



A Person-Centered Representation of Basic Need Satisfaction Balance at Work

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Abstract: This study examines how a global overarching need satisfaction construct, together with three specific dimensions (autonomy, competence, and relatedness needs satisfaction) combine within different profiles of workers among two independent samples ($n = 1,419$ and $n = 677$). In addition, this research investigates the role of job demands and resources in the prediction of profile membership, and documents the relation between these profiles and maladaptive outcomes (anxiety and physical fatigue). The results revealed four distinct profiles. Job resources (e.g., participation, organizational support, and work scheduling autonomy) predicted an increased likelihood of membership in the *normative* profile in both samples. The *globally dissatisfied yet moderately autonomous* profile was also associated with the highest anxiety levels relative to all other profiles.

Keywords: psychological need satisfaction, latent profiles, bifactor, job demands and resources, burnout

The satisfaction of employees' psychological needs at work represents an important driver of work motivation, well-being, and performance (Deci, Olafsen, & Ryan, 2017). Self-determination theory (SDT; Deci & Ryan, 2000) proposes that the satisfaction of the needs for autonomy (the need to experience a sense of volition and psychological freedom), competence (the need to feel effective), and relatedness (the need to feel connected with others) is crucial to the emergence of self-determined goal-directed behaviors across domains, including work (Deci et al., 2017). While SDT has received strong support from variable-centered studies demonstrating the importance of psychological need satisfaction for employees' functioning, this support remains mainly focused on the isolated effect of each need, without considering the combined effects of autonomy, competence, and relatedness needs satisfaction. In a related way, despite the acknowledgment that individuals might be driven by a combination of multiple forms of need satisfaction (e.g., Ferrand, Martinent, & Charry, 2015; Souesme, Martinent, & Ferrand, 2016), little is known about the typical configurations that characterize these combinations, the organizational factors involved in their emergence, and their effects on work-related outcomes.

Indeed, variable-centered analyses operate under the assumption that all participants are drawn from a single population for which a single set of "average" parameters can be estimated. In contrast, person-centered analyses,

such as latent profile analyses (LPA), identify homogeneous subgroups (or profiles) of workers sharing similar configurations of psychological need satisfaction. The present study adopts such a person-centered approach to identify naturally occurring profiles characterized by distinct configurations of need satisfaction, their determinants, and their outcomes, while also considering the extent to which results would generalize across two independent samples of employees. Indeed, from a more practical standpoint, the ability to rely on person-centered solutions as guides for the development of intervention strategies tailored at distinct profiles of employees (e.g., Meyer & Morin, 2016) is conditional on the ability to demonstrate that these profiles can be reliably identified across a variety of samples. More precisely, observing similarity means that generic interventions strategies (designed to select, promote, manage, help or support employees based on their profiles) can be developed and expected to generalize to different types of workers, which is a much more parsimonious approach than having to develop strategies targeting different types of profiles for distinct types of workers. More generally, the present research aims to illustrate the utility of innovative statistical procedures by showing how they may help to achieve an improved representation of employees' need satisfaction profiles.

We first reviewed prior studies examining the combined effects of need satisfaction using variable- and

person-centered methodologies. Then, we referred to the construct validity of person-centered solutions in order to ascertain that the extracted profiles of participants are meaningful in their own right and can be expected to generalize across samples. Finally, we studied the links between need satisfaction profiles and a set of predictors (job demands and resources) and outcomes (anxiety and physical fatigue) to support a substantive interpretation of the identified profiles.

The Combined Effects of Need Satisfaction

Self-determination theory (SDT) positions the psychological needs for autonomy, competence, and relatedness as essential nutrients for well-being (Deci & Ryan, 2000) and positive work outcomes, such as work engagement and job satisfaction (Huyghebaert, Gillet, Fernet, et al., 2018). In contrast, when these needs are not satisfied, maladaptive outcomes, such as burnout, are expected (Trépanier, Fernet, & Austin, 2013). These conclusions hold across a variety of work settings (Gillet, Fouquereau, Forest, Brunault, & Colombat, 2012). SDT also states that all three needs must be fulfilled for psychological well-being to occur (Deci & Ryan, 2000). Thus, if only one or two of the three needs are satisfied, employees' functioning would be less optimal than when the three needs are satisfied. Despite evidence suggesting differential relations between the three needs and work outcomes (Trépanier, Fernet, & Austin, 2016), this hypothesis remains difficult to verify with variable-centered studies given the interrelated nature of the three needs (Bidee et al., 2017; Gillet, Lafrenière, Vallerand, Huart, & Fouquereau, 2014). Two approaches can be used to study these combined effects of psychological need satisfaction: Variable-centered analyses of interactions or balance, and person-centered analyses of employees' profiles.

Variable-Centered Analyses

Variable-centered tests of interaction effects are designed to assess the extent to which the effects of a variable differ as a function of any other variable (e.g., Marsh, Hau, Wen, Nagengast, & Morin, 2013). In this approach, mutually reinforcing effects would be evidenced by the observation that the effects of the satisfaction of each need would increase when the level of satisfaction of the other needs increases. In a first study of interactions effects, Vansteenkiste, Lens, Soenens, and Luyckx (2006) showed that the needs for autonomy, competence, and relatedness all predicted unique variance in students' psychological well-being, vitality, and depression. Autonomy need satisfaction also had a

weaker positive effect on vitality and a weaker negative effect on depression when relatedness need satisfaction was high. Thus, as suggested by SDT, the experience of interpersonal intimacy and connection with others appeared to compensate for a lack of ability to function in a volitional manner. In addition, the positive relation between competence need satisfaction and vitality was found to be weaker among students with low levels of autonomy compared to those with high levels of autonomy. Thus, again in line with SDT, the ability to function in a volitional manner seemed to help students maximally benefit from high levels of competence need satisfaction. In a more recent study focusing on leisure activities among adults, Chang (2012) observed a similar mutually reinforcing positive interaction between autonomy and competence need satisfaction in the prediction of self-rated health.

Rather than focusing on interactions, Sheldon and Niemiec (2006) argued that understanding the combined effects of need satisfaction required the consideration of the extent to which the satisfaction of the three needs would be balanced with one another. They argued that two employees with the same global level of need satisfaction might present two very distinct need satisfaction profiles, based on the degree to which satisfaction level was similar across the three needs. Using an additional score reflecting the "balance" among the satisfaction of these three needs, their results showed that students who experienced a balanced level of need satisfaction tended to report higher levels of well-being than other students presenting the same global amount of need satisfaction but a more unbalanced profile. However, although Dysvik, Kuvaas, and Gagné (2013) reported similar effects of need balance in the prediction of workers' intrinsic motivation, they also found that need balance did not account for any additional variance in intrinsic motivation once the effects of need satisfaction levels and of their interactions were taken into account. When considering these results, it is important to note that both studies relied on an indirect measurement of need balance via the calculation of difference scores, known to be particularly sensitive to measurement errors (Edwards, 2002). An additional flaw of Dysvik et al.'s (2013) approach comes from the fact that they added the need balance difference score to a regression equation already incorporating the interactions effects. Yet, these interactions effects are known to incorporate an implicit representation of balance effects (e.g., Cheung, 2009; Edwards, 2009). This statistical redundancy could explain Dysvik et al.'s (2013) observation of the limited added-value of balance effects.

