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The energising experience of psychological need fulfilment: a person-centred approach

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Abstract

Purpose – Energy is important at work. The self-determination theory posits that to increase employee energy, individuals must have three fundamental psychological needs fulfilled: autonomy, competence and relatedness. We take a person-centred approach to the experience of need fulfilment for energy at work.

Design/methodology/approach – Across two studies, we investigate psychological needs profiles and their relationship to energy during times in which employees exerted extra effort at work. We utilise latent profile analysis.

Findings – We discover five profiles of need fulfilment and tested their relationship to energy during the event: high-level, low-level, competence-driven, upper-middle and lower-middle. Participants whose needs were highly fulfilled (high-level need fulfilment class) reported the highest mean energy levels.

Originality/value – Previous research has often taken a variable-centred approach, conflated need fulfilment and need thwarting and/or only considered need fulfilment profiles related to negative outcomes. Our study extends this research by investigating need fulfilment profiles related to energy at work.

Keywords Self-determination theory, Energy, Need fulfilment, Latent profile analysis

Paper type Research article

Energy is the fuel of motivated behaviour and serves as a personal resource that allows individuals to engage in effortful action for a particular event, such as a work task (Dutton, 2003; Green *et al.*, 2017; Schaufeli *et al.*, 2002; Schmitt *et al.*, 2026). Importantly, energy underlies many important constructs in the organisational sciences (Owens *et al.*, 2016). To illustrate, energy is a central component of motivation (Parker *et al.*, 2021), employee engagement (Green *et al.*, 2017; Owens *et al.*, 2016) and thriving (Goh *et al.*, 2022). For organisations, energised employees are more productive (Bellet *et al.*, 2024; Steers *et al.*, 2004), engage in more organisational citizenship behaviours (Binnewies *et al.*, 2009; Lam *et al.*, 2016) and provide better customer service (Cayla and Auriacombe, 2025). As such, scholars and practitioners alike seek to understand how to optimise employee energy.

Importantly, Deci and Ryan (2000), in the self-determination theory (SDT), suggest that individuals naturally exert more energy in environments that fulfil all three of their fundamental psychological needs for autonomy, competence and relatedness. Considerable evidence using a variable-centred approach supports the proposition that fulfilment of the psychological needs theorised by SDT is associated with greater energy (Martela *et al.*, 2016; Ryan *et al.*, 2010; Ryan and Deci, 2008; Van den Broeck *et al.*, 2008; Van den Broeck *et al.*, 2016). Rather than solely relying on a variable-centred approach, we suggest that a person-centred approach provides important complementary information by simultaneously considering constellations of need fulfilment that differ not just in their absolute levels of need fulfilment, but also in the configurations of the profiles (suggesting a potential compensatory effect of one or more needs) (Morin *et al.*, 2018).

We make three key contributions. First, by taking a person-centred approach to need fulfilment, we complement previous variable-centred research investigating whether and how profiles of need fulfilment differ and influence energy experiences at work. Such a contribution is important in providing greater understanding of Deci and Ryan's (2000)

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theoretical tenet that all needs are equally important and must be fulfilled in order for employees to exert their highest levels of energy. Second, we consider need fulfilment profiles specifically for a positive work outcome. A small subset of studies has begun to consider needs profiles, yet they do so by conflating need fulfilment and need thwarting or by only considering need fulfilment related to negative outcomes (Gillet *et al.*, 2019; Huyghebaert-Zouaghi *et al.*, 2023; Li *et al.*, 2021; Rouse *et al.*, 2020; Warburton *et al.*, 2020). Our contribution is important because need fulfilment and need thwarting are not opposites and warrant distinct investigations, particularly in light of the evidence that need-fulfilment is most relevant to positive work experiences (Van den Broeck *et al.*, 2016), such as energy. Finally, we contribute to the literature on energy at work by considering individual differences that provide greater insight into the way work can be structured for need fulfilment and subsequent energy experiences.

