Job Demands-Resources Model Components through the Lens of O*NET Classifications

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Abstract

Much of our understanding of job demands and resources rests on the assumption that some aspects and components of one's job are resources and some are demands. We build on a small but growing literature suggesting that individual differences may matter our perception of characteristics as demands and resources. The primary aims were to explore 1) whether there is variability in subjective ratings of job characteristics with respect to how much they served as resources and demands, and 2) whether or not there was a match between the literature-implicated resources/demands and subjective ratings of these characteristics. O*NET work characteristics were rated by 568 employed respondents in terms of relevance, perception as a demand, and perception as a resource. The results suggest that job characteristics differ in variability/stability regarding subjective worker perceptions, particularly for hindrance demands which showed the most variability. Job characteristics were not uniquely categorized as a resource or demand as evidenced by correlations, and lastly, literature-implicated resources not consistently rated as job resources or demands.

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

Word count: X

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Research on the job demands-resources model (Demerouti et al., 2001) and later job demands-resources theory (Bakker & Demerouti, 2017) highlights the importance of work characteristics on the experience of motivation and strain, which subsequently have an impact on job performance among other outcomes. However, much of our existing knowledge regarding the way this model functions is grounded in the assumption that job characteristics are generally considered resources or generally considered demands. We build on the research of a small, but growing number of researchers who argue that the characteristics of work may be appraised simultaneously as resources and demands (Webster et al., 2011) or that appraisals may change over time (Rosen et al., 2020). We extend this critical research to that of the subjective distinction between challenge and hindrance demands (and resources) in the workplace, with a primary aims of exploring 1) whether there is variability in subjective ratings of job characteristics with respect to how much they serve as resources and demands, and 2) whether or not there is a match between the literature-implicated resources/demands and subjective ratings of these characteristics. Prior to presenting the current study in detail, we provide a brief overview of the relevant theories and relevant empirical work on this topic.

The Job demands-Resources Theory

The overarching context for this study is that of the job demands-resources theory, which is an expansion of the well-studied job demands-resources model (Demerouti et al., 2001). One of the major advantages of the job demands-resources theory is that it allows us to model both work environment and job characteristics via job resources and demands. *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 (Demerouti et al., 2001). In contrast, demands include components of a

job that require sustained effort, and as such, produce psychological or physiological strain [e.g., high work pressure is frequently cited as a common demand; Demerouti et al. (2001)]. Cognitively, 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 & Demerouti, 2014). Of particular importance here is that it is the perception of a characteristic or situation determines which process an employee will experience despite the typical apriori assignment of a characteristic as objectively a "demand" or "resource." We explore this further below.

The Essential Role of Appraisal

As described in the last paragraph, job context and characteristics are assigned or appraised as demands or resources. Although much of our research on job demands in particular is based on apriori classifications (Searle & Auton, 2015), the classification of a work characteristic as a demand or resource is largely subjective by nature (e.g., an employee could most certainly perceive being a public figure as a resource or as a demand. The stress process speaks to how such individual difference in appraisal is possible. Lazarus and Folkman (1984) presented the transactional theory of stress and coping, which states that people cognitively appraise stimuli in their environments on a continuous basis. Via this process, meaning is assigned to stimuli based on potential for gain or loss. If appraised as threatening, challenging, or possibly harmful, the resulting emotional distress initiates coping. The cycle of appraisal then continues based on the action to cope with the stressor (Lazarus & Folkman, 1984). Coping is considered a secondary appraisal and is the way that someone chooses to manage a stressor. Although not suggested by the names, primary and secondary appraisals can happen simultaneously. For instance, available resources to cope with a stressor may influence an employee's initial appraisal of a stressor (e.g., amount of time [resource] available to prepare for the speech may influence one's primary appraisal of this ask).

The Challenge-hindrance Stressor Framework

Although there is a tendency to attach a negative connotation to the word "stress," Selye (1936) defined stress as simple a response to change. We return to the employed public figure for this next section. Consider two employees be called upon to serve as spokespeople for their organization. One may appraise the circumstance as an opportunity to positively influence others, while the other may feel daunted by the task.

The challenge-hindrance stressor framework suggests that the way we understand reactions to stressors requires consideration of how people feel about a given stressor (Cavanaugh et al., 2000). Cavanaugh et al. (2000) delineated between two forms of demands – that of *challenge* and *hindrance* demands. Challenge demands promote mastery, personal growth, and future gains – these stressors should lead to coping strategies that facilitate achievement. Stressors like time pressure and responsibility are considered challenge stressors/demands. Hindrance demands, in contrast, inhibit growth, learning and goal achievement. Hindrance stressors (e.g., role conflict, role ambiguity, politics) are associated with negative job behaviors and attitudes. This distinction between challenges and hindrances has been of value in determining which demands are related to various outcomes. 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).

Prior to considering the subsequent empirical work on this topic, it is of value to explore *why* different outcomes are expected with these forms of demands. M. A. LePine (2022) explain the mechanisms by which demands are related to performance and wellbeing outcomes. Similar to the job-demands resources theory (Bakker & Demerouti, 2017), challenge and hindrance demands elicit two different paths or processes. First, challenge stressors typically result in a challenge 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. Hindrance stressors elicit a different process. Disengagement is likely to result from a hindrance appraisal, which in contrast, negatively impacts motivation, performance, growth and wellbeing. This happens because resources are depleted via frustrations and other affectively negative reactions (M. A. LePine, 2022).

We next consider the empirical evidence on this topic. The first question we should ask is whether people distinguish between challenge vs. hindrance demands, or whether all demands are under a larger "demands" category. Evidence suggests the employees do, in fact, differentiate between challenge and hindrance stressors (e.g., Bakker & Sanz-Vergel, 2013; Gerich, 2017; Webster et al., 2011). For example, Bakker and Sanz-Vergel (2013) found that work pressure was perceived as a hindrance demand, and emotional demands as more of a challenge demand. Webster et al. (2011) approached this question with three common workplace demands: workload, role ambiguity, and role conflict. They found while that each could be appraised primarily as challenges or hindrances demands, they could also simultaneously be perceived as being both a challenge and hindrance demands to different degrees.