Interestingly, recent psychometric research on the structure of need satisfaction ratings has revealed a more direct way to measure of need balance. More precisely, despite the recognition that a complete assessment of psychological

need satisfaction should tap into the needs of autonomy, competence, and relatedness (Bidee, Vantilborgh, Pepermans, Griep, & Hofmans, 2016; Knight, Patterson, Dawson, & Brown, 2017), high correlations are typically observed among ratings of autonomy, competence, and relatedness needs satisfaction (Bidee et al., 2017; Gillet et al., 2014). This observation has led many researchers to suggest that employees might experience need satisfaction in a more holistic manner (Huyghebaert, Gillet, Fernet, et al., 2018) as a single overarching dimension (Gillet, Forest, Benabou, & Bentein, 2015; Gillet, Fouquereau, Huyghebaert, & Colombat, 2015; Jungert, Van Den Broeck, Schreurs, & Osterman, 2018). More recently, studies relying on bifactor models have started to demonstrate that need satisfaction ratings simultaneously reflect respondents' global levels of need satisfaction across all three needs as well as the more specific levels of satisfaction of their needs for competence, relatedness, and autonomy left unexplained by this global level (Sánchez-Oliva et al., 2017; Tóth-Király, Morin, Bóthe, Orosz, & Rigó, 2018). In a bifactor model (Chen, West, & Sousa, 2006), one Global (G) factor underlying the answers to all items (here reflecting balance in the satisfaction of all three needs) and a series of orthogonal Specific (S) factors (here reflecting the degree of imbalance associated with each need when compared to the others) explain the covariance among a set of items. This bifactor representation of need satisfaction has been supported in the work (Bidee et al., 2016; Sánchez-Oliva et al., 2017), educational (Gillet et al., 2018), sport (Brunet, Gunnell, Teixeira, Sabiston, & Bélanger, 2016), and general life (Tóth-Király et al., 2018) areas, and provides a way to simultaneously obtain a direct explicit estimate of the extent to which the satisfaction of all three needs is balanced for a specific individual (the global component), together with a non-redundant estimate of imbalance in the satisfaction of each need relative to all others for a specific individual (i.e., expressed as deviations from that global level).

A Person-Centered Perspective

Person-centered analyses, such as LPA, are specifically designed to account for the presence of subpopulations characterized by different parameters (Meyer & Morin, 2016; Morin, 2016). LPA focus on the identification of subgroups characterized by distinct configurations, or profiles, on a set of variables, and are naturally suited to the consideration of the joint effects of variable combinations. More precisely, LPA provide a way to investigate how the various components of need satisfaction will be combined among different types of employees. However, no person-centered research on employees' need satisfaction profiles has so far been conducted in the work domain.

Of direct relevance to the present investigation, Morin and Marsh (2015; also see Morin, Boudrias, Marsh, Madore, & Desrumaux, 2016; Morin et al., 2017) showed that whenever global constructs are assumed to co-exist with specific dimensions assessed from the same set of indicators, failure to control for this global tendency in the context of LPA may mistakenly result in the identification of profiles of employees differing from one another quantitatively (*level*) rather than qualitatively (*shape*). More precisely, these authors note that the identification of *level*-differentiated profiles (i.e., profiles characterized by matching levels across all indicators and differing from one another quantitatively) is generally taken as evidence against the meaningfulness of a person-centered solution, when compared to *shape*-differentiated profiles (i.e., profiles characterized by a qualitatively different configuration of indicators). However, just like ignoring co-existing global and specific constructs is likely to result in inflated factor correlations or cross-loadings in variable-centered analyses, this ignorance is likely to result in the erroneous estimation of *level*-differentiated profiles in LPA. These considerations appear to be particularly important to person-centered research focusing on need satisfaction given the aforementioned research evidence that employee ratings of need satisfaction do indeed tend to follow a bifactor structure encompassing both global (need balance) and specific (need imbalance) components. Following Morin, Boudrias, et al.'s (2016) and Morin et al.'s (2017) recommendations, the need satisfaction profiles estimated in the present study will thus be estimated on the basis of factor scores taken from preliminary bifactor measurement models. According to these authors, this approach not only provides a way to achieve a better control for measurement errors than relying on scale scores (Skrondal & Laake, 2001), but it also provides a way to identify profiles differing on the basis of both the global and specific factors.

Despite the fact that no research has ever been done to estimate need satisfaction profiles in the work area, two recent person-centered studies of need satisfaction profiles have been conducted among geriatric populations. In the first of those studies, Souesme et al. (2016) identified three need satisfaction profiles among geriatric patients characterized by (1) low levels of autonomy and competence needs satisfaction, coupled with moderate levels of relatedness need satisfaction (low-moderate satisfaction profile), (2) high levels of relatedness need satisfaction, coupled with moderate levels of autonomy and competence needs satisfaction (high-moderate satisfaction profile), and (3) high levels of autonomy, competence, and relatedness needs satisfaction (high satisfaction profile). In the second study, Ferrand et al. (2015) similarly identified three need satisfaction profiles among hospitalized elderly people: (1) a high satisfaction profile, (2) a profile characterized by high levels of

autonomy and competence needs satisfaction, coupled with moderate levels of relatedness need satisfaction, and (3) a low satisfaction profile.

This study is the first to estimate need satisfaction profiles in the work area, and the first do so while relying on factor scores taken from preliminary bifactor measurement models. Yet, recent person-centered results obtained in the geriatric area, coupled with variable-centered results related to the need balance perspective (Dysvik et al., 2013; Sheldon & Niemiec, 2006; Vansteenkiste et al., 2006), allow us to propose the following hypotheses:

Hypothesis 1: Employees' need satisfaction at work will be best represented by a relatively small number of profiles (i.e., between three and five).

Hypothesis 2: At least one profile reflecting employees' need satisfaction at work will be characterized by high and matching levels of need satisfaction across dimensions.

Hypothesis 3: Additional profiles reflecting employees' need satisfaction at work will be characterized by well-differentiated configurations of need satisfaction across indicators.