Psychological needs and energy

Energy has been investigated using various terms such as vigour, zest, energetic activation and vitality (Green *et al.*, 2017; Quinn and Dutton, 2005), creating confusion in the literature. In a meta-analysis, Schmitt *et al.* (2026) define energy as both an antecedent and component of engagement. Energy is similar to the vigour component of engagement as vigour emphasises the feeling of being energised; yet we distinctly conceptualise energy as a personal resource one expends, beyond simply a feeling (Schaufeli *et al.*, 2006). Zest is a broader concept than energy and vigour and describes an individual's life approach where they feel active, hopeful and excited (Peterson *et al.*, 2009). Energetic activation comes from Thayer's (1990) model of mood differentiating energetic and tension-related arousal. We differ from Thayer as we conceptualise energy as a positive resource. Finally, energy differs from vitality, which is a measure of well-being (Ryan and Deci, 2000). In sum, energy overlaps with many organisational constructs, with subtle differences existing among them.

SDT provides a particularly apt theoretical perspective for understanding how to facilitate employee energy. In describing SDT, Deci and Ryan (2000) take an organismic approach and state that much like humans have fundamental physiological needs that must be fulfilled (e.g. food and water), humans also have three fundamental psychological needs that must be fulfilled for them to be fully energised (Deci and Ryan, 2000). Specifically, fulfilment of all three fundamental psychological needs leads to behaviour that is integrated with one's sense of self (i.e. more autonomous), thereby marked with greater levels of vitality (Deci and Ryan, 2000).

The three psychological needs in SDT are autonomy, competence and relatedness (Deci and Ryan, 2000). Autonomy refers to feeling volitional and that one's behaviour is in alignment with one's sense of self. Competence refers to feeling capable and effective, while relatedness refers to feeling close and connected to others (Deci and Ryan, 2000). Considerable evidence using a variable-centred approach supports the proposition that fulfilment of the psychological needs theorised by SDT is associated with greater energy (Campbell *et al.*, 2018; Nerstad *et al.*, 2020; Ryan *et al.*, 2010; Ryan and Deci, 2008; Van den Broeck *et al.*, 2008).

Further, scholars have begun to investigate psychological needs profiles. For example, profiles consisting of need satisfaction and need thwarting have been related to stress, anxiety, depression, life satisfaction (Rouse *et al.*, 2020); motivation, enjoyment, well-being and burnout with regards to physical activity (Warburton *et al.*, 2020) and physical activity participation (Li *et al.*, 2021; Tapia-Serrano *et al.*, 2024). In another study, profiles consisting of need satisfaction, need thwarting and need unfulfillment were related to work motivation (Huyghebaert-Zouaghi *et al.*, 2023). Additionally, need fulfilment profiles have been related to anxiety and physical fatigue (Gillet *et al.*, 2019).

In observing the previous needs profile research, profiles have typically included both need fulfilment and need thwarting for predicting outcomes, or need fulfilment profiles have been related to only negative outcomes. Importantly, a thwarted psychological need refers to the

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active frustration of a psychological need, and differs from an unsatisfied need, which refers to a need not fulfilled (Bartholomew *et al.*, 2011; Chen *et al.*, 2015). Although scholars have called for a greater investigation of fulfilled and thwarted needs, need fulfilment should be associated with energising experiences whereas needs thwarting more closely aligns with negative outcomes (Deci and Ryan, 2000; Sezer *et al.*, 2024; Van den Broeck *et al.*, 2016). As such, previous research that conflates need satisfaction and need thwarting, or looks at the relationship between need satisfaction and negative outcomes, likely does not provide the most accurate theoretical picture of how profiles of need fulfilment are associated with energy at work, or even whether the need fulfilment profiles are truly distinct from one another. Thus, we begin with the following:

H1. Distinct patterns of need fulfilment will emerge from the data, reflecting different profiles of fulfilment of the needs for autonomy, competence and relatedness.

H2. The profile comprised of high fulfilment levels of all needs will be associated with the highest levels of energy relative to all other profiles.

Study 1 method

We fully describe our sampling strategy, data exclusions and measures in the methods section for each study. We obtained IRB approval prior to conducting each study [detailed IRB information redacted for peer review]. We provide our data and output files with syntax on the Center for Open Science repository: https://osf.io/xup59/overview?view_only=808e70c93775407f87b6028dcfb94c76.

Participants and procedure

We used Amazon Mechanical Turk (mTurk) to collect our data and followed best practices for doing so (Aguinis *et al.*, 2021). mTurk provides high-quality data from demographically diverse samples that have a variety of different jobs working for various firms (Aguinis *et al.*, 2021; Sheehan and Pittman, 2016). We required that participants were currently employed, worked more than 30 hours a week and were not self-employed or employed by a relative. We required that participants had completed at least 5,000 mTurk tasks with an overall 98% approval level. Analyses were based on the 353 workers (145 female, 208 male) who completed our measures. These respondents averaged 33.50 years old (SD = 9.71), had an average job tenure of 54.03 months (SD = 44.87) and most had a college degree or beyond (67.42%, $n = 238$).

