Net item was

363 retained within the "autonomy" category. Mean ratings of the O*Net items were then

364 computed by element (e.g., all of the items representing autonomy) to explore whether

365 literature-implicated resources and demands were evaluated as such.

366   Figure 5 presents these comparisons visually, where the bar lengths represent mean

367 ratings within element category (e.g., the white bar represents mean O*Net resource ratings

368 for a given JD-R element). First exploring the right side of Figure 5, there is a pattern of the

369 highest level ratings being those of literature-derived resources (e.g., job control). As

370 described above, the left side of Figure 5 shows literature-derived demand categories (e.g.,

371 work pressure). However, in contrast, we do not see a clear demarcation of resource and

372 challenge, as would be expected if the job characteristics evidenced consistency (the

373 literature-driven consistency would manifest as "high" gray and black bars and "low" white

374 bars). In alignment with what we observed regarding variability in ratings of hindrance

375 stressors in H1, there is much less consistency in how employees rated what should

376 objectively be "hindrances" at work.

377 Repeated-measures ANOVAs were computed to further explain each of the patterns

378 observed descriptively in Figure 5. The effect for Job Control was $F_{(2,1134)} = 52.78$ ($\eta^2 =$

379 0.08). The effect for Participation was $F_{(2,1124)} = 991.16$ ($\eta^2 = 0.64$). The effect for

380 Autonomy was $F_{(2,1074)} = 951.90$ ($\eta^2 = 0.64$). The effect for Team Cohesion was $F_{(2,1120)} =$

381 853.39 ($\eta^2 = 0.60$). Statistical significance was less than .001 for all four category

382 comparisons. Here, the pattern was as expected. Across categories, resources were rated the

383 highest (see white bars representing resources in Figure 5). However, as can be seen, mean

384 challenge (which is a demand) was rated quite similarly and above the midpoint of 3 across

385 JD-R categories. In fact, the means were nearly identical for resource and challenge ratings

386 for all for categories. The literature-implied category with the lowest resource rating also has

387 the highest hindrance rating, so job control is positive and negative.

388 Next, repeated-measures ANOVAs were also run for the group of literature-implicated

389 *demands* (see the left hand side of Figure 5). The effect for Overwork was $F_{(2,1134)} = 17.71$

390 (η^2 was 0.03). The effect for Physical Environment was $F_{(2,1108)} = 112.97$ ($\eta^2 = 0.17$). The

391 effect for `Time Pressure` was $F_{(2,1090)} = 82.22$ ($\eta^2 = 0.13$). The effect for Emotional

392 Demands was $F_{(2,1098)} = 393.43$ ($\eta^2 = 0.42$). The effect for Recipient Contact was $F_{(2,1126)} =$

393 $1,031.73$ ($\eta^2 = 0.65$). The effect for Work Pressure was $F_{(2,1132)} = 718.12$ ($\eta^2 = 0.56$). In all

394 cases, statistical significance was less then .001. However, the findings revealed that what the

395 literature implicates as a demand was actually evaluated as a *resource* (all resource means

396 are above the midpoint). This is contrary to the expectation that ratings would match our

397 assumption of what a demand constitutes. Looking at demands, there is a large difference

398 between whether a characteristic is viewed as a challenge or hindrance. See the pattern of

399 white resource bars on the left hand side of Figure 5. In other words, demands are viewed as

400 resources. In sum, these results provide some support for RQ 1 and 2.

Discussion

402   The major aim and contribution of this paper was to examine whether there was

403 variability in subjective ratings of job characteristics with respect to how much they serve as

404 resources and demands (both challenge and hindrance), and also whether or not there is a

405 match between the literature-implicated resources/demands and subjective ratings of these

406 characteristics using the comprehensive taxonomy provided by O*Net. The findings broadly

407 revealed that there was relatively more consistency in ratings of resource and challenge

408 characteristics, and far more variability in job characteristics rated as hindrance stressors.

409 This finding lends additional evidence to Horan et al. (2020)'s conclusion that "...stressors

410 are only challenge or hindrance stressors to the extent that they are perceived as such by

411 employees" (p. 3). Lastly, we also found support for the hypothesis that job characteristics

412 are not uniquely categorized as a resource or demand, but rather, some job characteristics

413 are rated highly as both a resource and a demand (H2). Specifically, we consistently

414 observed a pattern of job characteristics seen as challenging also being cited as a resource.

Implications

416   The findings presented above have implications for both theory and practice. First,

417 this research is couched within the well-studied job demands-resources theory (Demerouti et

418 al., 2001). We argue that while useful, additional emphasis should be placed on individual

419 differences in perceptions of job characteristics. In fact, our findings support the related

420 literature suggesting that perceptions of resources and demands, broadly, are not universal -

421 there are individual differences in how employees experience the characteristics of their jobs

422 (Webster et al., 2011). This finding aligns quite well with both the transactional theory of

stress and coping, and the challenge-hindrance stressor framework, which collectively argue

that employees perceive stimuli (i.e., job characteristics) uniquely (Lazarus & Folkman,

1984), and thus, could appraise them as either a challenge or hindrance to their job

performance (Cavanaugh et al., 2000). Further, Cavanaugh et al. (2000) suggests that

challenge stressors are typically associated with positive outcomes and hindrance stressors

are associated with negative outcomes (e.g., Cavanaugh et al., 2000).