A Construct Validation Perspective

As noted by Morin, Meyer, Creusier, and Biétry (2016), it is critical to systematically assess the construct validity of person-centered solutions in order to ascertain that the extracted profiles of participants are meaningful in their own right and can be expected to generalize across samples. A way to address these issues is the demonstration that the identified profiles have heuristic and theoretical values, which is best illustrated by the identification of well-differentiated relations between the identified profiles and a series of theoretically relevant predictors and outcomes, and that they can reliably be replicated across samples (Marsh, Lüdtke, Trautwein, & Morin, 2009; Morin, 2016).

Generalizability

Person-centered evidence is cumulative in nature, and requires an accumulation of results obtained within distinct samples to differentiate the core subset of profiles that systematically emerges, the peripheral profiles that only emerges in specific situations, and the even less frequent set of profiles that simply reflects random sampling variations (e.g., Morin, 2016; Solinger, Van Olffen, Roe, & Hofmans, 2013). In the absence of prior person-centered research on need satisfaction profiles at work, it appeared particularly critical for this study to assess the extent to which the identified profiles would generalize across two distinct samples of participants.

Hypothesis 4: The identified profiles reflecting employees' need satisfaction at work will be replicated across two distinct samples of employees.

Job Demands and Resources

According to the job demands-resources model (Bakker & Demerouti, 2007), a health impairment process is activated by excessive demands that lead to physical and psychological health problems. Job demands refer to those aspects of a job that require sustained physical and/or psychological effort, therefore resulting in physiological and/or psychological costs. In contrast, job resources may help to enhance employees' well-being and to reduce psychological health difficulties as they contribute to achieving goals, reducing the costs associated with job demands, and stimulating personal growth. The effects of job demands (e.g., mental load, workload, role ambiguity) and resources (e.g., information, participation, perceived colleagues support, perceived organizational support, work scheduling autonomy, task identity, and significance) have been examined in relation to burnout, work engagement, and organizational commitment (Bakker, Demerouti, & Sanz-Vergel, 2014; Brauchli, Schaufeli, Jenny, Fülleman, & Bauer, 2013). This influence has been shown to occur through personal resources (Xanthopoulou, Bakker, Demerouti, & Schaufeli, 2007), equity (Hu, Schaufeli, & Taris, 2013) or recovery (Kinunen, Feldt, Siltaloppi, & Sonnentag, 2011). Attention has also been paid to the effects of job demands and resources on need satisfaction (Gillet, Fouquereau, et al., 2015; Trépanier, Forest, Fernet, & Austin, 2015). Fernet, Austin, Trépanier, and Dussault (2013) showed that employees' perceptions of role ambiguity negatively predicted their competence need satisfaction.

Despite the well-documented importance of job demands and resources in the work context (Alarcon, 2011), to the best of our knowledge, no person-centered research has examined the effects of job demands and resources on employees' need satisfaction profiles. We thus leave as an open research question the exact differential role of job demands and resources in need satisfaction profiles. However, prior variable-centered studies (Fernet et al., 2013; Trépanier et al., 2015) suggest that job demands and resources should predict membership into need satisfaction profiles. More specifically, higher job demands should predict a higher likelihood of membership into the profiles characterized by lower levels of autonomy, competence, and relatedness needs satisfaction. In contrast, higher job resources should predict a higher likelihood of membership into the profiles characterized by higher levels of autonomy, competence, and relatedness needs satisfaction (Trépanier et al., 2015). Nevertheless, because of the demonstrated benefits of need balance (Dysvik et al., 2013; Sheldon &

Niemiec, 2006; Vansteenkiste et al., 2006), we also expect that higher job resources and lower job demands should predict a higher likelihood of membership into the profiles in which there is a balance across the three needs (i.e., with high levels of global need satisfaction and low specific levels of imbalance in the satisfaction of the needs for autonomy, competence, and relatedness).

Outcomes of Profile Membership

The present study also seeks to assess relations between the need satisfaction profiles and employees' levels of job anxiety and physical fatigue. These two outcome variables were retained based on previous research showing that they present significant associations with employees' need satisfaction (Huyghebaert, Gillet, Lahiani, Dubois-Fleury, & Fouquereau, 2018; Trépanier et al., 2013). Previous variable-centered research has shown need satisfaction to be associated with a variety of desirable outcomes (e.g., lower anxiety and burnout; see Deci et al., 2017). In addition, numerous studies (Trépanier et al., 2016) report well-differentiated relations between each need and work outcomes. However, research also leads to divergent conclusions regarding the relative importance of each need in the prediction of outcomes. For instance, Sheldon and Niemiec's (2006) results suggest that moderate levels of autonomy need satisfaction are not necessarily harmful when combined with equally moderate levels of competence and relatedness needs satisfaction among undergraduate students. In addition, autonomy need satisfaction was less strongly related to well-being when relatedness need satisfaction was high (Vansteenkiste et al., 2006). Given that all of these previous results stem from variable-centered research, we leave as an open research question the exact differential nature of the associations between the need satisfaction profiles and employees' levels of anxiety and physical fatigue. Yet, these previous variable-centered results still allow us to expect that the profile characterized by the highest levels of autonomy, competence, and relatedness needs satisfaction would be associated with the lowest levels of anxiety and physical fatigue. Likewise, the profile characterized by the lowest levels of autonomy, competence, and relatedness needs satisfaction should similarly be associated with the highest levels of anxiety and physical fatigue. Finally, a profile characterized by differentiated scores across specific needs, attesting to need imbalance (e.g., high specific levels of autonomy coupled with low specific levels of competence and relatedness) should be associated with higher levels of anxiety and physical fatigue than a profile characterized by matching levels across all indicators (i.e., high levels on the global need satisfaction factors coupled with low levels of imbalance evidenced by average scores on the specific autonomy, competence, and relatedness factors).

Method

Participants and Procedure

Sample 1

This study was conducted in the French Air Force. Soldiers received information about the study via the intranet network of the French Air Force, and were then sent an e-mail inviting them to complete an online survey. Each soldier also received a letter explaining the study's purposes, a consent form stressing that participation was voluntary, and a link to the online survey. A sample of 580 contract and 839 career soldiers (1,107 men and 312 women) participated in this study. Respondents were aged between 20 and 62 years ($M = 36.61$, $SD = 8.06$), had an average tenure of 16.29 years ($SD = 8.44$) in the French Air Force and of 3.56 years ($SD = 3.26$) in their position.

Sample 2

Research assistants distributed a paper-based questionnaire to a convenience sample of 677 workers (309 men and 367 women; 1 participant did not indicate his/her gender) from organizations (e.g., public hospitals, industries, sales, and services) located in France. In each organization, participants received a survey packet including the questionnaire, a cover letter explaining the study's purposes, and a consent form stressing that participation was anonymous and voluntary. Questionnaires took approximately 20 min to complete. Completed questionnaires were returned to the research assistants. Respondents were aged between 18 and 61 years ($M = 37.56$, $SD = 12.79$), had an average tenure of 10.19 years ($SD = 10.66$) in their organization and of 6.65 years ($SD = 8.11$) in their position. A total of 557 participants were full-time workers (82.3%). Thirty-eight participants (5.6%) had no diploma, 211 completed vocational training (31.2%), 187 completed high school (27.6%), 231 completed university (34.1%), and 10 did not indicate their education level (1.5%).