Appraisals are associated with different forms of coping, and subsequently, outcomes. The challenge-hindrance stressor framework has been associated with a wide variety of organizational outcomes ranging from affective variables like job satisfaction, to motivation, performance, and wellbeing. A sampling of variables and relationships are described below to provide a sense of scope of the work that has been on this topic. Kim and Beehr (2020) found that appraising a demand (in their study, workload, responsibility, and learning demands were measured) as a challenge was associated with motivational resources (i.e., sense of self-worth and work meaningfulness), which were positively related to flourishing. The opposite occurred when a demand was appraised as a hindrance – in those instances, the appraisal had a negative association with motivational resources. Cavanaugh et al. (2000), in a study of managers, found that challenge demands were positively related to job

satisfaction and negatively related to job search behaviors, while hindrance demands demonstrated the opposite pattern. Chen et al. (2021) found that daily challenge demands were positively related to cognitive wellbeing and work-family enrichment. Daily hindrance demands were negatively related to these outcomes. In contrast, Abbas and Raja (2019) found that challenge and hindrance stressors were *both* positively related to strain and turnover intentions. We also have some evidence that challenge-hindrance appraisals are related to engagement in the expected direction whereby hindrance appraisals are negatively associated with engagement and challenge appraisals are positively associated with it (Crawford et al., 2010). Challenge and hindrance appraisals have also been shown to relate to citizenship and counterproductive performance, although indirectly via emotions like anxiety (Rodell & Judge, 2009). Lastly, Gerich (2017) concluded that employee wellbeing was also, in part, explained by appraised challenge or hindrance demands such that working conditions of time pressure, qualitative demands, responsibility, and interruptions, were partially mediated by challenge and hindrance demands.

We even have sufficient evidence to explore outcomes associated with challenge and hindrance stressors meta-analytically at this point, and a rich collection of them support differential associations across a variety of organizational outcomes as well. For example, both challenges and hindrances have been shown to positively predict strain (J. A. LePine et al., 2005; Podsakoff et al., 2007; Webster et al., 2010). Many other outcomes are differentially related to challenges and hindrances, largely in the expected direction. For example, motivation, job satisfaction, commitment, and performance have been shown to positively relate to challenge stressors and negatively relate to hindrance stressor (J. A. LePine et al., 2005). Turnover intentions, turnover and withdrawal behaviors are negatively related to hindrance stressors (Podsakoff et al., 2007). Kim and Beehr (2020), similarly, found evidence for the differential results via challenge and hindrance appraisals.

Horan et al. (2020) and M. A. LePine (2022) specifically call out the need for additional research to incorporate the appraisal process described by Lazarus and Folkman

(1984) into the challenge-hindrance stressor framework, which aligns with other calls to capture subjective ratings of demands and resources into our study of the overarching JD-R model. In fact, Horan et al. (2020) state that "...stressors are only challenge or hindrance stressors to the extent that they are perceived as such by employees" (p. 3). In fact, Horan et al. (2020) suggest future research continue to move away from apriori classifications of stressors, as doing so can be problematic for theoretical and empirical reasons. Theoretically, apriori classifications run counter to the original transactional theory of stress on which the challenge-hindrance stressor framework was based for which appraisals are a central component. Empirically, as shown above, we have some evidence suggesting people can appraise a stressor as both a hindrance and challenge at the same time (e.g., Searle & Auton, 2015). TRANSITION NEEDED HERE. I DELETED THE ONET PARAGRAPH.

Current Study and Hypotheses

The integration of the literature above results in two primary hypotheses. The first addresses whether employees generally agree on their appraisals of job characteristics as resources or challenge or hindrance demands. For instance, although challenge stressors tend to be appraised more so as challenges, and hindrance stressors tend to be appraised more as hindrances than challenges, others have reported variability in these appraisals (M. A. LePine, 2022). M. A. LePine (2022), in fact, argues that the challenge-hindrance stressor framework acknowledges that these appraisals are not universal. Thus, it is quite possible, given the theoretical and empirical evidence presented above, that there is wide variability in individual appraisal of work activities and context such that some people may rate a given activity as a resource and others a hindrance.

Hypothesis 1: Job characteristics differ in consistancy regarding subjective worker perception as a demand or resource.

Hypothesis 2: Job characteristics are not exclusively categorized as a resource or demand, but rather, some job characteristics are viewed as both a resource and a demand.

Two exploratory questions further address whether our *literature-implicated* resources (e.g., autonomy) and demands are consistently rated as our research models suggest across the job-demands resources theory (Bakker & Demerouti, 2017) and challenge-hindrance stressor framework (Cavanaugh et al., 2000).

Research Question 1: Do literature-implicated resources materialize as perceived resources?

Research Question 2: Do literature-implicated demands materialize as job demands?

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 retained 98 work activity and context classifications 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 (i.e., the context of the job in terms of human interaction processes), physical work conditions (i.e., the work context as it relates to the interactions between the worker and the physical job environment), and structural job characteristics (i.e., 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 statements/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, 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 (statements/questions).

Procedure

Data were collected through Prolific, a 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+ and holding either a full-time or part-time job. Participants then voluntarily chose to respond to the online survey. Participants were asked to think about their primary job while answering the survey, 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 (i.e., . . . 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 (i.e., . . . this aspect of your job is a challenge that can promote mastery, personal growth, or future gains), or hindrance (i.e., . . . 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 1 and 2 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 1 presents the resources, challenges, and hindrances characteristics that are *most consistently agreed on* as indexed by (relatively) low standard deviations, while Figure 2 presents the characteristics with the greatest amount of *disagreement* across workers.

