O*NET defined demands and resources and associations with stress, burnout, and

engagement

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Abstract

O*NET work characteristics were rated in terms of relevance, perception of demand, and perception as resource.

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Materials

Characteristics, Demands, and Resources.   Our analyses are organized by
O*NET's classifications of "work activity": 1) *Information Input* (5 statements), 2)
Interacting with Others (17 statements), 3) *Mental Processes* (10 statements), and 4) *Work
Output* (9 statements) and "work context": 5) *Interpersonal Relationships* (14 statements),
6) *Physical Work Conditions* (30 statements)[1], and 7) *Structural Job Characteristics* (13
statements).

Other than very minor grammatical editing (for example, changing "the" to "you"),
we retained the O*NET wording for our item stems. We also administered O*NET's
response scales, several of which were unique across items. Subsequent to these
descriptions of the respondent's work activity and context, each respondent who agreed
that an element had *at least some relevance to their job* was also asked to rate that element
in terms of, 1) . . . this aspect of your job is a resource that can be functional in achieving
work goals, reduce job demands, or stimulate personal growth/development, 2) . . . this
aspect of your job is a challenge that can promote mastery, personal growth, or future
gains, and 3) . . . this aspect of your job is a hinderance that can inhibit personal growth,
learning, and work goal attainment. Our analyses focus on the extent to which the O*NET
work characteristics are viewed as resources, challenges, or hindrances.

Burnout and Stress.   Were taken from the Copenhagen Psychosocial
Questionnaire (Burr et al., 2019). There were 4 burnout items and 3 stress items with
current sample α's of 0.85 (burnout) and 0.85 (stress).

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[1] Note that we excluded several statements within the "Physical Work Conditions" ratings of resources and
demands (for example, we did not ask if "exposure to radiation" was considered a demand or resource). In
total there were 11 exclusions from this category when assessing demands and resources.

Engagement.   The 18-item engagement measure was recently developed (Russell, Ossorio Duffoo, Garcia Prieto Palacios Roji, & Kulas, 2022), with the authors specifying three subscales which yielded current sample α's of 0.68 (Absorption) and 0.80 (Vigor), and 0.90 (Dedication). For the purposes of the current study, we focused on an overall engagement score (18 item aggregate, $\alpha = 0.91$).

Results

Our analyses are grouped by characteristics of work that are percieved as being resources, challenge demands, and hindrance demands.

Resources.   Across all items, the average perception that an O*NET job element could be considered a *resource* was 3.77 with a standard deviation of 0.48.

The more a work characteristic was perceived as a resource, the more engaged the respondent was ($R^2 = .15$, $F_{(7, 528)} = 12.82$, $p < .001$), although there was a only a trivial effect between being viewed as a resource and stress ($R^2 = .03$, $F_{(7, 528)} = 2.20$, $p < .05$) and no significant association between being viewed as a resource and burnout ($R^2 = .01$, $F_{(7, 528)} = 1.12$, $p = .35$). Note that this is consistent with the predictions of the JD-R.

Hindrances.   Across all items, the average perception that an O*NET job element could be considered a *hindrance* was 2.39 with a standard deviation of 0.78.

There was a marginal association between a work characteristic being percieved as a greater hindrance and lower levels of engagement ($R^2 = .07$, $F_{(7, 528)} = 5.84$, $p < .001$), with similar effects both between being viewed as a hindrance and increased stress ($R^2 = .06$, $F_{(7, 528)} = 4.88$, $p < .001$) as well as increased levels of burnout ($R^2 = .06$, $F_{(7, 528)} = 4.90$, $p < .001$).

Challenges.   Across all items, the average perception that an O*NET job element could be considered a *challenge* was 3.75 with a standard deviation of 0.50.

The impact of challenging demands on engagement was similar in direction and magnitude to that of resources, as consistent with JD-R predictions ($R^2 = .13$, $F_{(7, 528)} = 11.03$, $p < .001$), with absent effects for both stress ($R^2 = .01$, $F_{(7, 528)} = 0.88$, $p = .52$) and burnout ($R^2 = .02$, $F_{(7, 528)} = 1.21$, $p = .30$; that is, workplace challenges were predictive of engagement but not self-reported stress or burnout).