Measures

Need Satisfaction

Need satisfaction was measured with 15 items from a measure initially developed in French by Gillet, Rosnet, and Vallerand (2008). In the present study, these items were contextualized with the referent "At work...", and were rated on a 7-point scale ranging from 1 (= *strongly disagree*) to 7 (= *strongly agree*). Five items assessed the need for competence (α in Sample 1 = .85; α in Sample 2 = .86; e.g., "I feel like I am able to meet the demands of the tasks that I have to perform"), five items referred to the need for autonomy (α in Samples 1 and 2 = .89; e.g., "I have the opportunity to make decisions about the tasks that I have

to perform”), and five items measured the need for relatedness (α in Sample 1 = .83; α in Sample 2 = .80; e.g., “I get along well with the people whom I interact with”). Previous studies showed good psychometric properties for this scale in work settings (e.g., Gillet et al., 2012).

Job Demands and Resources (Sample 1: Predictors)

Mental load (4 items, $\alpha = .87$; e.g., “Do you have to give continuous attention to your work?”), workload (4 items, $\alpha = .85$; e.g., “Do you have too much work to do?”), role ambiguity (4 items, $\alpha = .81$; e.g., “Do you know exactly for what you are responsible and which areas are not your responsibility?”), reversed item), information (4 items, $\alpha = .85$; e.g., “Does your work give you the opportunity to check on how well you are doing your work?”), participation (4 items, $\alpha = .88$; e.g., “Can you participate in decisions affecting issues related to your work?”), and perceived colleagues support (4 items, $\alpha = .90$; e.g., “Can you count on your colleagues when you encounter difficulties in your work?”) were measured with six subscales from a measure developed and validated in French by Lequeurre, Gillet, Ragot, and Fouquereau (2013). Responses were provided on a 7-point response scale ranging from 1 (= *never*) to 7 (= *always*).

Job Resources (Sample 2: Predictors)

Work scheduling autonomy (3 items, $\alpha = .73$; e.g., “The job allows me to plan how I do my work”), task identity (4 items, $\alpha = .78$; e.g., “The job allows me to complete work I start”), and significance (4 items, $\alpha = .78$; e.g., “The job has a large impact on people outside the organization”) were measured via scales from the French version of the Work Design Questionnaire (Bigot et al., 2014; Morgeson & Humphrey, 2006). Items were rated on a 7-point scale (1 = *strongly disagree* to 7 = *strongly agree*).

Perceived Organizational Support (Sample 2: Predictor)

Perceived organizational support was assessed using 8 items ($\alpha = .87$; e.g., “My organization really cares about my well-being”) from the French version (Gillet, Colombat, Michinov, Pronost, & Fouquereau, 2013; Gillet, Huart, Colombat, & Fouquereau, 2013) of Eisenberger, Huntington, Hutchison, and Sowa’s (1986) measure. All items were rated on a 1 (= *strongly disagree*) to 7 (= *strongly agree*) response scale.

Anxiety (Sample 2: Outcome)

A 5-item subscale ($\alpha = .85$) from the French version (Gillet, Fouquereau, Lafrenière, & Huyghebaert, 2016) of the Job-Anxiety-Scale (Linden, Muschalla, & Olbrich, 2008) was employed (e.g., “Colleagues or family have already told

me that I am worrying too much about my work”) to assess anxiety. Participants responded to items on a 7-point Likert-scale ranging from 1 (= *totally disagree*) and 7 (= *totally agree*).

Physical Fatigue (Sample 2: Outcome)

Physical fatigue was assessed with 6 items ($\alpha = .92$; e.g., “I feel tired”) from the French version (Sassi & Neveu, 2010) of the Shirom and Melamed’s (2006) burnout measure. Responses were provided on a 7-point scale (1 = *never* to 7 = *always*).

Analyses

Preliminary Analyses

Mixture models (including LPA) are often estimated using mean or sum scores as profile indicators. Although latent factors controlled for measurement errors (i.e., models where the items are used to estimate factors, themselves used as profile indicators) provide a stronger approach (e.g., Bollen, 1989), fully latent mixture models are rarely seen (e.g., Morin, Scalas, & Marsh, 2015). Indeed, given their computational complexity, it is often impossible to estimate fully latent mixture models. An alternative, which is becoming more frequent recently, is to rely on factor scores saved from preliminary measurement models (e.g., Gillet, Morin, & Reeve, 2017; Kam, Morin, Meyer, & Topolnytsky, 2016). Factor scores do not explicitly control for measurement errors the way latent variables do, but provide a partial control for measurement errors by giving more weight to items presenting lower residuals (Skrondal & Laake, 2001), and preserve the nature of the measurement model (i.e., measurement invariance and bifactor structure) better than scale scores (Morin, Meyer, et al., 2016). This is the approach taken in the present study for profile indicators, predictors, and outcomes.

In addition, given the aforementioned mounting evidence regarding the superiority of a bifactor representation of need satisfaction ratings (Sánchez-Oliva et al., 2017; Tóth-Király et al., 2018), first-order and bifactor models were systematically contrasted. As expected, our results supported the superiority of a bifactor representation of need satisfaction ratings. Yet, for comparison purposes, factor scores from preliminary first-order and bifactor measurement models were used as inputs for the analyses. These factor scores were saved from multi-group models of measurement invariance (Millsap, 2011) to ensure the comparability of the results across samples. Extensive details on these measurement models, their measurement invariance, and composite reliability are reported in the

Electronic Supplementary Material (ESM 1; see Tables S1–S4). All analyses relied on Mplus 8.0's (Muthén & Muthén, 2017) robust maximum likelihood (MLR) estimator, and Full Information Maximum Likelihood (FIML; Enders, 2010) to handle missing responses (Sample 1: 0.00%; Sample 2: 0.00–1.62%).

Person-Centered Analyses

LPA were first estimated separately in each sample using the need satisfaction factor scores as profile indicators to verify whether the same number of profiles would be extracted in both samples (e.g., Morin & Wang, 2016). In each sample, we examined solutions including 1–8 latent profiles in which the means of the need satisfaction factor scores were freely estimated in all profiles. Despite the advantages of models in which the indicators' variances are also freely estimated in all profiles (Morin, Maïano, et al., 2011), these models tended to converge on improper solutions or not at all. This suggests the inadequacy of these models and their overparameterization, and the superiority of our more parsimonious models (Chen, Bollen, Paxton, Curran, & Kirby, 2001). LPA were conducted using 5,000 random sets of start values, 1,000 iterations, and retaining the 200 best solutions for final optimization (Hipp & Bauer, 2006). The procedure used to determine the optimal number of profiles, as well as the similarity in the profile solutions across samples, is described in ESM 1.