We asked participants to think of a specific event at work in which they exerted more effort than typical. Focusing on a specific event facilitates salience and recall (Wellman *et al.*, 2016). We chose to consider the context of extra energy at work for the sake of best understanding the differences in need fulfilment during times of energy, our context of interest. We asked participants to describe the event to increase the salience of the event in their minds. Participants then rated the extent to which they experienced psychological fulfilment as well as their energy level during the event they described.

Extra effort event

To elicit the event, we provided these instructions: *Please bring to mind a specific event in your current job during which you exerted extra effort. Stated differently, please think of a specific event within the last month (such as a situation or task) in which you exerted considerably more energy than typical at work.* We included the notion of exerting extra effort and energy in our prompt in alignment with our definition that energy is a personal resource allowing individuals to expend effort in tasks. We asked participants to describe the event, what they experienced and how they reacted to help them recall the event and make their experiences more salient before rating their experiences related to the event.

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Measures

Psychological need fulfilment

After describing the extra effort event, subjects responded to three items for each need, adapted from Sheldon *et al.* (2001), that measured the extent to which they experienced need fulfilment prior to the event (on a 5-point Likert scale from *strongly disagree* to *strongly agree*). Sample items include: "That my choices were based on my true interests and values," "That I was very capable in what I was doing" and "That I had a sense of contact with people at work who cared for me, and who I care for."

Energy

Participants indicated their energy (on a 5-point Likert scale ranging from *strongly disagree* to *strongly agree*) during the event using five items adapted from the Vigour subscale of the Utrecht Work Engagement Survey (UWES; Schaufeli *et al.*, 2002). Although vigour is not conceptualised as a personal resource in the way energy is, the Vigour subscale of the UWES adequately captures the feeling of energy and is a common measure for energy at work (Schmitt *et al.*, 2026). Sample items include "I was bursting with energy."

Data analyses

Measurement model

Tables 1 and 2 present the descriptive statistics and correlations for Study 1. For our measurement model, we compared a model in which all three needs loaded on their own factors to a model in which they loaded on one factor. The three-factor model ($\chi^2_{(24)} = 54.26$, $p < 0.001$; CFI = 0.98; RMSEA = 0.06; SRMR = 0.03) fit the data well.

Profile identification

We utilised mPlus 8.3 to conduct our latent profile analysis (Muthén and Muthén, 1998-2021). We started by extracting two profiles and increasing the number of extracted profiles until the model fit no longer improved in a way to justify the increased number of profiles (Gabriel *et al.*, 2015). To assess model fit, we looked for lower values of log likelihood (LL), Akaike information criterion (AIC), Bayesian information criterion (BIC) and sample-size-adjusted BIC (SSA–BIC), a significant Lo–Mendell–Rubin likelihood ratio test (LMR) and higher values of entropy. Furthermore, we assessed theoretical redundancy of the profiles and opted for a lower number of profiles should redundant profiles emerge (Gabriel *et al.*, 2015). To assess the relationship between the profiles and their reported energy levels, we utilised the BCH command. The BCH command indicates whether the average of one profile's outcome

Table 1. Internal reliabilities, means and standard deviations for studies 1 and 2

	Variable	Study 1 internal reliability	Study 1 mean	Study 1 SD	Study 2 mean	Study 2 SD	Study 2 internal reliability
1	Autonomy	0.82	3.82	0.801	4.06	0.662	0.78
2	Competence	0.84	4.21	0.699	4.32	0.615	0.79
3	Relatedness	0.87	3.73	0.861	3.84	0.730	0.81
4	Vigour	0.79	4.00	0.680	4.08	0.553	0.78
5	Age	–	33.50	9.71	36.33	10.14	–
6	Sex – % Female	–	41.1%	–	35.3%	–	–
7	Ethnicity – % Caucasian	–	75.5%	–	48.7%	–	–

Note(s): Study *1* $n = 353$. Study *2* $n = 150$

Source(s): Authors' own work

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Table 2. Studies 1 and 2 correlations