Differences in outcomes depending on whether or not an employee perceives a job

characteristic to be a challenge or hindrance has practical implications. Our results suggest

that what is generally seen as a resource and challenge tends to be agreed upon moreso that

what is seen a hindrance. In fact, hindrance demands are rated more variably and thus, it

may be important to have conversations about job characteristics and expectations at

multiple time points after hire. For example, having open conversations with employees

regarding their subjective perceptions of characteristics that may be unique in limiting their

performance or comfort. Such conversations could happen during an annual performance

review or more informally. In addition, J. A. LePine et al. (2005) and Podsakoff et al. (2007)

encourage organizations to incorporate strain-reducing activities like training and support to

offset the negative effects of challenging job demands, which may be associated with

increased performance in the short term, but strain when prolonged. The current results

suggest that these activities and training sessions would ideally be personalized.

Limitations and Future Directions

Cross-sectional

As with all individual studies, this project was limited in scope, and as such, there

are a number of avenues for future study worth exploring. First, although we aggregated to

both literature-derived as well as O*Net groupings, essentially we were dealing with

single-item scales. Although not ideal psychometrically, this provided a strong linkage to the

established O*Net framework. Related to that, we intentionally worked within the O*Net

database, and in selecting job context and activity items, did not include other types of job characteristics that may be important resources/demands. Therefore, to the extent that O*Net is not an exhaustive repository, there are existing characteristics that we did not capture. For example, O*Net also includes styles and values, which we did not sample. Future studies may want to expand to explore these additional aspects of work.

We also retained the literature-derived definitions of resources, challenges, and hindrances (Demerouti et al., 2001). Given the high associations observed between ratings of resource and challenge, it is possible that respondents did not distinguish between these definitions as cleanly as we intended. Future investigations may wish to explore the colloquial versus academic phrasing of these questions and how that may impact observed associations between resources and challenges. It would also be prudent to consider work-relevant outcomes associated with similar job characteristic ratings.

Lastly, there may be some practical utility to pursue training interventions aimed at *how* characteristics are appraised. Perhaps the clinical literature may be informative - for example, within cognitive behavioral therapeutic applications, the way in which situations are appraised can be a mechanism to help battle affective disorders such as depression. Given the current findings, where the same characteristic may be viewed similarly as both a demand and resource, it is possible that framing interventions may ameliorate negative outcomes of demands such as, for example, stress or strain.

In sum, this endeavor explored the job-demands-resources literature from a unique lens from within a universally accessible framework. We showed that there are far more individual differences in how employees perceive demands and resources than much of our current research suggests. While resources and challenges idiosyncratic more similarly experienced, what is experienced as a hindrance tends to be idiosyncratic.

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Table 1

Challenge, hindrance, and resource bivariate correlations.

	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20
1. onet.resource.ii	-																			
2. onet.resource.mp	.61**	-																		
3. onet.resource.wo	.46**	.50**	-																	
4. onet.resource.io	.49**	.64**	.45**	-																
5. onet.resource.ir	.46**	.55**	.37**	.60**	-															
6. onet.resource.pc	.19**	.15**	.32**	.18**	.37**	-														
7. onet.resource.sc	.43**	.46**	.41**	.45**	.48**	.37**	-													
8. onet.challenge.ii	.62**	.49**	.37**	.41**	.33**	.08	.33**	-												
9. onet.challenge.mp	.47**	.63**	.42**	.50**	.41**	.09*	.38**	.65**	-											
10. onet.challenge.wo	.34**	.39**	.64**	.34**	.30**	.29**	.38**	.45**	.49**	-										
11. onet.challenge.io	.34**	.48**	.33**	.65**	.48**	.13**	.40**	.50**	.68**	.43**	-									
12. onet.challenge.ir	.32**	.40**	.26**	.48**	.63**	.23**	.39**	.46**	.60**	.39**	.70**	-								
13. onet.challenge.pc	.12**	.08	.21**	.13**	.26**	.66**	.29**	.14**	.12*	.33**	.20**	.31**	-							
14. onet.challenge.sc	.27**	.31**	.28**	.38**	.40**	.27**	.62**	.36**	.41**	.38**	.51**	.45**	.40**	-						
15. onet.hindrance.ii	-.26**	-.26**	-.17**	-.24**	-.18**	-.02	-.08	-.27**	-.26**	-.10*	-.19**	-.16**	.06	-.10*	-					
16. onet.hindrance.mp	-.23**	-.30**	-.17**	-.22**	-.15**	.05	-.07	-.22**	-.27**	-.10*	-.18**	-.15**	.12**	-.06	.86**	-				
17. onet.hindrance.wo	-.21**	-.25**	-.22**	-.22**	-.06	-.02	-.12**	-.14**	-.21**	-.23**	-.15**	-.09*	.05	-.10*	.66**	.69**	-			
18. onet.hindrance.io	-.22**	-.27**	-.14**	-.29**	-.18**	-.01	-.10*	-.21**	-.25**	-.10*	-.27**	-.19**	.07	-.10*	.79**	.86**	.69**	-		
19. onet.hindrance.ir	-.22**	-.24**	-.15**	-.24**	-.25**	-.06	-.11**	-.19**	-.21**	-.08*	-.20**	-.23**	.04	-.12**	.79**	.80**	.61**	.82**	-	
20. onet.hindrance.pc	-.04	-.08*	-.09*	-.11**	-.10*	-.16**	-.13**	-.03	-.04	-.06	-.08*	-.10*	-.04	-.13**	.38**	.33**	.47**	.35**	.47**	-
21. onet.hindrance.sc	-.13**	-.15**	-.13**	-.19**	-.13**	-.09*	-.23**	-.12**	-.10*	-.05	-.16**	-.12**	-.01	-.17**	.62**	.62**	.56**	.64**	.66**	.45**