As can be seen in the figures, 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 considerable less 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 3 presents our standard deviation indices across all rated items. Here, the Figure 1 discrepancies receive illumination, 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

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

across the challenge, hindrance, and resource ratings confirms this difference ($\chi^2 = 76.83$, $p = 0.00$). In sum, these results provide some collective support for H1, and particularly so for hindrances, which are consistently viewed as "different."

The second hypothesis stated that job characteristics would not be uniquely categorized as a resource or demand. Table 1 provides the correlations among the O*Net item groupings by resource, challenge and hindrance demand. We would expect to see minimal correlations if job characteristics *were* uniquely categorized. Here, we do expected to see more than minimal correlations. First, the mean correlation within resource categories was .43 ($SD = .13$, range from .15 to .64), and challenge categories were similar (ranging from .12 to .70, $M = .43$, $SD = .16$). Hindrance categories had less differentiation across categories ranging from .33 to .86, $M = .62$, $SD = .17$. When people perceived hindrances, these seemed to be shared across different types of job activities, whereas challenges challenges and resources exhibited more differentiation. We would expect these to be the highest.

The mean resource to challenge correlations within the same dimension ranged from .62 to .66, $M = .64$, $SD = .02$; for example, the association between information input ratings as a resource and as a challenge was .62). The correlations between resources and challenges across dimensions (for example, the correlation between mental processes and work output was .42 and .39) ranged from .08 to .50, $M = .32$, $SD = .12$. The mean resource to hindrance correlations within the same dimension ranged from -.16 to -.30, $M = -.24$, $SD = .05$). The correlations between resources and hindrances across dimensions ranged from .05 to -.27, $M = -.14$, $SD = .08$. The mean challenge to hindrance correlations within the same dimension ranged from -.04 to -.27, $M = -.21$, $SD = .08$). The correlations between challenges to hindrances across dimensions ranged from .12 to -.26, $M = -.11$, $SD = .09$. Correlations were larger when what was being rated was the same type of characteristic. In sum, Challenge and hindrance demands demonstrated smaller relationships, but mostly negative. Challenge and resource are strongly and positively

related. These results provide support for H2, suggesting that there is overlap in how employees perceive job characteristics - particularly regarding what is perceived as a *resource* being also perceived as a *challenge*. Stated another way, job characteristics are not uniquely categorized as a resource or as a demand.

The ability to suppress reporting of reporting confidence intervals has been deprecated in this version. The function argument show.conf.interval will be removed in a later version.

Means, standard deviations, and correlations with confidence intervals

Variable M SD 1 2 3

1. onet.resource.ii 3.98 0.80

2. onet.resource.mp 4.19 0.60 .61**
   [.55, .66]

3. onet.resource.wo 3.79 0.84 .46** .50**
   [.40, .53] [.43, .56]

4. onet.resource.io 4.10 0.60 .49** .64** .45**
   [.42, .55] [.59, .69] [.38, .51]

5. onet.resource.ir 3.80 0.61 .46** .55** .37**
   [.40, .53] [.48, .60] [.30, .44]

6. onet.resource.pc 2.99 0.77 .19** .15** .32**
   [.11, .27] [.07, .23] [.24, .39]

7. onet.resource.sc 3.65 0.61 .43** .46** .41**
   [.36, .50] [.39, .52] [.34, .48]

8. onet.hindrance.ii 2.15 1.01 -.26** -.26** -.17**
   [-.34, -.18] [-.34, -.18] [-.25, -.09]

9. onet.hindrance.mp 2.10 1.05 -.23** -.30** -.17**
   [-.31, -.15] [-.38, -.22] [-.25, -.09]

10. onet.hindrance.wo 2.31 1.02 -.21** -.25** -.22**
    [-.29, -.13] [-.33, -.17] [-.30, -.14]

11. onet.hindrance.io 2.23 1.03 -.22** -.27** -.14**
    [-.30, -.14] [-.34, -.19] [-.22, -.06]

12. onet.hindrance.ir 2.35 0.89 -.22** -.24** -.15**
    [-.30, -.14] [-.32, -.17] [-.23, -.07]

13. onet.hindrance.pc 2.66 0.83 -.04 -.08* -.09*
    [-.12, .05] [-.17, -.00] [-.17, -.01]

14. onet.hindrance.sc 2.64 0.80 -.13** -.15** -.13**
    [-.22, -.05] [-.23, -.06] [-.21, -.04]

15. onet.challenge.ii 3.98 0.80 .62** .49** .37**
    [.56, .67] [.42, .55] [.30, .44]

16. onet.challenge.mp 4.20 0.64 .47** .63** .42**
    [.40, .53] [.58, .68] [.35, .49]

17. onet.challenge.wo 3.65 0.88 .34** .39** .64**
    [.26, .41] [.31, .45] [.58, .68]

18. onet.challenge.io 4.07 0.64 .34** .48** .33**
    [.26, .41] [.41, .54] [.26, .41]

19. onet.challenge.ir 3.85 0.63 .32** .40** .26**
    [.24, .39] [.33, .47] [.18, .34]

20. onet.challenge.pc 2.85 0.79 .12** .08 .21**
    [.04, .21] [-.01, .16] [.13, .29]
21. onet.challenge.sc 3.66 0.59 .27** .31** .28**
    [.19, .35] [.24, .39] [.20, .35]

    4 5 6 7 8 9

    .60**
    [.54, .65]

    .18** .37**
    [.10, .26] [.29, .43]

    .45** .48** .37**
    [.38, .51] [.42, .55] [.30, .44]

    -.24** -.18** -.02 -.08
    [-.32, -.16] [-.26, -.09] [-.10, .06] [-.16, .00]

    -.22** -.15** .05 -.07 .86**
    [-.29, -.14] [-.23, -.07] [-.03, .13] [-.16, .01] [.84, .88]