Predictors and Outcomes of Profile Membership

The results reported in ESM 1 supported the similarity of the profiles estimated (in terms of number, structure, and size) across samples. This most “similar” profile was retained in order to test associations between the profiles, predictors, and outcomes in order to ensure the comparability of results. Because predictors and outcomes differed across samples, separate models had to be estimated. To ensure that the final, most similar, LPA solution remained unchanged by the addition of predictors and outcomes (Diallo, Morin, & Lu, 2017; Marsh et al., 2009; Morin, Morizot, Boudrias, & Madore, 2011), sample-specific solutions aligned with the final retained multi-group solution were defined using the manual three-step approach described by Asparouhov and Muthén (2014; also see Morin & Litalien, 2017). Multinomial logistic regressions were conducted separately in each sample to test the relations between the predictors and profile membership. In Sample 2, outcomes were also incorporated into the final solution. Outcome levels were contrasted using a model-

based approach proposed by Lanza, Tan, and Bray (2013) and implemented through the Auxiliary (DCON) function (Asparouhov & Muthén, 2014). Predictors and outcomes were incorporated to these models as factors scores saved from preliminary measurement models estimated separately in each sample. In these models, each predictor and outcome was defined as a simple correlated CFA factor. One a priori correlated uniqueness was added to the model estimated in Sample 2 to account for the negative wording of two of the perceived organizational support items (Marsh, Scalas, & Nagengast, 2010). In both samples, these preliminary measurement models resulted in an acceptable level of model fit ($CFI/TLI \geq .90$; $RMSEA \leq .06$). Parameter estimates from these preliminary measurement models are reported in Tables S5 (Sample 1) and S6 (Sample 2) in ESM 1, and the correlations among all variables used in both samples are reported in Tables S7 (Sample 1) and S8 (Sample 2). It is interesting to note that estimates of composite reliability obtained in these preliminary measurement models were fully satisfactory for all variables (Sample 1: $\omega = .819-.910$; Sample 2: $\omega = .749-.918$).

Results

Latent Profile Solutions

In line with Hypothesis 1, the class enumeration procedure and tests of profile similarity described in ESM 1 (see Table S9 and Figures S1–S2) supported a solution including four profiles per sample for the LPA solution based on bifactor factor scores. These profiles presented the same structure and relative sizes across samples, thus supporting Hypothesis 4. However, within-profile variation on the relatedness S-factor, but not on the other factors, was found to be slightly higher in Sample 2. For comparison purposes, the 4-profile solution was also retained for models based on first-order factor scores, and tests of profile similarity conducted on this solution converged on identical conclusions (see Table S10 in ESM 1). These models were thus retained for interpretation, and are graphically illustrated in Figures 1 (bifactor) and 2 (first-order). As noted above, these solutions were characterized by the same profile structure and size across samples. Parameter estimates from these models are reported in Table S11 in ESM 1. As expected, the solution based on first-order factor scores resulted in substantively uninteresting profiles presenting almost pure *level* differences, revealing a very small profile characterized by extremely low levels of need satisfaction (Profile 1: 1.44%), two large profiles characterized by average (Profile 2: 40.35%) or high (Profile 4: 41.02%) levels of need satisfaction, and one moderately large profile characterized by low levels of need satisfaction (17.18%). In contrast, the solution based

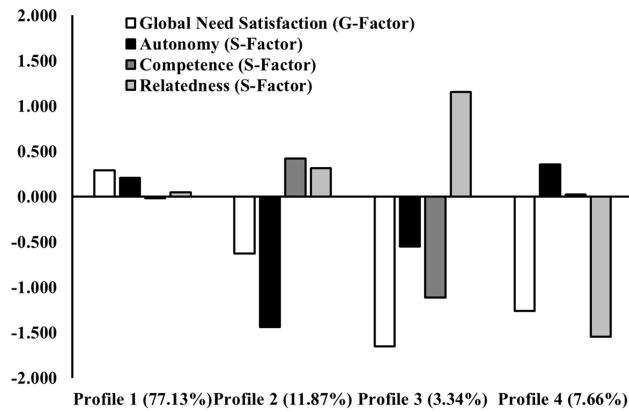


Figure 1. Final 4-profile solution based on bifactor factor scores. The global need satisfaction G-factor reflects respondents' global levels of balance in the satisfaction of all three needs. The specific autonomy, relatedness, and competence S-factors reflect imbalance in the satisfaction of all three needs when compared to the others (specific levels of need satisfaction left unexplained by the G-factor). Profile indicators are estimated from factor scores with $M = 0$ and $SD = 1$. Profile 1 = normative, Profile 2 = globally dissatisfied yet moderately competent and connected, Profile 3 = globally dissatisfied yet highly connected, Profile 4 = globally dissatisfied yet moderately autonomous.

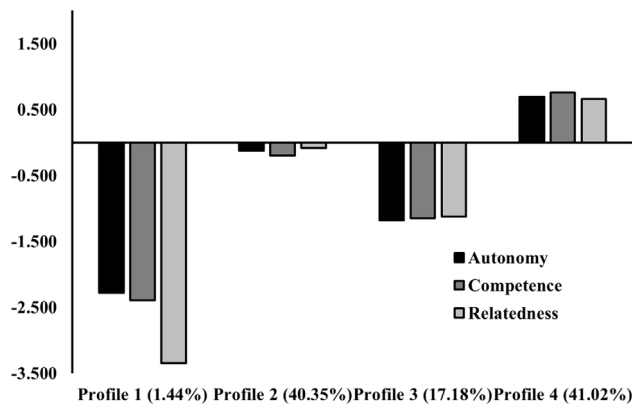


Figure 2. Comparison 4-profile solution based on first-order factor scores. Profile indicators are estimated from factor scores with $M = 0$ and $SD = 1$.

on bifactor factor scores resulted in profiles presenting clear *shape* differences. This observation is aligned with Morin, Boudrias, et al.'s (2016) and Morin et al.'s (2017) observation that relying on bifactor factor scores helps to extract profiles that can differ from one another both in terms of this global construct (here the global level of need satisfaction), but also based on their specific levels of autonomy, competence, and relatedness needs satisfaction. For this reason, we retained the LPA solution based on bifactor factor scores as our final solution. For this solution, the results also reveal a high level of classification accuracy of participants into their most likely profile in both samples (reported

in Table S12 in ESM 1), varying from 82.3% to 94.7% in Sample 1 and from 72.1% to 94.1% in Sample 2.