Note. * p < .05, ** p < .01; The seven O*Net grouping categories represented here are: Information Input (ii), Mental Processes (mp), Work Output (wo), Interacting with Others (io), Interpersonal Relationships (ir), Physical Work Conditions (pc), and Structural Job Characteristics (sc)

Table 2

Overall variable bivariate correlations.

	1	2	3	4	5	M	SD
1. Challenge	-					3.75	0.50
2. Hindrance	-.21***	-				2.39	0.78
3. Resource	.74***	-.25***	-			3.77	0.48
4. Stress	-.03	.11**	-.08	-		2.59	0.97
5. Burnout	-.05	.08	-.08	.70***	-	3.04	0.87
6. Engagement	.28***	-.11**	.33***	-.24***	-.30***	4.03	0.79

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

Table 3

Moderated regression summary of outcomes regressed on challenges and resources

DV	Step	Model	β	R^2	ΔR^2
Engagement	1	Challenge	-0.08		
		Resource	0.37 **	0.15 **	
	2	Challenge	-0.08		
		Resource	0.37 **		
		Challenge X Resource	-0.07 *	0.16 **	0.01 *
Stress	1	Challenge	0.12		
		Resource	-0.06	0.01	
	2	Challenge	0.12		
		Resource	-0.06		
		Challenge X Resource	0.02	0.01	0.00
Burnout	1	Challenge	0.28 **		
		Resource	-0.12	0.04 **	
	2	Challenge	0.28 **		
		Resource	-0.12		
		Challenge X Resource	0.05	0.04 **	0.00

Note. * = p < .05; ** = p < .01

Table 4

Moderated regression summary of outcomes regressed on hindrances and

resources

DV	Step	Model	β	R^2	ΔR^2
Engagement	1	Hindrance	-0.11 **		
		Resource	0.35 **	0.17 **	
	2	Hindrance	-0.10 **		
		Resource	0.34 **		
		Hindrance X Resource	-0.01	0.17 **	0.00
Stress	1	Hindrance	0.08 *		
		Resource	0.01	0.01 *	
	2	Hindrance	0.16 **		
		Resource	-0.10		
		Hindrance X Resource	-0.17 **	0.04 **	0.03 **
Burnout	1	Hindrance	0.09 *		
		Resource	0.10 *	0.04 **	
	2	Hindrance	0.13 *		
		Resource	0.03		
		Hindrance X Resource	-0.11 **	0.05 **	0.01 **

Note. * = p < .05; ** = p < .01
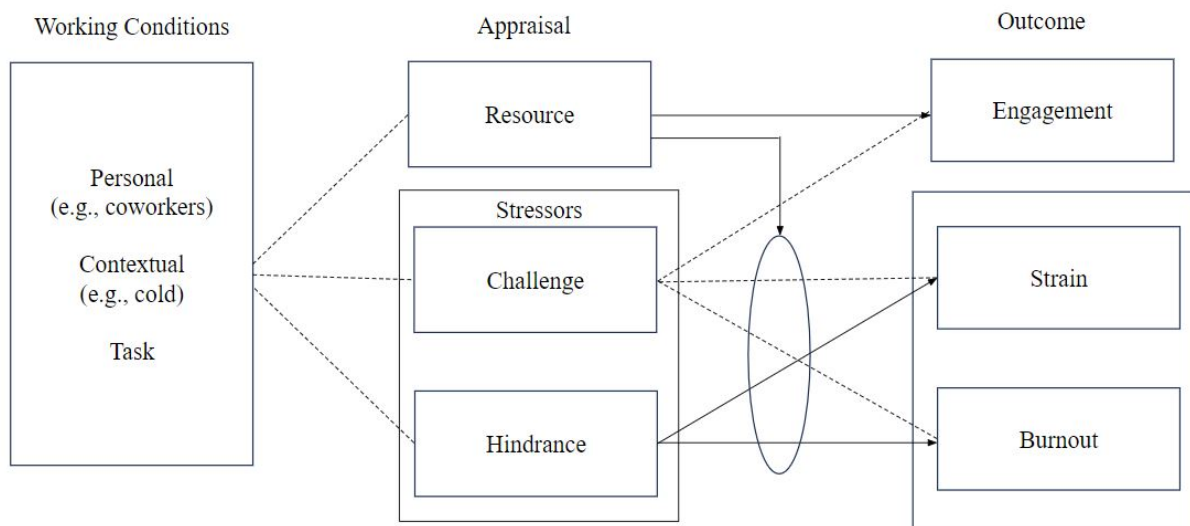
Figure 1