Variables		1	2	3	4
1	Autonomy		0.646	0.555	0.583
2	Competence	0.467		0.368	0.513
3	Relatedness	0.593	0.419		0.385
4	Vigour	0.396	0.380	0.483	

Note(s): Study 1 correlations are below the diagonal, and Study 2 correlations are above the diagonal. Correlations are all significant ($p < 0.001$). Study 1 $n = 353$. Study 2 $n = 150$

Source(s): Authors' own work

variable is significantly different from the average of another profile's outcome variable (Asparouhov and Muthen, 2021; Gabriel *et al.*, 2018; McLarnon and Beck, 2025). Furthermore, we had mPlus export the profile assignment for each respondent. We then used that as a dummy-coded, categorical variable to predict overall vigour.

Study 1 results

Table 1 presents internal reliabilities, means and standard deviations for all variables. Table 2 presents variable correlations. Table 3 shows the fit statistics for the profiles across all studies. In alignment with recommendations, and in support of Hypothesis 1, we selected a five-profile solution. While the LL, AIC and BIC were slightly lower for the six-class solution, the drop was much smaller relative to the drop from the four-class to the five-class solution. Furthermore, the adjusted LMR was statistically significant ($p = 0.002$), whereas it was nonsignificant for the other profile solutions, and the entropy value for the five-class solution was the second highest at 0.92. Last, but not least, we considered the theoretical redundancy of the profiles and note that the profiles for the five-class solution appear distinct from one another.

Table 4 displays the descriptives for each need in the five profiles. The class with the largest percentage of people (61.76%) consisted of upper-middle level psychological need fulfilment

Table 3. Fit statistics for profiles in studies 1 and 2

No. of profiles	LL	AIC	BIC	SSA-BIC	Entropy	LMR (*p*)
Study 1						
2	−1138.081	2296.162	2334.827	2303.103	0.862	202.765
3	−1099.039	2226.078	2280.209	2235.795	0.821	74.892
4	−1062.908	2161.817	2231.413	2174.31	0.9	69.308
5	*−1023.924*	*2091.848*	*2176.91*	*2107.118*	*0.915*	*74.782*
6	−994.327	2040.654	2141.182	2058.7	0.943	56.775
7	−976.594	2013.188	2129.182	2034.01	0.899	34.017
Study 2						
2	−411.935	843.87	873.976	842.328	0.885	82.43
3	−381.182	790.365	832.514	788.206	0.919	58.582
4	−365.938	767.876	822.067	765.101	0.921	29.04
5	*−346.056*	*736.112*	*802.346*	*732.721*	*0.937*	*37.874*
6	−334.101	720.203	798.479	716.194	0.907	22.773
7	−326.057	712.114	802.433	707.489	0.919	15.324

Note(s): LL = log-likelihood; AIC = Akaike information criteria; BIC = Bayesian information criteria; SSA-BIC = sample-size adjusted BIC; LMR = Lo, Mendell and Rubin (2001) test

Source: Authors' own work

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Table 4. Descriptive information per latent profile indicator in studies 1 and 2

	% of sample	Autonomy *M*	Competence *M*	Relatedness *M*
Study 1				
High-Level	16.28%	4.85	4.87	4.56
Low-Level	1.72%	2.06	1.57	1.96
Comp-Driven	6.14%	1.88	4.16	2.49
Upper-Middle	61.76%	3.96	4.24	3.80
Lower-Middle	14.10%	3.04	3.66	3.25
Study 2				
High-Level	15.84%	4.83	4.91	4.89
Low-Level	3.35%	2.27	3.32	2.14
Comp-Driven	16.97%	4.29	4.59	2.97
Upper-Middle	53.49%	4.05	4.27	4.04
Lower-Middle	10.35%	3.14	3.57	3.19