The solution obtained when using bifactor factor scores is illustrated in Figure 1. A first noteworthy observation lies in the identification of a *normative* profile (Profile 1), representing 77.13% of the employees. The label *normative* was retained to reflect the fact that this profile not only characterized the majority of employees, but also reflected a subpopulation of employees whose global levels of need satisfaction are slightly above average (about 0.3 *SD* higher than the sample average), whereas their specific levels of autonomy, competence, and relatedness satisfaction are similarly close to the average. The identification of such a profile suggested that the basic psychological needs of most employees tended to be globally met at work and to display a strong level of balance across each of the three needs. In contrast, the remaining profiles were characterized not only by moderately low (Profile 2) to very low (Profiles 3 and 4) global levels of need satisfaction, but also by a strong imbalance in the degree of satisfaction of each specific need. Thus, members of Profile 2 were characterized by very low levels of satisfaction of their specific need for autonomy, but by moderately high levels of satisfaction of their specific needs for competence and relatedness. This *globally dissatisfied yet moderately competent and connected* profile characterized 11.87% of the employees. In contrast, members of Profile 3 were characterized by low levels of satisfaction of their specific needs for autonomy and competence, but by very high levels of satisfaction of their specific need for relatedness. This *globally dissatisfied yet highly connected* profile characterized 3.34% of the employees. Finally, members of Profile 4 were characterized by very low levels of satisfaction of their specific need for relatedness, but by average to moderately high levels of satisfaction of their specific needs for autonomy and competence. This *globally dissatisfied yet moderately autonomous* profile characterized 7.66% of the employees. More generally, these results supported Hypotheses 2 and 3.

Predictors of Profile Membership

Associations between predictors and profile membership are reported in Table 1. Before considering specific results, it is noteworthy that these predictors, when taken together, were able to achieve a statistically significant differentiation between all pairs of profiles. More precisely, in Sample 1, mental load predicted an increased likelihood of membership in the *globally dissatisfied yet moderately competent and connected* profile (2) relative to all other profiles. Role ambiguity predicted an increased likelihood of membership into the *globally dissatisfied yet moderately competent and connected* (2) and *globally dissatisfied yet highly connected* (3) profiles relative to the *normative* (1) one. In contrast, the ability to participate in decisions predicted an increased

Table 1. Results from multinomial logistic regressions for the effects of the predictors on profile membership

	Latent Profile 1 vs. 4		Latent Profile 2 vs. 4		Latent Profile 3 vs. 4	
	Coefficient (SE)	OR	Coefficient (SE)	OR	Coefficient (SE)	OR
Sample 1						
Mental Load	0.190 (.354)	1.209	.881 (.428)*	2.414	-0.018 (.454)	0.982
Workload	-0.390 (.369)	0.677	-.576 (.430)	0.562	-0.075 (.471)	0.928
Information	-0.257 (.359)	0.774	-.014 (.455)	0.986	-0.313 (.487)	0.731
Participation	0.555 (.411)	1.743	-1.485 (.515)**	0.226	-2.166 (.557)**	0.115
Colleagues' Support	2.184 (.398)**	8.883	2.176 (.558)**	8.811	1.983 (.523)**	7.263
Role Ambiguity	-0.459 (.339)	0.632	-.045 (.384)	0.956	0.319 (.431)	1.375
Sample 2						
Scheduling Autonomy	0.815 (.300)**	2.259	-.289 (.343)	0.749	-1.092 (.829)	0.336
Significance	0.343 (.254)	1.410	.194 (.269)	1.215	-0.255 (.455)	0.775
Task Identity	0.224 (.283)	1.251	.377 (.271)	1.457	0.601 (.392)	1.824
Organizational Support	1.396 (.284)**	4.039	.555 (.277)*	1.742	0.802 (.491)	2.230
	Latent Profile 1 vs. 3		Latent Profile 2 vs. 3		Latent Profile 1 vs. 2	
	Coefficient (SE)	OR	Coefficient (SE)	OR	Coefficient (SE)	OR
Sample 1						
Mental Load	0.207 (.345)	1.230	0.899 (.363)*	2.457	-0.692 (.229)**	0.501
Workload	-0.315 (.402)	0.730	-0.501 (.426)	0.606	0.185 (.208)	1.203
Information	0.056 (.396)	1.058	0.299 (.422)	1.349	-0.243 (.238)	0.784
Participation	2.721 (.498)**	15.196	0.680 (.524)	1.974	2.041 (.276)**	7.698
Colleagues' Support	0.201 (.346)	1.223	0.193 (.384)	1.213	0.008 (.281)	1.008
Role Ambiguity	-0.778 (.310)*	0.459	-0.364 (.318)	0.695	-0.414 (.200)*	0.661
Sample 2						
Scheduling Autonomy	1.907 (.810)*	6.733	0.803 (.860)	2.232	1.104 (.295)**	3.016
Significance	0.598 (.455)	1.818	0.449 (.497)	1.567	0.149 (.270)	1.161
Task Identity	-0.377 (.381)	0.686	-0.224 (.397)	0.799	-0.152 (.272)	0.859
Organizational Support	0.594 (.444)	1.811	-0.247 (.453)	0.781	0.841 (.209)**	2.319

Notes. The coefficients and OR reflect the effects of the predictors on the likelihood of membership in the first-listed profile relative to the second-listed profile; predictors are factor scores with $M = 0$ and $SD = 1$. SE = standard error of the coefficient; OR = odds ratio; Profile 1 = normative; Profile 2 = globally dissatisfied yet moderately competent and connected; Profile 3 = globally dissatisfied yet highly connected; Profile 4 = globally dissatisfied yet moderately autonomous. ** $p < .01$; * $p < .05$.

likelihood of membership into the *normative* (1) and *globally dissatisfied yet moderately autonomous* (4) profiles relative to the *globally dissatisfied yet moderately competent and connected* (2) and *globally dissatisfied yet highly connected* (3) profiles. Perceptions of colleagues support predicted an increased likelihood of membership into all profiles relative to the *globally dissatisfied yet moderately autonomous* profile (4). Finally, workload and information were unrelated to profile membership.

In Sample 2, perceptions of organizational support predicted an increased likelihood of membership into the *normative* (1) and *globally dissatisfied yet moderately competent and connected* (2) profiles relative to the *globally dissatisfied yet moderately autonomous* profile (4). This predictor was also associated with an increased likelihood of membership into the *normative* profile (1) relative to the *globally dissatisfied yet moderately competent and connected* profile (2). Work scheduling autonomy predicted an increased likelihood of membership into the *normative* profile (1) relative

to all other profiles, whereas neither task identity nor significance presented any statistically significant association with the likelihood of profile membership.