Focal constructs and associations of interest
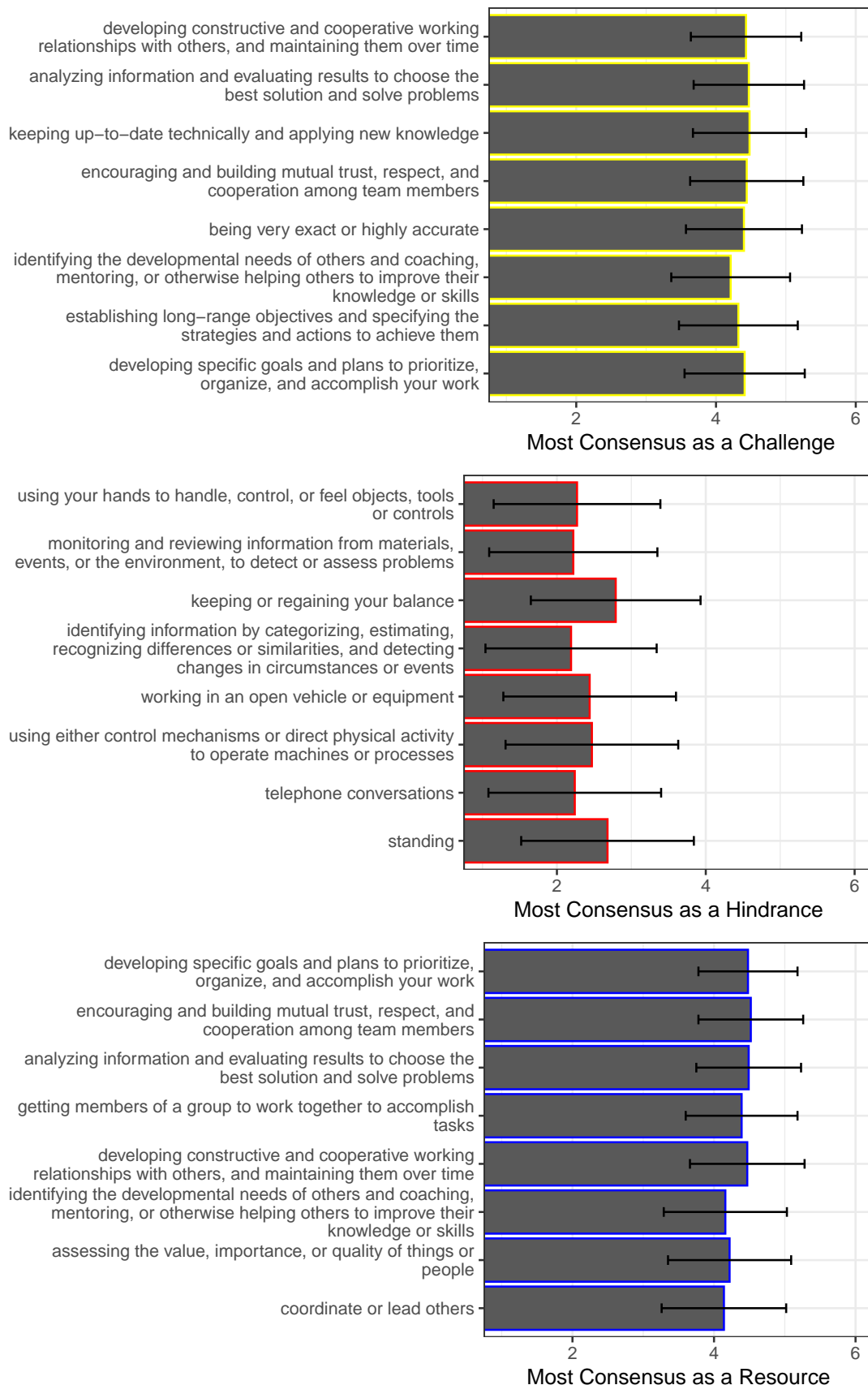
Figure 2