Note(s): M = mean

Source(s): Authors' own work

for all three needs: autonomy ($M = 3.96$), competence ($M = 4.24$) and relatedness ($M = 3.80$). We named this class the *upper-middle* need fulfilment class. The class with the next largest percentage of people (16.28%) consisted of high levels of fulfilment for all three needs: autonomy ($M = 4.85$), competence ($M = 4.87$) and relatedness ($M = 4.56$). We named this class the *high-level* need fulfilment class. The third largest profile (14.10%) consisted of lower-middle level psychological need fulfilment for all three needs: autonomy ($M = 3.04$), competence ($M = 3.66$) and relatedness ($M = 3.25$). We named this class the *lower-middle* need fulfilment class. The fourth profile in terms of size (6.14%) consisted of higher levels of competence fulfilment ($M = 4.16$) and low levels of fulfilment of autonomy ($M = 1.88$) and relatedness ($M = 2.50$). We named this class the *competence-driven* need fulfilment class. Finally, the smallest profile (1.72%) demonstrated relatively lower need fulfilment for all three needs: autonomy ($M = 2.06$), competence ($M = 1.57$) and relatedness ($M = 1.96$). We named this class the *low-level* need fulfilment class.

Table 5 displays the results from the BCH analyses assessing the mean levels of energy by profile and the and R^2 analysis. The significant omnibus χ^2 and R^2 both indicate that vigour varies by the categorical profiles. Although we asked participants about an event in which they were particularly energised at work, our results suggest that even high-energy events feel qualitatively different for individuals. Relying on SDT, in Hypothesis 2, we posit that the profile of high need fulfilment of all three needs will be associated with the highest levels of energy relative to the other profiles. In support of Hypothesis 2, the *high-level* profile was associated with significantly greater energy levels ($M = 4.54$) than all the other profiles. The next highest level of energy was the *upper-middle* profile ($M = 4.02$) which was also significantly different from *competence-driven* profile ($M = 3.46$) and the *lower-middle* profile ($M = 3.57$). The *low-level* profile ($M = 3.50$) was not significantly different from any of the other profiles except for the *high-level* profile.

Study 1 discussion

We found five need fulfilment profiles which we labelled (in order of profile size): *upper-middle*, *high-level*, *lower-middle*, *competence-driven* and *low-level*. We then assessed the relationship between each of the profiles and rated energy levels. In support of SDT, our findings indicate that those employees who reported a constellation of high fulfilment for all needs experienced the highest energy levels. Our results also suggest profiles with moderate

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Table 5. 3-Step results for outcomes (BCH) and results for R^2 analysis for studies 1 and 2

	High-level (A)	Low-level (B)	Competence-driven (C)	Lower-middle (D)	Upper-middle (E)	χ^2	R^2
Study 1							
Vigour	4.54BCDE	3.50A	3.46AE	3.57AE	4.02ACD	78.85**	0.184**
Study 2							
Vigour	4.67BCDE	3.32ACE	4.14ABD	3.69ACE	4.01ABD	94.18**	0.285**

Note(s): Analyses for the omnibus χ^2 and mean differences were run utilizing the BCH procedure. The values for each outcome are means for each profile. Capitalised superscripts indicate profiles that are significantly different at $p < 0.05$

To calculate the R^2 we had mPlus export the profile assignment for each respondent and then used that as a dummy-coded, categorical variable to predict vigour. The statistically significant R^2 in this case tells us similar information as the Omnibus χ^2, namely that vigour varies by the categorical profiles

** denotes $p < 0.01$

Source(s): Authors' own work

fulfilment of all three needs are associated with more energy than profiles with just one need highly fulfilled which aligns with the SDT proposition that one need cannot compensate for low levels of the others. Such results are particularly interesting in the work context, which can notoriously emphasise competence over all other needs (e.g. Forner *et al.*, 2021). Furthermore, profiles of *low-level* fulfilment of psychological needs only experienced significantly less energy than those who had *high-level* need fulfilment. However, they did not experience significantly less energy than individuals in the other needs profiles.

We sought to replicate and extend Study 1. In doing so, we relied on our previous findings and specifically hypothesise:

H3. Five latent profiles exist in the data such that individuals may be classified into one of the following need fulfilment profiles: high-level, upper-middle, competence-driven, lower-middle and low-level.

H4. Profile membership will be differently associated with energy such that those with high levels of need fulfilment will be associated with the highest levels of energy while those with low levels of need fulfilment will be associated with the lowest levels of energy.

Study 2 method

Whereas in Study 1 we asked employees about their psychological need fulfilment *prior to* an event, in Study 2 we asked employees about their psychological need fulfilment *during* an event in which they exerted extra effort. We made this change to remain conceptually consistent across studies while also providing the opportunity to learn if the experience of need fulfilment *leading to* the exertion of extra effort is similar to the experience of need fulfilment that *accompanies* the exertion of extra effort. Importantly, scholars have noted the importance of conducting a conceptually similar replication study with variation to determine if findings remain consistent across conditions (Locke, 2015).