Outcomes of Profile Membership

The associations between profile membership and the outcomes obtained in Sample 2 are reported in Table 2. These analyses reveal that the highest anxiety levels were associated with the *globally dissatisfied yet moderately autonomous* profile (4) relative to all other profiles, which could not be differentiated from one another in terms of anxiety. In contrast, levels of physical fatigue were the highest in the *globally dissatisfied yet moderately autonomous* (4) and *globally dissatisfied yet highly connected* (3) profiles, which could not be differentiated from one another, followed by the *Globally Dissatisfied yet Moderately Competent and Connected* profile (2), with the lowest levels observed among the *normative* profile (1).

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Table 2. Associations between profile membership and the outcomes (Sample 2)

	Profile 1 M [CI]	Profile 2 M [CI]	Profile 3 M [CI]	Profile 4 M [CI]	Summary of differences ($p \leq .05$)
Anxiety	-0.069 [-0.145, 0.007]	0.019 [-0.179, 0.217]	-0.051 [-0.461, 0.359]	0.756 [0.440, 1.072]	4 > 1 = 2 = 3
Physical fatigue	-0.138 [-0.216, -0.060]	0.255 [0.049, 0.461]	0.746 [0.311, 1.181]	0.756 [0.476; 1.036]	3 = 4 > 2 > 1

Notes. Outcomes are estimated from factor scores with a mean of 0 and a standard deviation of 1. *M* = mean; CI = 95% confidence interval; Profile 1 = normative, Profile 2 = globally dissatisfied yet moderately competent and connected, Profile 3 = globally dissatisfied yet highly connected, Profile 4 = globally dissatisfied yet moderately autonomous.

Discussion

Relying on a recent bifactor operationalization of need satisfaction at work (Sánchez-Oliva et al., 2017), we sought to identify profiles of employees characterized by distinct configurations of need satisfaction. To do so, we relied on a proper disaggregation of employees' ratings of their global levels of need satisfaction from more specific ratings of imbalance related to the satisfaction of the need for autonomy, competence, and relatedness relative to this global level of need satisfaction.

Characteristics of Need Satisfaction Profiles

Morin, Boudrias, et al. (2016) and Morin et al. (2017) demonstrated the importance of adopting a proper variable-centered measurement model as a starting point for person-centered analyses. Importantly, they showed that failure to take into account construct-relevant psychometric multidimensionality related to the presence of a bifactor measurement structure could lead to the estimation of latent profiles in which *shape* differences are minimized and *level* differences artificially inflated. Indeed, when profiles were estimated based on first-order factor scores, the results revealed profiles presenting almost pure *level* differences (similar to results previously reported in the geriatric context by Ferrand et al., 2015). In contrast, when the profiles were estimated based on bifactor factor scores, our results revealed much clearer *shape* differences. More precisely, our results revealed four well-differentiated need satisfaction profiles: (a) *normative*; (b) *globally dissatisfied yet moderately competent and connected*; (c) *globally dissatisfied yet highly connected*; and (d) *globally dissatisfied yet moderately autonomous*. The identification of a large (77.1%) *normative* profile is interesting and suggests that, for the majority of the sample, global levels of need satisfaction remain satisfactory and balanced with the specific needs (autonomy, competence, and relatedness). This result is well-aligned with the results from Morin, Boudrias, et al. (2016) and Morin et al. (2017) who also identified the presence of a dominant *normative* profile characterized by moderate levels of well-being (2017) or psychological health

(2016) across indicators. Apart from this profile characterized by balanced levels of need satisfaction across specific needs and a slightly above average level of global need satisfaction, it is interesting to note that all other profiles are characterized both by discrepant levels of need satisfaction across needs, and by low global levels of need satisfaction, supporting Sheldon and Niemiec's (2006) assertion of the importance of achieving balanced levels of need satisfaction.

Generally, these profiles support the value of a finer-grained representation of need satisfaction incorporating both the global extent to which all three needs are met, and the specificity associated with each need over and above this global level (need imbalance, expressed as deviations from the global level), rather than simply focusing on a global score of need satisfaction (Vansteenkiste et al., 2006). Importantly, our results also showed that these profiles presented a well-differentiated pattern of associations with the two outcomes considered in this study (i.e., anxiety and physical fatigue).

Effects of Need Satisfaction Profiles on Work Outcomes

To better understand the meaning and the psychological processes involved in these profiles, it is helpful to consider their associations with the two outcomes considered in this study. Specifically, the lowest levels of physical fatigue were observed in the *normative* (1) profile, which was the profile characterized by the highest global level of need satisfaction, coupled with the most balanced need satisfaction profile. Based on prior theoretical developments (Sheldon & Niemiec, 2006) and results (Sánchez-Oliva et al., 2017; Tóth-Király et al., 2018), this result demonstrates the key role of employees' need satisfaction balance in the prediction of work outcomes.

One might wonder about the non-significant differences between the *normative* profile and the *globally dissatisfied yet moderately competent and connected* and *globally dissatisfied yet highly connected* ones in terms of anxiety. Similarly, the *globally dissatisfied yet moderately autonomous* profile appeared to be the least desirable one from an outcomes perspective. When we compare these three globally

dissatisfied profiles, it is interesting to note that the least desirable one is associated with the lowest levels of relatedness need satisfaction, whereas both the *globally dissatisfied yet moderately competent and connected* and *globally dissatisfied yet highly connected* profiles present high levels of relatedness need satisfaction. These results thus suggest that high levels of relatedness need satisfaction could somehow help to buffer the negative effects of low global levels of need satisfaction. This interpretation is consistent with the theoretically positive role ascribed to relatedness need satisfaction (Vansteenkiste et al., 2006), and the idea that relatedness need satisfaction leads to positive outcomes by helping the internalization process of work-related rules and regulations (Dysvik et al., 2013). Managers should thus focus their efforts in helping to increase relatedness need satisfaction, prior to any other needs, among globally dissatisfied workers.

Finally, the *globally dissatisfied yet moderately competent and connected* profile was associated with lower levels of physical fatigue than the *globally dissatisfied yet highly connected* profile. It is noteworthy that the key difference between these two profiles appears to lie in the achievement of a more balanced level of need satisfaction across at least two of the needs (competence and relatedness) in the first of these profiles. This result thus suggests that competence need satisfaction might also be helpful, particularly in combination with relatedness need satisfaction. This observation is aligned with the results from previous studies showing that employees who believe in their capabilities to organize and execute their job tasks display lower levels of burnout (Consiglio, Borgogni, Alessandri, & Schaufeli, 2013). Employees with high levels of competence need satisfaction persevere when faced with difficulties and tend to interpret demands as challenges rather than hindrances or uncontrollable events. They have also optimistic feelings about their performance and their own personal achievements (Ventura, Salanova, & Llorens, 2015). It thus appears to be better for globally dissatisfied employees to find a way to satisfy their specific need for competence, as doing so may contribute to preserve their emotional resources (Hobfoll, 1989).