Characteristics percieved most similarly (lowest standard deviations).
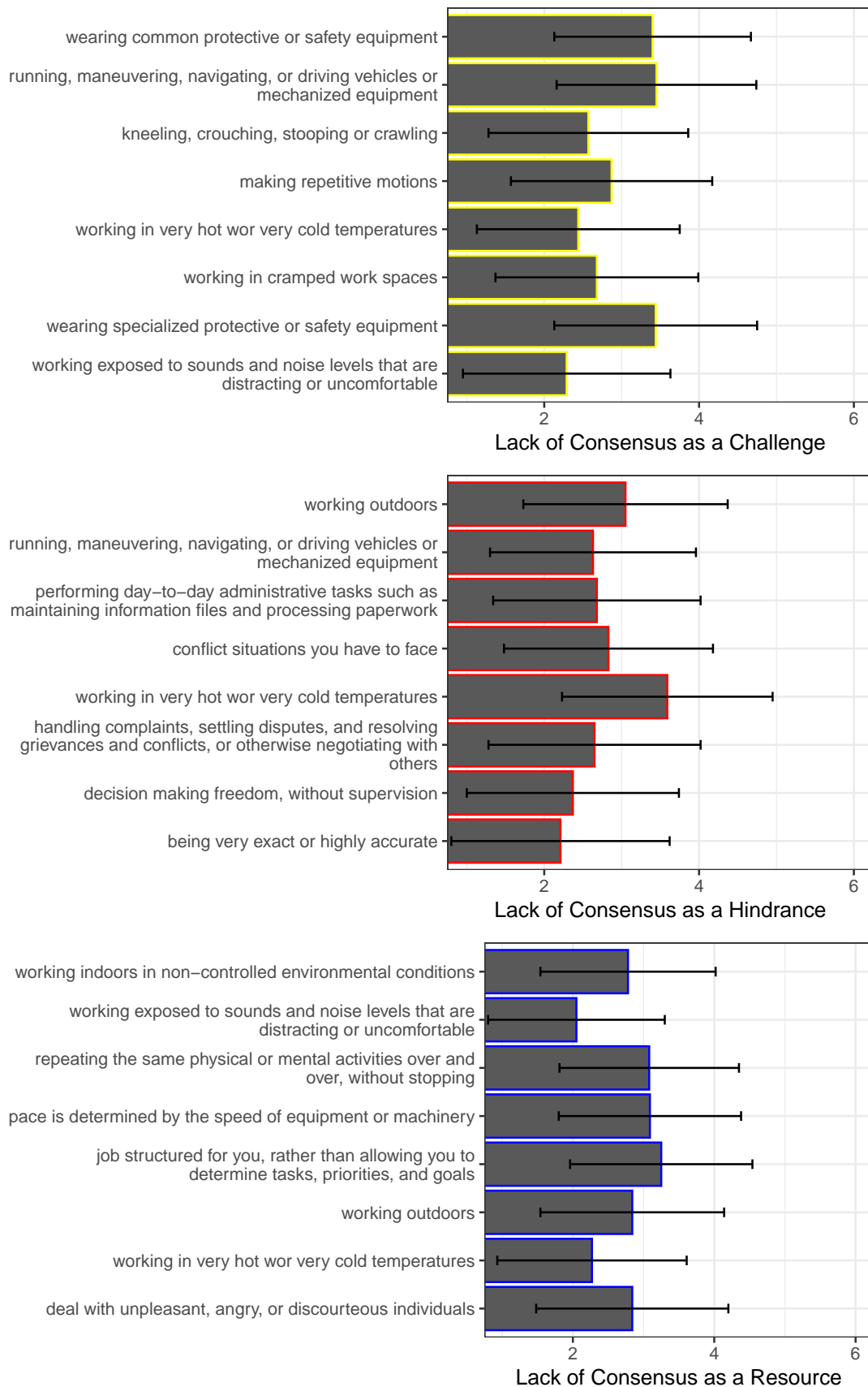
Figure 3