    -.22** -.06 -.02 -.12** .66** .69**
    [-.30, -.14] [-.15, .02] [-.11, .06] [-.20, -.04] [.61, .70] [.65, .73]

    -.29** -.18** -.01 -.10* .79** .86**
    [-.37, -.22] [-.26, -.10] [-.09, .08] [-.18, -.02] [.75, .82] [.84, .88]

    -.24** -.25** -.06 -.11** .79** .80**
    [-.32, -.16] [-.32, -.17] [-.14, .03] [-.19, -.03] [.75, .82] [.77, .83]

    -.11** -.10* -.16** -.13** .38** .33**
    [-.19, -.03] [-.18, -.02] [-.24, -.08] [-.21, -.05] [.31, .45] [.25, .40]

    -.19** -.13** -.09* -.23** .62** .62**

[-.27, -.11] [-.21, -.04] [-.17, -.00] [-.31, -.15] [.56, .67] [.56, .66]

.41** .33** .08 .33** -.27** -.22**

[.33, .47] [.26, .41] [-.01, .16] [.25, .40] [-.34, -.19] [-.30, -.14]

.50** .41** .09* .38** -.26** -.27**

[.43, .56] [.34, .48] [.01, .17] [.30, .44] [-.33, -.18] [-.35, -.19]

.34** .30** .29** .38** -.10* -.10*

[.27, .41] [.22, .37] [.21, .36] [.31, .45] [-.19, -.02] [-.18, -.01]

.65** .48** .13** .40** -.19** -.18**

[.60, .70] [.42, .54] [.05, .21] [.33, .47] [-.27, -.11] [-.26, -.10]

.48** .63** .23** .39** -.16** -.15**

[.41, .54] [.58, .68] [.15, .30] [.32, .46] [-.24, -.07] [-.23, -.07]

.13** .26** .66** .29** .06 .12**

[.05, .21] [.18, .33] [.61, .71] [.21, .36] [-.03, .14] [.04, .21]

.38** .40** .27** .62** -.10* -.06

[.31, .45] [.33, .47] [.19, .34] [.56, .66] [-.18, -.02] [-.14, .03]

10 11 12 13 14 15

.69**

[.65, .73]

.61** .82**

[.56, .66] [.80, .85]

.47** .35** .47**

[.41, .54] [.28, .42] [.40, .53]

.56** .64** .66** .45**

[.50, .61] [.58, .68] [.61, .71] [.39, .52]

-.14** -.21** -.19** -.03 -.12**

[-.22, -.05] [-.29, -.13] [-.27, -.10] [-.11, .06] [-.20, -.04]

-.21** -.25** -.21** -.04 -.10* .65**

[-.29, -.13] [-.33, -.17] [-.29, -.13] [-.13, .04] [-.19, -.02] [.59, .69]

-.23** -.10* -.08* -.06 -.05 .45**

[-.31, -.15] [-.18, -.02] [-.17, -.00] [-.14, .02] [-.14, .03] [.38, .51]

-.15** -.27** -.20** -.08* -.16** .50**

[-.23, -.06] [-.34, -.19] [-.28, -.12] [-.16, -.00] [-.24, -.08] [.44, .56]

-.09* -.19** -.23** -.10* -.12** .46**

[-.17, -.01] [-.27, -.11] [-.31, -.15] [-.18, -.02] [-.20, -.03] [.39, .52]

.05 .07 .04 -.04 -.01 .14**

[-.03, .14] [-.01, .15] [-.05, .12] [-.12, .04] [-.09, .07] [.06, .22]

-.10* -.10* -.12** -.13** -.17** .36**

[-.18, -.02] [-.18, -.01] [-.20, -.04] [-.21, -.05] [-.25, -.09] [.29, .43]

16 17 18 19 20

.49**

[.42, .55]

.68** .43**

[.63, .72] [.36, .49]

.60** .39** .70**

[.54, .65] [.31, .45] [.65, .74]

.12** .33** .20** .31**

[.03, .20] [.25, .40] [.12, .28] [.24, .38]

.41** .38** .51** .45** .40**

[.34, .48] [.30, .45] [.45, .57] [.38, .51] [.33, .46]

Note. M and SD are used to represent mean and standard deviation, respectively. Values in square brackets indicate the 95% confidence interval. The confidence interval is a plausible range of population correlations that could have caused the sample correlation (Cumming, 2014). * indicates $p < .05$. ** indicates $p < .01$.

In addition to the two hypotheses, two related research questions were proposed: 1) do literature-implicated resources materialize as perceived resources and 2) do literature-implicated demands materialize as perceived demands? To answer these questions, authors first categorized O*Net items into the JD-R elements listed in the JD-R literature. For example, autonomy is frequently described as a resource in the JD-R literature. An O*Net item in the autonomy category is, "How much decision making freedom, without supervision, does your job offer?" This O*Net item was therefore retained within the "autonomy" category. Mean ratings of the O*Net items were then computed by element (e.g., all of the items representing autonomy) to explore whether literature-implicated resources and demands were evaluated as such.

Figure 4 presents these comparisons visually. First exploring the right side of Figure 4, there is a clearer pattern of the highest level ratings being that of resources on the right side of Figure 4 showing literature-derived resources (e.g., job control) and the corresponding average category ratings. The white bars representing resources are consistently higher. As described above, the left side of Figure 4 shows literature-derived demand categories (e.g., work pressure). However, in contrast, we do not see a clear demarcation of resource and challenge, as would be expected if the job characteristics evidenced consistency (the literature-driven consistency would manifest as "high" gray and black bars and "low" white bars). In alignment with what we observed regarding variability in ratings of hindrance stressors in H1, there is much less consistency in how employees rated what should objectively be "hindrances" at work.