More generally, and as mentioned above, these results confirm that specific needs tend to present well-differentiated relations with outcomes when global levels of need satisfaction are considered. They point out the importance of exploring synergistic relations between the three needs and argue for the added-value of jointly considering the global and specific levels of need satisfaction. However, our results suggest that some of the compensatory effects described above are limited to one outcome (anxiety) without generalizing to the other one (physical fatigue). Sánchez-Oliva et al. (2017) demonstrated the nomological validity of global (balance) and specific (imbalance) ratings of need satisfaction in relation to burnout components

(emotional exhaustion, depersonalization, and professional efficacy). Their findings revealed that global levels of need balance were negatively associated to all burnout components. They also showed that specific levels of imbalance in the satisfaction of the need for competence (S-factor: having one's need for competence satisfied more than one's global levels of need satisfaction) were negatively related to depersonalization, and positively related to professional efficacy, whereas imbalance in relatedness need satisfaction was negatively related to emotional exhaustion. No such effects were found in relation to imbalance in autonomy need satisfaction. Such results suggest that the combined effects of global and specific levels of need satisfaction may differ as a function of the outcomes under study. This observation reinforces the importance for future research to consider a broader range of desirable (e.g., organizational citizenship behaviors, organizational commitment) and undesirable (e.g., workaholism, work-family conflict) outcomes in order to better understand the mechanisms at play in explaining these differential effects. In addition, future studies should examine how the effects of balance in need satisfaction change as a function of the imbalance related to autonomy, competence, and relatedness.

Predictors of Employees' Need Satisfaction Profiles

The present study was finally designed to investigate the role of job demands and resources in the prediction of profile membership. To our knowledge, no research has yet considered the factors that contribute to the development of employees' need satisfaction profiles. The present results first showed that job demands such as role ambiguity predicted a decreased likelihood of membership into the *normative* profile, while job resources (e.g., participation, organizational support, work scheduling autonomy) predicted an increased likelihood of membership into this profile. This finding is in line with research showing that job demands tend to be associated with lower levels of need satisfaction (Gillet, Fouquereau, et al., 2015; Trépanier et al., 2015) and negative outcomes (Bakker et al., 2014) given that they negatively relate to equity (Hu et al., 2013) and recovery (Kinnunen et al., 2011). In contrast, job resources are associated with higher levels of need satisfaction (Fernet et al., 2013) and positive outcomes (Brauchli et al., 2013) as they have positive influence on employees' recovery experiences (Kinnunen et al., 2011). Furthermore, perceptions of organizational and colleagues support also predicted a decreased likelihood of membership into the least desirable *globally dissatisfied yet moderately autonomous* profile when compared to the other

globally dissatisfied profiles characterized by higher levels of relatedness need satisfaction. This result is in line with past studies showing that perceived organizational and colleagues support foster relatedness need satisfaction as they tend to be associated with lower interpersonal conflicts at work (Eisenberger & Stinglhamber, 2011). Other investigations also demonstrated that perceived organizational and colleagues support tended to positively relate to psychological need satisfaction (Gillet et al., 2012).

Limitations and Directions for Future Research

The present study has limitations. First, we used self-report measures that can be impacted by social desirability and self-report biases. We thus encourage researchers to conduct additional research using more objective turnover data as well as informant-reported (e.g., supervisor) measures of performance as ultimate outcomes. Second, although our treatment of some variables as predictors or outcomes was based on theoretical considerations (e.g., Deci et al., 2017), our design did not allow us to rule out the possibility of reverse causality, reciprocal influence, or spurious associations. Future longitudinal research should devote more attention to the identification of the true directionality of the associations among predictors, outcomes, and profiles. It would also be important for future research to better consider the mechanisms involved in both the formation and consequences of need satisfaction profiles. Third, future studies may contribute to the literature by adopting a longitudinal design and addressing the joint issues of within-person and within-sample profile stability (Gillet et al., 2017; Kam et al., 2016). More precisely, it would be interesting to examine whether the need satisfaction profiles identified in the current study change in terms of number, structure, variability, size, and outcomes across time (within-sample stability) and whether membership into the different need satisfaction profiles remain stable (within-person stability). Future research may also consider the possible mechanisms at play in explaining these potential profile transitions. Furthermore, it would be interesting for further studies to examine whether a profile characterized by high levels of global need satisfaction balance and low specific levels of imbalance in the satisfaction of the needs for autonomy, competence, and relatedness presents the greatest levels of stability over time. Fourth, we only considered job demands and resources as possible predictors of need satisfaction profiles. It would be interesting for future research to consider a more diversified set of determinants of need satisfaction profiles (e.g., proactive personality, job crafting, organizational culture, transformational leadership). Finally, our reliance on a sample of soldiers (Sample 1)

and a convenience sample of workers (Sample 2) makes it hard to assess the extent to which these samples can be considered to be representative of more general populations of workers. It would remain important for future research to rely on more diversified (in terms of cultures, languages, and professions) and representative samples.

Practical Implications

From a practical perspective, our results suggest that managers should be particularly attentive to employees displaying low global levels of need satisfaction, and especially to those who also display low levels of relatedness need satisfaction (*globally dissatisfied yet moderately autonomous*) as these workers appeared to be particularly at risk for a variety of work difficulties, including anxiety and fatigue. Interestingly, our results revealed that perceiving high levels of organizational and colleagues support was associated with a lower likelihood of membership into that least desirable profile. Therefore, practitioners and human resources managers should try to promote organizational and colleagues support in the workplace in order to increase employees' need satisfaction and reduce their psychological health difficulties. Among ways to achieve this objective, top management might promote a supportive culture, for instance, by providing employees the resources or materials they need to perform their job effectively, by reducing work overload, and by promoting justice and fairness in terms of policy implementation and rewards distribution (Eisenberger & Stinglhamber, 2011). Recently, Gonzalez-Morales, Kernan, Becker, and Eisenberger (2018) also developed and provided evidence for the efficacy of a brief support training program including four basic strategies (i.e., benevolence, sincerity, fairness, and experiential processing). Finally, in order to foster a climate of support among colleagues, managers may implement informal mentoring activities, as well as help to organize informal social events aiming to encourage the development of stronger social ties (Newman, Thanacoody, & Hui, 2012). In the existing literature, numerous studies have also shown that autonomy-supportive behaviors were positively related to psychological need satisfaction (Gillet et al., 2012). Thus, having managers displaying higher levels of autonomy-supportive behaviors could be associated with higher levels of need satisfaction among employees.

Electronic Supplementary Material

The electronic supplementary material is available with the online version of the article at <https://doi.org/10.1027/1866-5888/a000228>

ESM 1. Details of need satisfaction measurement models as well as class enumeration procedure and tests of profile similarity; additional statistics (Tables S1–S12) and elbow plots of the value of the information criteria for solutions including different numbers of latent profiles (Figures S1–S2)

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