*Characteristics percieved most **dissimilarly** (largest standard deviations).*
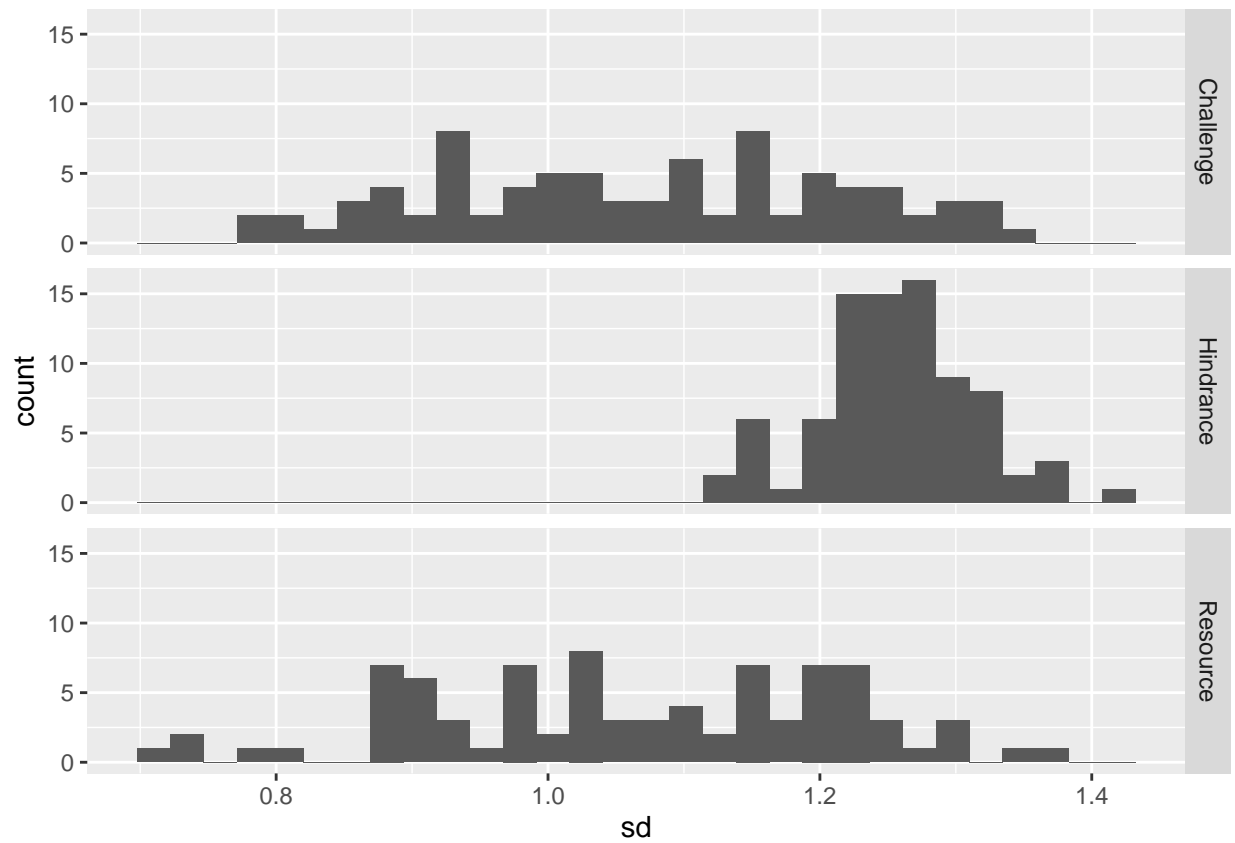
Figure 4