Summary

The full correlation table including a simultaneous presentation of resources, challenges, and demands is too large, but we did investigate associations among these characteristics, with the average correlation among average correlation among resources and challenges being .37 (sd=.16), resources and hindrances being -.16 (sd=.08), and average correlation among challenges and hindrances being -.13 (sd=.09)

Discussion

There is richer information available within this dataset. Our job elements are grouped by O*NET category, which facilitates broad exploration, however, individual elements likely impact engagement, stress, and burnout, so these individual elements should be explored. For example, the *Work Context* element of "having to meet strict deadlines" is likely something that is important alone. Incremental variance couldn't look at because of sheer number of IVs.

References

Burr, H., Berthelsen, H., Moncada, S., Nübling, M., Dupret, E., Demiral, Y., . . . Pohrt, A. (2019). The Third Version of the Copenhagen Psychosocial Questionnaire. *Safety and Health at Work, 10*(4), 482–503. https://doi.org/10.1016/j.shaw.2019.10.002

Russell, M., Ossorio Duffoo, C., Garcia Prieto Palacios Roji, R., & Kulas, J. (2022). Development of an intentional bifactor measure of engagement. In *The seattle edition of siop* (pp. 1–14). SIOP.

Table 1

Scale intercorrelations (resources).

	1	2	3	4	5	6	7	8	9	M	SD
1. engagement	-									4.04	0.83
2. burnout	-.35***	-								3.04	0.87
3. stress	-.30***	.70***	-							2.59	0.97
4. onet.resource.ii	.10*	-.07	-.07	-						3.98	0.80
5. onet.resource.mp	.16***	.00	-.01	.61***	-					4.19	0.60
6. onet.resource.wo	.14***	-.02	-.04	.46***	.50***	-				3.79	0.84
7. onet.resource.io	.25***	-.05	-.08	.49***	.64***	.45***	-			4.10	0.60
8. onet.resource.ir	.28***	-.07	-.07	.46***	.55***	.37***	.60***	-		3.80	0.61
9. onet.resource.pc	.15***	-.03	-.10*	.19***	.15***	.32***	.18***	.37***	-	2.99	0.77
10. onet.resource.sc	.33***	-.07	-.12**	.43***	.46***	.41***	.45***	.48***	.37***	3.65	0.61

Note. * p < 0.05; ** p < 0.01; *** p < 0.001

Table 2

Scale intercorrelations (challenges).

	1	2	3	4	5	6	7	8	9	M	SD
1. engagement	-									4.04	0.83
2. burnout	-.35***	-								3.04	0.87
3. stress	-.30***	.70***	-							2.59	0.97
4. onet.challenge.ii	.08	-.03	-.01	-						3.98	0.80
5. onet.challenge.mp	.07	-.02	-.04	.65***	-					4.20	0.64
6. onet.challenge.wo	.08	-.06	-.06	.45***	.49***	-				3.65	0.88
7. onet.challenge.io	.21***	-.07	-.09*	.50***	.68***	.43***	-			4.07	0.64
8. onet.challenge.ir	.19***	-.05	-.05	.46***	.60***	.39***	.70***	-		3.85	0.63
9. onet.challenge.pc	.13**	.08	.01	.14**	.12**	.33***	.20***	.31***	-	2.85	0.79
10. onet.challenge.sc	.35***	-.03	-.01	.36***	.41***	.38***	.51***	.45***	.40***	3.66	0.59

Note. * $p < 0.05$; ** $p < 0.01$; *** $p < 0.001$

Table 3

Scale intercorrelations (hindrances).

	1	2	3	4	5	6	7	8	9	M	SD
1. engagement	-									4.04	0.83
2. burnout	-.35***	-								3.04	0.87
3. stress	-.30***	.70***	-							2.59	0.97
4. onet.hindrance.ii	-.04	.01	.07	-						2.15	1.01
5. onet.hindrance.mp	-.04	-.02	.04	.86***	-					2.10	1.05
6. onet.hindrance.wo	-.08	.05	.10*	.66***	.69***	-				2.31	1.02
7. onet.hindrance.io	-.06	.00	.06	.79***	.86***	.69***	-			2.23	1.03
8. onet.hindrance.ir	-.11**	.06	.12**	.79***	.80***	.61***	.82***	-		2.35	0.89
9. onet.hindrance.pc	-.17***	.17***	.14**	.38***	.33***	.47***	.35***	.47***	-	2.66	0.83
10. onet.hindrance.sc	-.20***	.15***	.18***	.62***	.62***	.56***	.64***	.66***	.45***	2.64	0.80

Note. * p < 0.05; ** p < 0.01; *** p < 0.001