Participants and procedure

We recruited 150 workers (53 female, 97 male) through Amazon's Mechanical Turk (mTurk) for our study. The workers averaged 36.33 years old (SD = 10.14), had an average job tenure of 69.83 months (SD = 72.45) and most had a college degree or beyond (73.33%, $n = 110$). We set the same mTurk restrictions as in Study 1.

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Extra effort event

As in Study 1, we asked participants to think of a specific event at work in which they exerted more effort than typical with these instructions: *We are interested in one of your experiences at work (i.e. a paid job). Please bring to mind a specific event in your current job in which you were extremely motivated. Stated differently, please think of a specific event (such as a situation or task) in which you exerted considerably more effort than typical at work.* To help participants recall the event and their experiences during the event, we asked them to describe the event, what they were experiencing and how they were reacting.

Measures

Psychological need fulfilment

We used the same items as in Study 1, adapted from the work of Sheldon *et al.* (2001).

Energy

We used the same five items adapted from the Vigour scale of the Utrecht Work Engagement Survey (Schaufeli *et al.*, 2002).

Data analyses

For profile identification and auxiliary variables, we used the same analytic approach as in Study 1.

Measurement model

Table 1 and Table 2 present the descriptive statistics and correlations for Study 2 variables. As before, we begin by testing the measurement model loading all the needs items on their three respective needs ($\chi^2_{(24)} = 64.80$, $p < 0.001$; CFI = 0.93; RMSEA = 0.11; SRMR = 0.06). Although RMSEA is slightly above conventional levels, the moderate-to-good fit indicated by the χ^2, CFI and SRMR provide support for proceeding with hypothesis testing.

Profiles and energy

Table 1 presents internal reliabilities, means and standard deviations for all variables. Table 2 presents variable correlations. Table 3 displays the fit statistics for the profile solutions. In support of Hypothesis 3, we again choose the five-profile solution. For the five-profile solution, the LL, AIC, BIC and SSA-BIC, are lower than for the four-profile solution. Yet the drop in values from the five-profile solution to the six-profile solution is relatively smaller, indicating that the solution is not a significantly better fit. Furthermore, the entropy value for the five-class solution was the highest at 0.937, and the adjusted LMR was marginally significant ($p = 0.063$), whereas it was nonsignificant for the other profile solutions. In sum, relying on the fit statistics, we once again chose the five-profile solution that replicates Study 1.

The *upper-middle* profile contained the largest percentage of people (53.49%) (autonomy: $M = 4.05$; competence; $M = 4.27$; relatedness: $M = 4.04$). The profile with the next largest percentage of people (16.97%) was the *competence-driven* profile (competence: $M = 4.59$; autonomy: $M = 4.29$; relatedness: $M = 2.97$). The *high-level* profile (15.84%) was third largest (autonomy: $M = 4.83$; competence: $M = 4.91$; relatedness: $M = 4.90$). The fourth profile in terms of size (10.35%) was the *lower-middle* profile (autonomy: $M = 3.15$; competence: $M = 3.57$; relatedness: $M = 3.19$). Finally, the smallest profile (3.35%) was the *low-level* profile (autonomy: $M = 2.27$; competence: $M = 3.32$; relatedness: $M = 2.14$). Table 4 displays the descriptives for each of the needs in the five profiles.

Table 5 displays the results from the BCH analyses assessing the mean levels of energy by profile and the and R^2 analysis. As before, the significant omnibus χ^2 and R^2 both indicate that vigour varies by the categorical profiles. We predicted in Hypothesis 4 that the profiles would

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be differently associated with energy such that the profile with *high-level* need fulfilment would be associated with the highest level of energy and the *low-level* need fulfilment profile would be associated with the lowest level of energy. In partial support of Hypothesis 4, the *high-level* profile was associated with significantly greater energy levels ($M = 4.67$) than all the other profiles. Furthermore, although the *low-level* profile ($M = 3.32$) was significantly different from three of the other profiles, it was not significantly different from those in the *lower-middle* ($M = 3.69$) profile. Thus, Hypothesis 4 receives partial support.