Repeated-measures ANOVAs were computed for the group of literature-implicated *resources* first (see the right hand side of Figure 4). The effect for `Job Control` was $F_{(2,1134)} = 52.78$ ($\eta^2 = 0.08$). The effect for `Participation` was $F_{(2,1124)} = 991.16$ ($\eta^2 = 0.64$). The effect for `Autonomy` was $F_{(2,1074)} = 951.90$ ($\eta^2 = 0.64$). The effect for `Team Cohesion` was $F_{(2,1120)} = 853.39$ ($\eta^2 = 0.60$). Statistical significance was less then .001 for all four category comparisons. Here, the pattern was as expected. Across categories, resources were rated the highest (see white bars representing resources in Figure 4). However, as can be seen, mean challenge (which is a demand) was rated quite similarly and above the midpoint of 3 across JD-R categories. In fact, the means were nearly identical for resource and challenge ratings for all for categories. The literature-implied category with the lowest resource rating also has the highest hindrance rating, so job control is positive and negative.

Next, repeated-measures ANOVAs were then run for the group of literature-implicated *demands*. See the left hand side of Figure 4. The effect for `Overwork` was $F_{(2,1134)} = 17.71$, partial eta squared (η^2) was 0.03. The effect for `Physical Environment` was $F_{(2,1108)} = 112.97$ ($\eta^2 = 0.17$). The effect for `Time Pressure` was $F_{(2,1090)} = 82.22$ ($\eta^2 = 0.13$). The effect for `Emotional Demands` was $F_{(2,1098)} = 393.43$ ($\eta^2 = 0.42$). The effect for `Recipient Contact` was $F_{(2,1126)} = 1{,}031.73$ ($\eta^2 = 0.65$). The effect for `Work Pressure` was $F_{(2,1132)} = 718.12$ ($\eta^2 = 0.56$). In all cases, statistical significance was less then .001. However, the findings revealed that what the literature implicates as a demand was actually evaluated as a *resource* (all resource means are above the midpoint). This is contrary to the expectation that ratings would match our assumption of what a demand constitutes. Looking at demands, there is a large difference between whether a characteristic is viewed as a challenge or hindrance. See the pattern of white resource bars on the left hand side of Figure 4. In other words, demands are viewed as resources. In sum, these results provide some support for RQ 1 and 2.

Discussion

The major aim and contribution of this paper was to examine whether there was variability in subjective ratings of job characteristics with respect to how much they serve as resources and demands (both challenge and hindrance), and also whether or not there is a match between the literature-implicated resources/demands and subjective ratings of these characteristics using a sample of items from O*Net. The findings broadly revealed that there was relatively more consistency in ratings of resources and challenges characteristics, and far more variability in job characteristics rated as hindrance stressors. This finding lends additional evidence to Horan et al. (2020)'s conclusion that "...stressors are only challenge or hindrance stressors to the extent that they are perceived as such by employees" (p. 3). The research questions regarding the match between literature-implicated demand and resource categories and empirical ratings aligns with the consistency/variability we observed in H1. Interestingly, we consistently observed that job characteristics rated as resources were also rated highly as challenge stressors, which are not inherently negative in the way that hindrance stressors are. Lastly, we also found support for the hypothesis that job characteristics are not uniquely categorized as a resource or demand, but rather, some job characteristics are rated highly as both a resource and a demand (H2).

Implications

Theoretically, these findings support growing body of literature suggesting that perceptions of resources and demands, broadly, are not universal. There is individual difference in how employees experience the characteristics of their jobs. Much of our existing research on job demands and resources has been done from the perspective that job characteristics could be classified in advance as a "resource" or "demand."

These results have implications for managers as well. The reality that there is more

individual difference in what employees perceive to be a hindrance and less in what is perceived to be a resource or challenge stressor is in some ways encouraging. These findings provide comforting support for the idea that managers and supervisors can predict which characteristics are perceived as supportive to employees' performance. Somewhat surprisingly, hindrances are rated more variably. As such, one important implication is that of frequent communication with employees regarding their perceptions of characteristics that limit their performance. J. A. LePine et al. (2005) and Podsakoff et al. (2007) encourage organizations to incorporate strain-reducing activities like train and support to offset the negative effects of challenging job demands.

Limitations and Future Directions

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 here. First, we captured only a small number of job characteristics given the nature of our research questions. Because we asked up to four questions about each characteristics, we were limited in the number of job characteristics we could reasonably include. 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. For example, we included minimal "social" resources or interactions with one's supervisor, which the literature would suggest are important resources. Future study should explore this aspect of work. We also used the exact definitions of resource, challenge, and hindrance. It is possible that respondents did not distinguish between the challenge and resource definition as cleanly as we intended and so future research should explore this question differently. It would also be interesting to consider outcomes associated with subjective 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.[^check] 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.

Conclusion

In sum, this endeavor explored the job-demands-resources literature from a unique lens, showing 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 are more similarly experienced, hindrance demands show a wide amount of variability.