*Frequency distribution of standard deviations across characteristics deemed resources, chal-
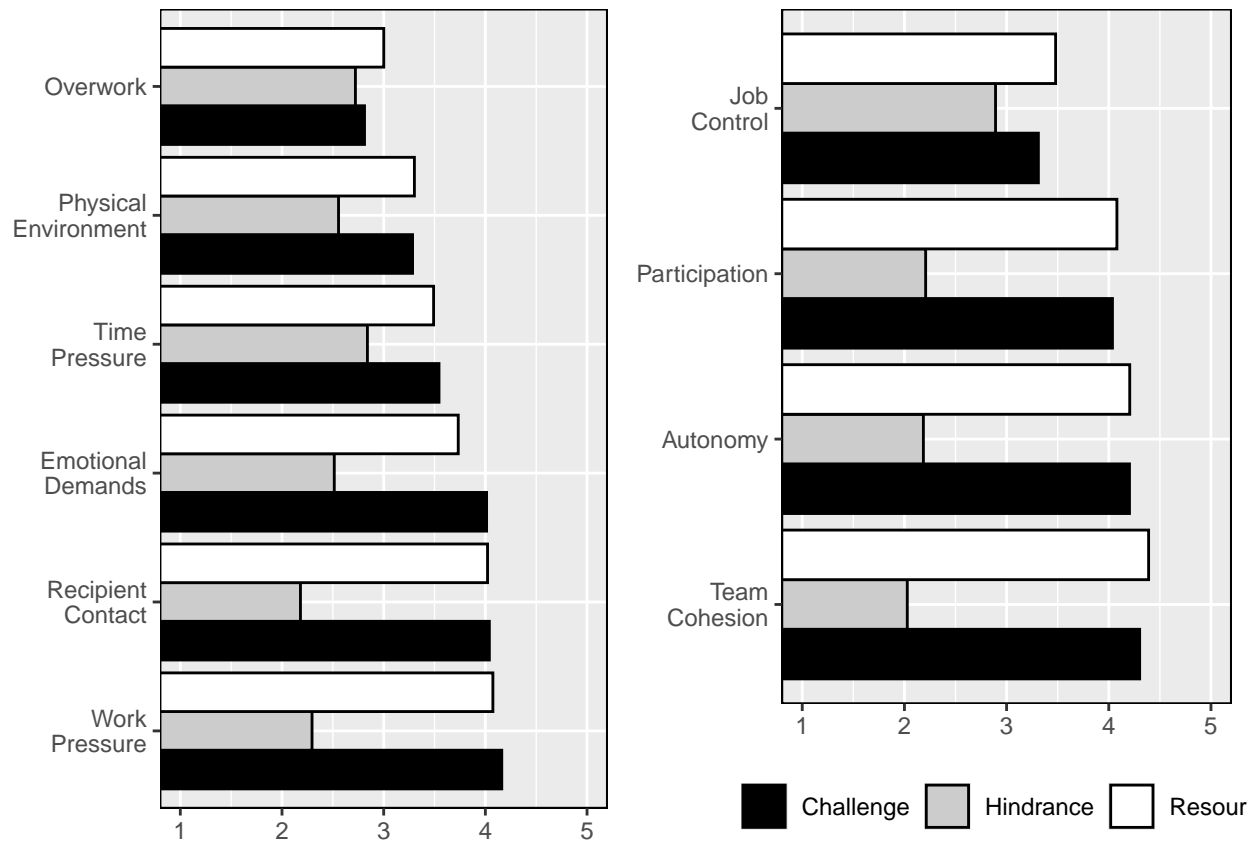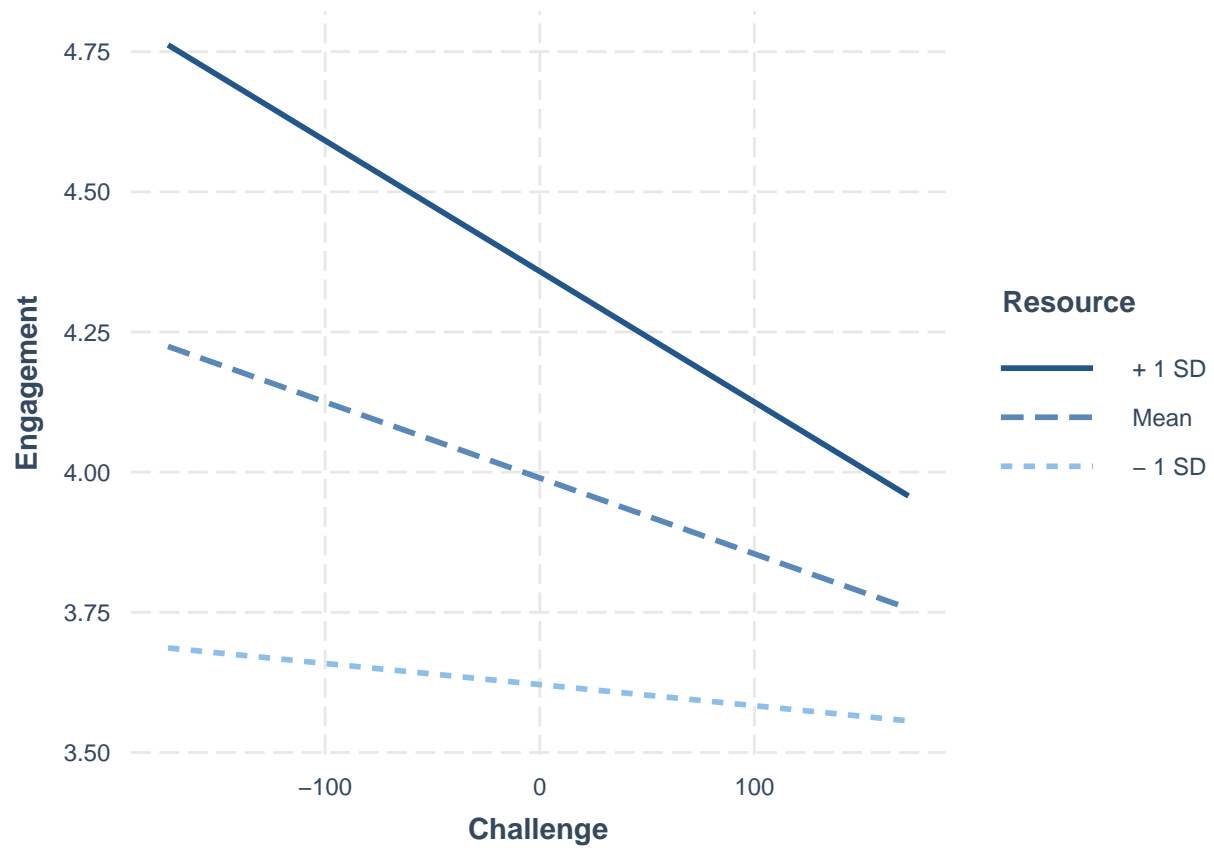lenges, and demands.*