Study 2 discussion

We designed Study 2 as a replication and extension of Study 1. We find that the needs profiles replicated across the two studies and are associated with varying energy levels. Generally, we find consistent relationships between the profiles and energy across the studies, although we note that the *upper-middle* profile was not significantly different from the *competence-driven* profile in Study 2, whereas it was in Study 1. Importantly, these findings together support the notion that one need cannot compensate for low levels of the other needs.

General discussion

The purpose of these studies was to take a person-centred approach to the experience of need fulfilment for energy at work. According to Deci and Ryan (2000), in SDT, fulfilment of all three psychological needs is associated with the most energised behaviour. Importantly, a person-centred approach complements the previous variable-centred research by investigating differences in the form and levels of need fulfilment across profiles.

We discovered five need fulfilment profiles: *high-level, competence-driven, upper-middle, lower-middle and low-level*. Interestingly, we find relative consistency in the percentage of each sample that falls into each needs profile with the *upper-middle* level of fulfilment profile containing the largest percentage (~50–60%) and the *low-level* need fulfilment profile containing the smallest percentage of each sample (~2–3%). Furthermore, in both samples, the *high-level* need fulfilment profile was approximately 16% of each sample. Our results suggest that employees have different profiles of need fulfilment when particularly energised at work. In the context of SDT, this finding challenges the notion that all employees will experience high levels of need fulfilment when more energised than typical. That said, our results regarding which of the need fulfilment profiles are most associated with energy are in alignment with predictions derived from SDT. Specifically, in both of our studies, profiles of high need fulfilment were associated with the highest levels of energy and profiles of low need fulfilment were associated with the lowest levels of energy.

As noted before, the *competence-driven* fulfilment profile was not significantly different from *lower-middle* and *low-level* fulfilment profiles in Study 1, whereas in Study 2, the *competence-driven* profile was not significantly different from those in the *upper-middle* level of fulfilment. Nonetheless, in relation to the underlying tenets of SDT, this profile's energy levels did differ from the *high-level* fulfilment profile which suggests that high fulfilment of one need cannot compensate for low levels of the other needs (Deci and Ryan, 2000). We speculate that the inconsistencies stem from the work-related nature of our sample, particularly in light of research demonstrating the emphasis workplace leaders place on competence need support (Forner *et al.*, 2021).

Limitations

We asked participants to recall, describe and respond to survey items about a specific event. Such an approach is widely used and valid (Wellman *et al.*, 2016). In doing so, we learned about the psychological experiences associated with energy at work. Nevertheless, asking participants to recall an event requires participants to construct the event from memory. Particularly for an event characterized by high energy, our findings may contain bias and limit

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our ability to speak to the causal order of need fulfilment and energy exertion. Similarly, although we were particularly interested in understanding energising experiences at work, asking participants specifically about a high-energy event may limit our generalisability to other types of work experiences.

Furthermore, we note three points about our sampling. First, we obtained our samples from Amazon's mTurk. Although evidence suggests participants from mTurk provide high-quality data with similar results to other samples (Sheehan and Pittman, 2016), we acknowledge it limits our generalisability. Second, although our measurement models, profiles and hypotheses were generally replicated in Study 2, the Study 2 sample size (n = 150) was small. The RMSEA, which is affected by sample size (Kenny *et al.*, 2015), for our Study 2 measurement model was slightly above conventional levels. Additionally, the number of members in the "low-level" profile in Study 2 was small, weakening the support we find for Hypothesis 4. Third, because all study measures were collected at the same time, by the same source, our findings are at risk of common method bias (Podsakoff *et al.*, 2012). Ultimately, we encourage further research with larger sample sizes and other study designs.

Practical implications

Our results suggest that individual employees likely need their work structured in different ways in order to exert more-than-typical energy. As such, what employees need at work to fulfil all their needs may require cultivation and resoluteness from managers to create and maintain the conditions in which individual employees can thrive. Of particular importance, our person-centred approach highlights that some of these solutions likely must occur at an individual level rather than as a blanket approach for all.

Conclusion

Our work contributes to our understanding of need fulfilment profiles in the context of energy at work. We take a person-centred approach and consider the three psychological needs theorised by SDT (Deci and Ryan, 2000). We provide evidence that differing profiles of need fulfilment are associated with differing energy levels, even when asked to think about energising experiences, but that our findings are generally consistent with the underlying tenets of SDT.

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