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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	*M*	*SD*
1. onet.resource.ii	-																				3.98	0.80
2. onet.resource.mp	.61*	-																			4.19	0.60
3. onet.resource.wo	.46*	.50*	-																		3.79	0.84
4. onet.resource.io	.49*	.64*	.45*	-																	4.10	0.60
5. onet.resource.ir	.46*	.55*	.37*	.60*	-																3.80	0.61
6. onet.resource.pc	.19*	.15*	.32*	.18*	.37*	-															2.99	0.77
7. onet.resource.sc	.43*	.46*	.41*	.45*	.48*	.37*	-														3.65	0.61
8. onet.challenge.ii	.62*	.49*	.37*	.41*	.33*	.08	.33*	-													3.98	0.80
9. onet.challenge.mp	.47*	.63*	.42*	.50*	.41*	.09*	.38*	.65*	-												4.20	0.64
10. onet.challenge.wo	.34*	.39*	.64*	.34*	.30*	.29*	.38*	.45*	.49*	-											3.65	0.88
11. onet.challenge.io	.34*	.48*	.33*	.65*	.48*	.13*	.40*	.50*	.68*	.43*	-										4.07	0.64
12. onet.challenge.ir	.32*	.40*	.26*	.48*	.63*	.23*	.39*	.46*	.60*	.39*	.70*	-									3.85	0.63
13. onet.challenge.pc	.12*	.08	.21*	.13*	.26*	.66*	.29*	.14*	.12*	.33*	.20*	.31*	-								2.85	0.79
14. onet.challenge.sc	.27*	.31*	.28*	.38*	.40*	.27*	.62*	.36*	.41*	.38*	.51*	.45*	.40*	-							3.66	0.59
15. onet.hindrance.ii	-.26*	-.26*	-.17*	-.24*	-.18*	-.02	-.08	-.27*	-.26*	-.10*	-.19*	-.16*	.06	-.10*	-						2.15	1.01
16. onet.hindrance.mp	-.23*	-.30*	-.17*	-.22*	-.15*	.05	-.07	-.22*	-.27*	-.10*	-.18*	-.15*	.12*	-.06	.86*	-					2.10	1.05
17. onet.hindrance.wo	-.21*	-.25*	-.22*	-.22*	-.06	-.02	-.12*	-.14*	-.21*	-.23*	-.15*	-.09*	.05	-.10*	.66*	.69*	-				2.31	1.02
18. onet.hindrance.io	-.22*	-.27*	-.14*	-.29*	-.18*	-.01	-.10*	-.21*	-.25*	-.10*	-.27*	-.19*	.07	-.10*	.79*	.86*	.69*	-			2.23	1.03
19. onet.hindrance.ir	-.22*	-.24*	-.15*	-.24*	-.25*	-.06	-.11*	-.19*	-.21*	-.08*	-.20*	-.23*	.04	-.12*	.79*	.80*	.61*	.82*	-		2.35	0.89
20. onet.hindrance.pc	-.04	-.08*	-.09*	-.11*	-.10*	-.16*	-.13*	-.03	-.04	-.06	-.08*	-.10*	-.04	-.13*	.38*	.33*	.47*	.35*	.47*	-	2.66	0.83
21. onet.hindrance.sc	-.13*	-.15*	-.13*	-.19*	-.13*	-.09*	-.23*	-.12*	-.10*	-.05	-.16*	-.12*	-.01	-.17*	.62*	.62*	.56*	.64*	.66*	.45*	2.64	0.80

Note. 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)

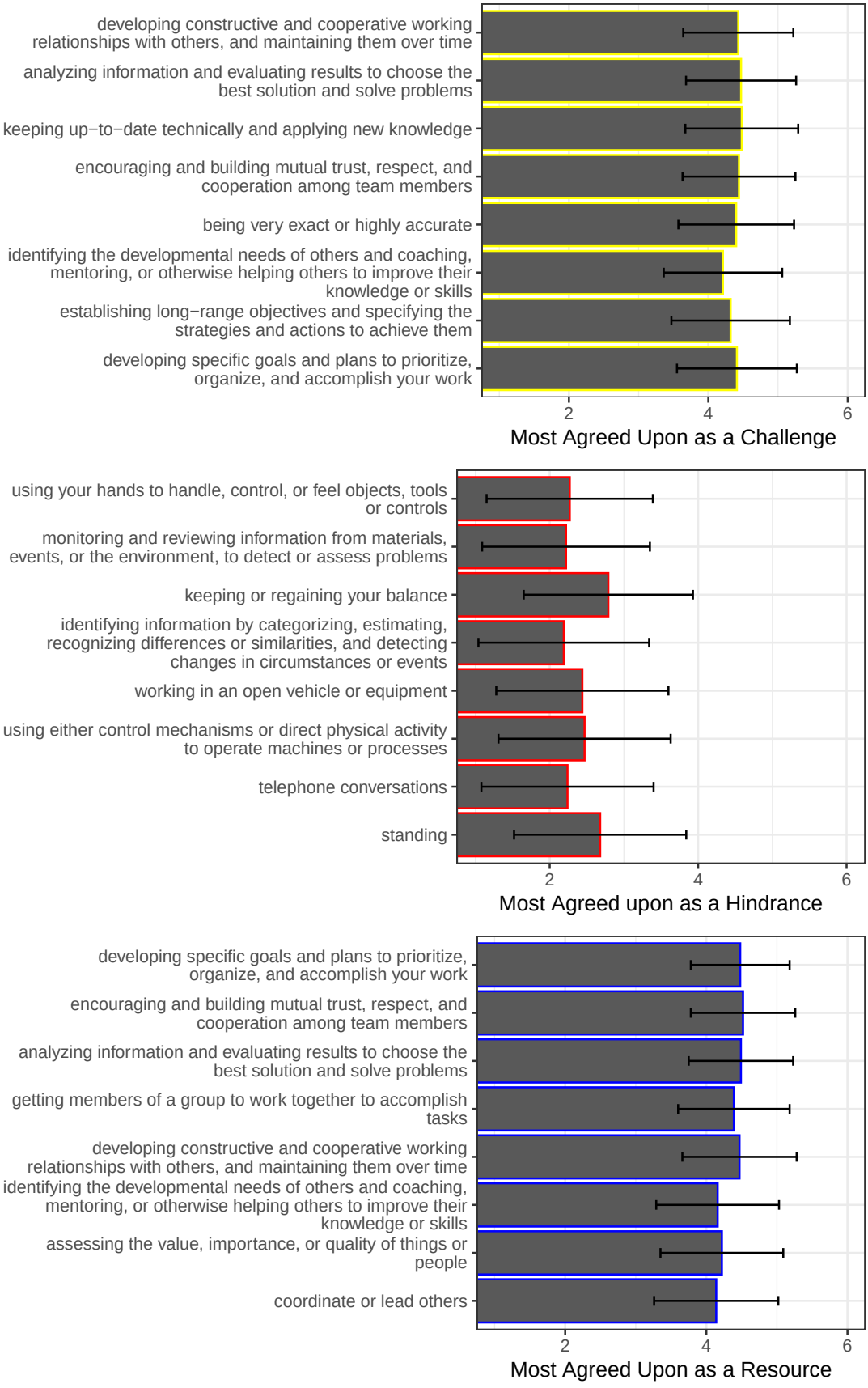

Figure 1. Characteristics percieved most similarly (lowest standard deviations).