Figure 5

Average characteristic rating grouped by literature-implicated categorizations.

Figure 6

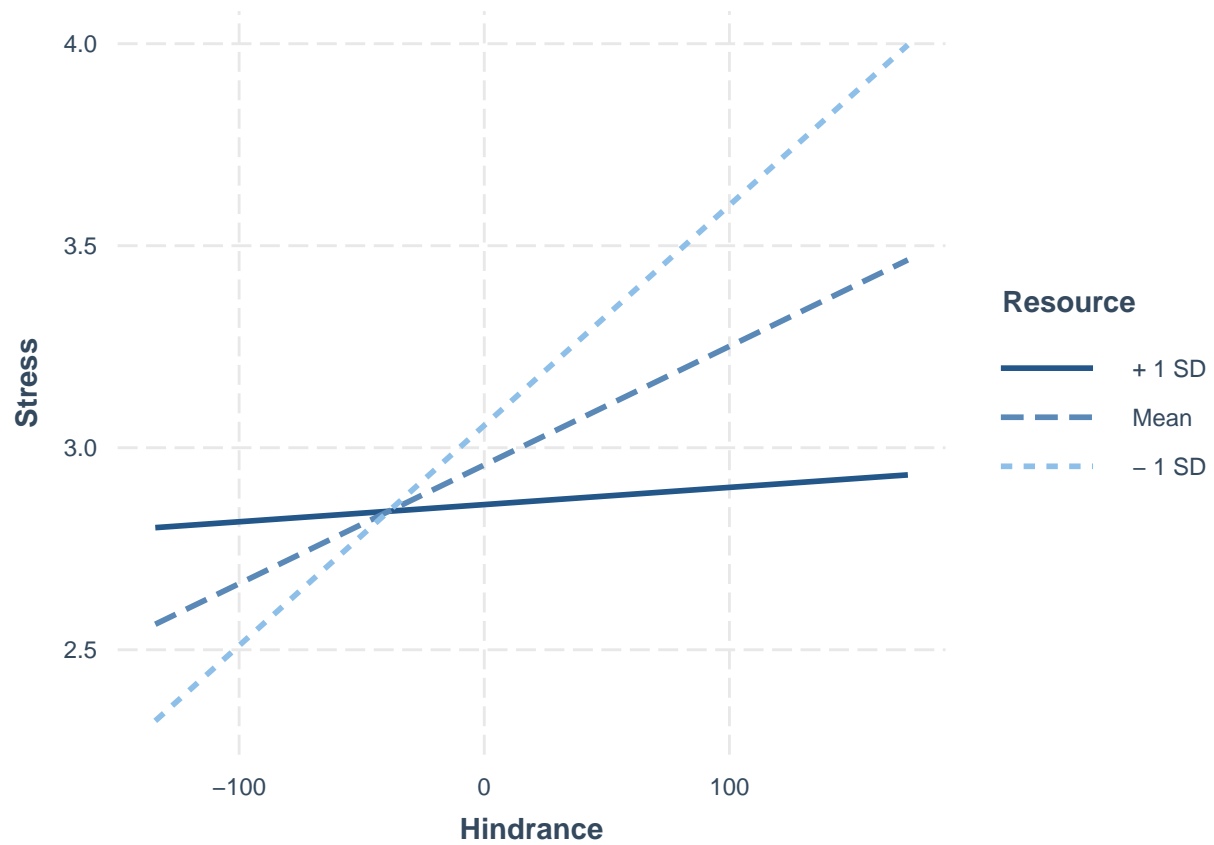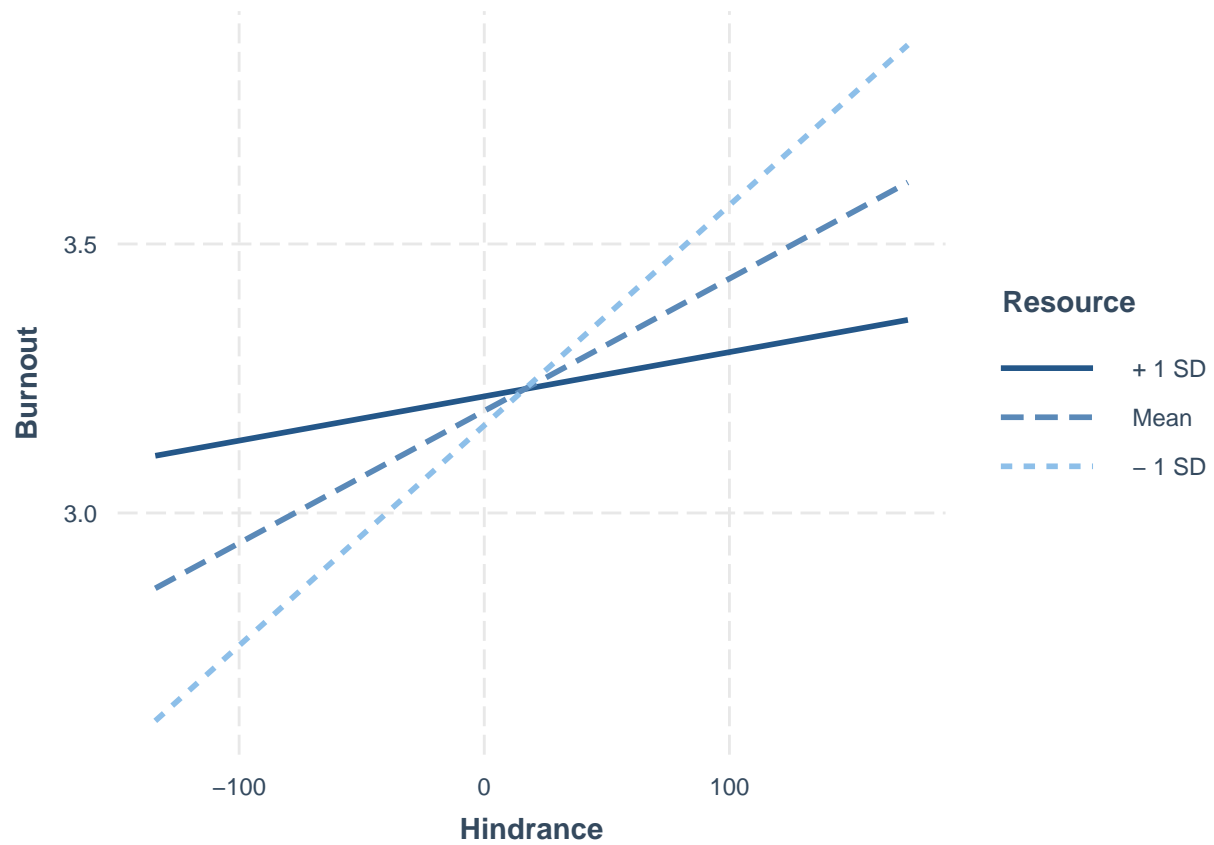*Interaction between Challenge and Resources on Engagement*

Figure 7

Interaction between Hindrances and Resources on Stress

Figure 8

Interaction between Hindrances and Resources on Burnout