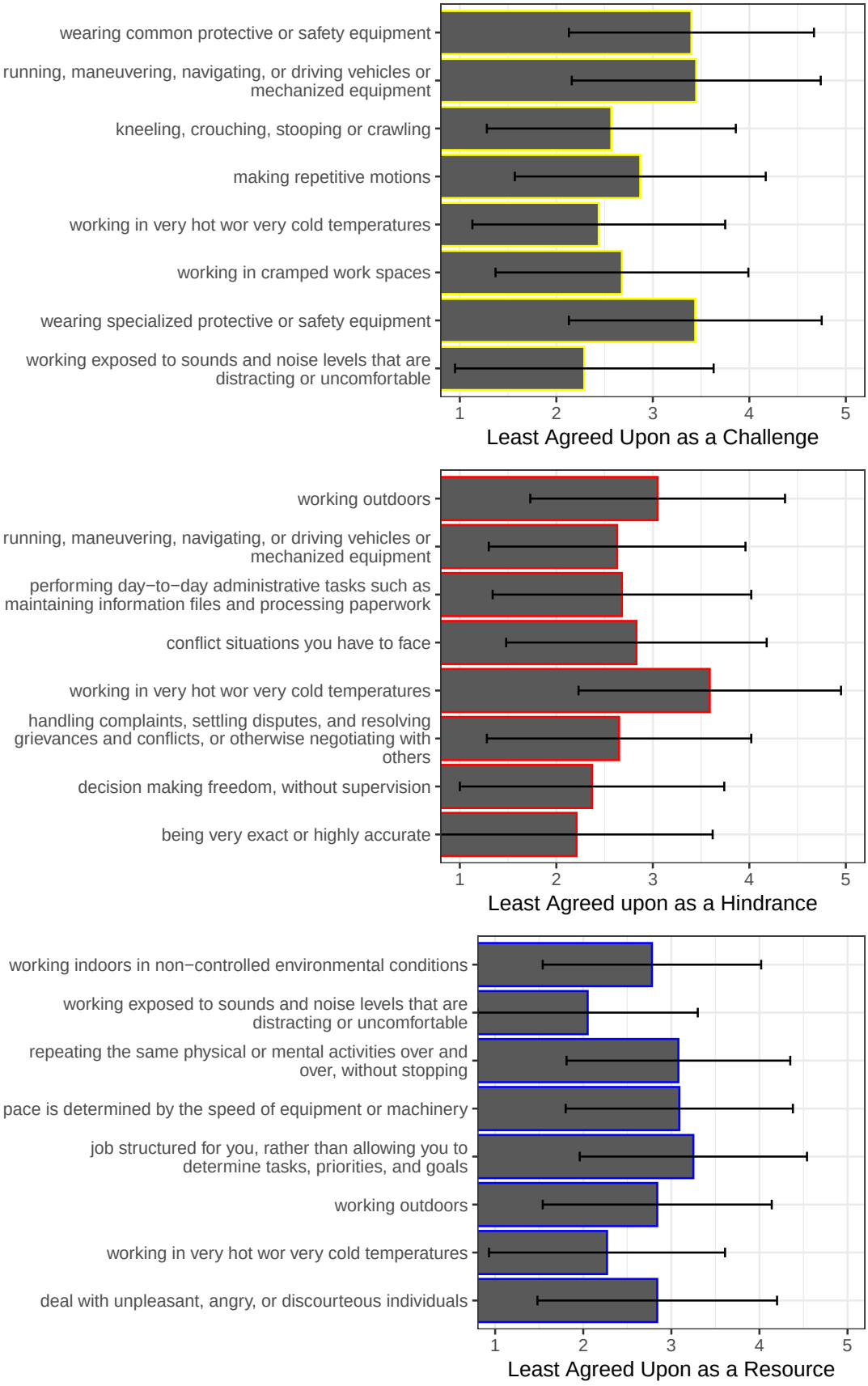

Figure 2. Characteristics percieved most *DIS*similarly (lowest standard deviations).

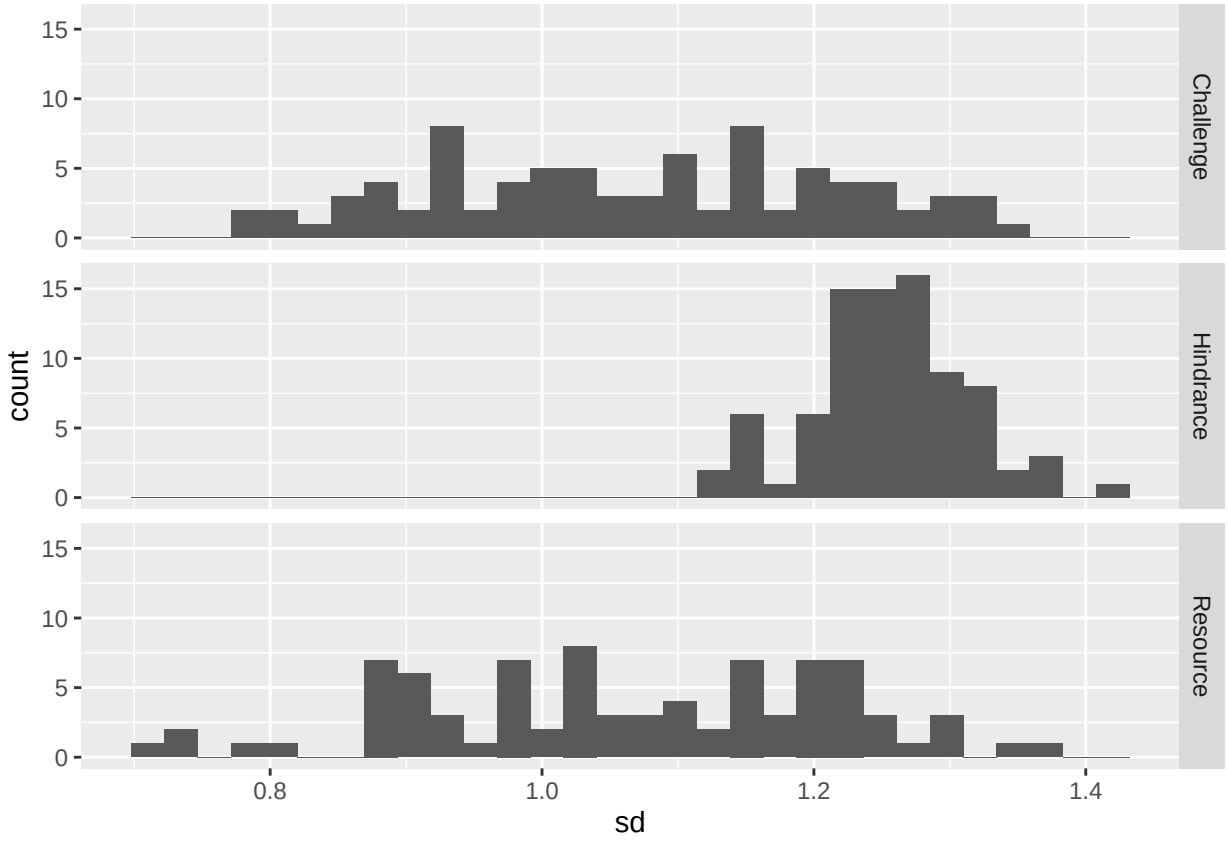

Figure 3. Frequency distribution of standard deviations across characteristics deemed resources, challenges, and demands.

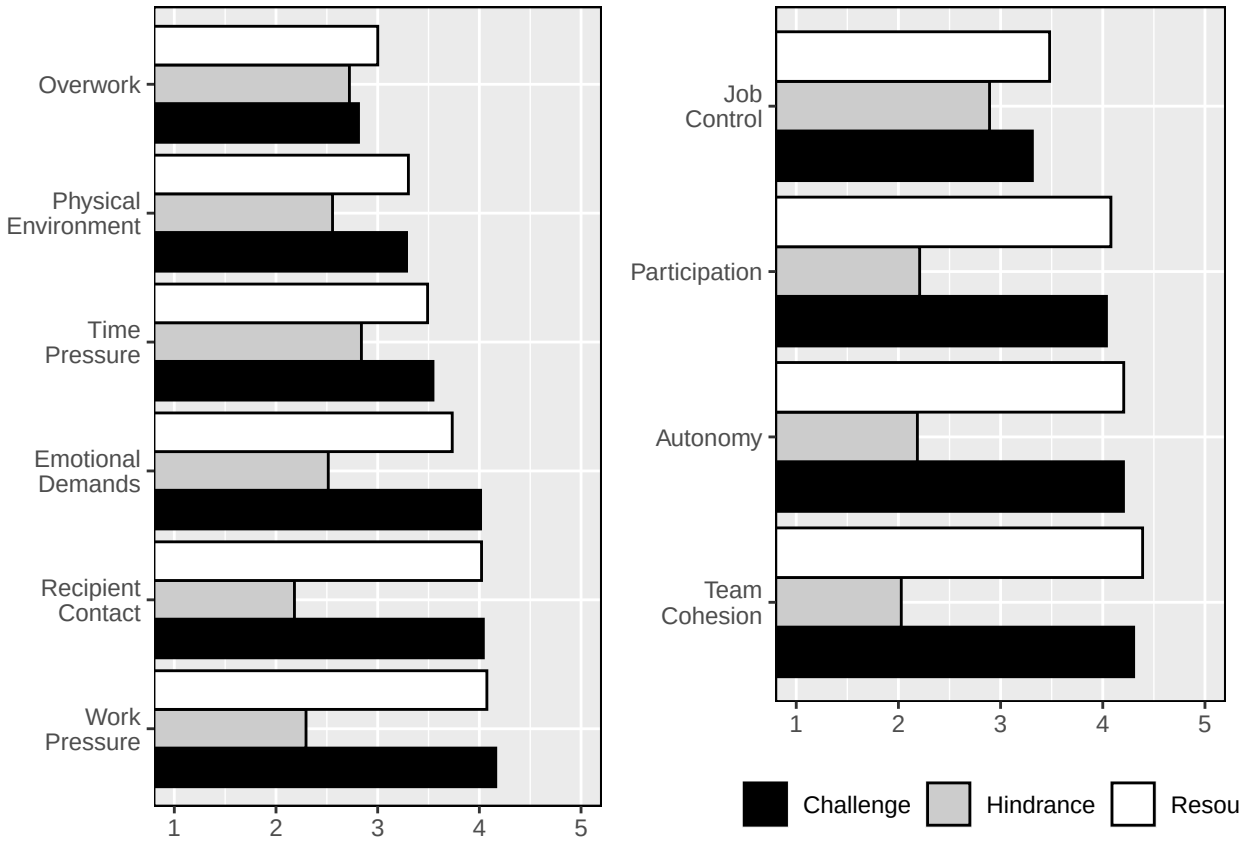

Figure 4. Average characteristic rating grouped by literature-implicated categorizations.