Self-Determination Theory and Well-Being in the Health Care Profession

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Abstract

In the current study we predicted two forms of well-being using basic needs theory (BNT). We examined domain specific (i.e., exercise) and global basic needs satisfaction (e.g., competence). One-hundred and twenty-one pharmacists and nurses from eight hospitals in a large Midwest inner city participated. We predicted 24 and 44% of the variance in mindfulness and vitality, respectively, with basic needs in exercise and life in general making significant contributions. Our findings supported the importance of competence satisfaction as the most critical basic need compared to autonomy and relatedness. Regular physical activity alleviates negative psychological states but can also potentially enhance positive mood states such as mindfulness and vitality if the exercise setting promotes a need satisfaction for competence.

Keywords: subjective well-being, motivation, health care
SELF-DETERMINATION THEORY AND WELL-BEING IN THE HEALTH CARE PROFESSION

Self-determination theory (SDT) has been used to guide a plethora of research in education (Ryan & Deci, 2009) and in exercise and sport settings (Hagger & Chatzisarantis, 2007). SDT has also been used to explain health behavior such as tobacco use (e.g., Williams, Gagné, Ryan, & Deci, 2002). Much of the SDT research conducted in health care settings has been conducted to explain patient behaviour, while very few researchers have used SDT to answer important questions about the well-being of health care providers, such as nurses and pharmacists working in hospitals. Research with health care workers often examines ill-being such as stress and burnout (e.g., Demerouti, Bakker, Nachreiner, & Schaufeli, 2000). For instance, Mott and colleagues conducted a national survey of pharmacists and reported that almost 70% of them experienced stress and role overload (Mott, Doucette, Pedersen, & Schommer, 2004).

Little work has been done from a positive psychology perspective to understand the factors that contribute to well-being. McCann and colleagues (2013) recently reviewed research in the health care profession geared towards a positive psychological state (i.e., resilience), yet most of the nursing research they examined was on coping, resilience, and hardiness and the ways in which nurses managed stress. No research examining or predicting positive psychological states was included. In one of the few studies on well-being, Rothmann and Malan (2011) examined predictors of work engagement. Work engagement was conceptualized as feelings of vigour and dedication towards work. Strong approach coping and low
avoidant coping predicted greater work engagement. To a lesser degree, low stress stemming from job demands also contributed to predicting well-being. Interestingly, stress from a lack of work related resources did not contribute to predicting well-being.

To address the lack of research examining well-being in health care professionals, we used SDT to predict mindfulness and vitality in nurses and pharmacists. Within SDT theory there are 5 smaller theories (see Vansteenkiste, Niemiec, & Soenens, 2010 for a review) and we specifically examined Basic Needs Theory (BNT). BNT proposes that people have basic innate needs across three areas. The first need is autonomy which refers to the need to be self-determining or in charge of one’s behavior. A second need is for competence and the satisfaction of being efficacious and demonstrating mastery. The final need is relatedness or the need to feel connected to other people. When individuals feel that their needs are met in these areas they are thought to exhibit well-being. In contrast, when people’s needs in the three areas are thwarted their mental health is jeopardized. Individuals needs in the three areas can be met through interactions with various individuals (e.g., work colleagues, family, and friends) in different settings (e.g., holiday parties, work meetings, dinner time). Individuals who feel that people in their life care about them would be more likely to assert that their basic need for relatedness was met compared to people who believed that few people in their life cared for them. Many researchers have supported the importance of satisfying the three basic needs across various life domains (e.g., Ryan & Deci, 2009; Ryan & Frederick, 1997).
In addition to the idea that people’s basic needs can be met in a global sense, there are also domain specific settings and activities whereby individuals in those settings may also be critical in helping to meet basic needs. One of those settings and activities is physical activity (McDonough & Crocker, 2007; Wilson, Rogers, Rodgers, & Wild, 2006). For example, students who perceived that their physical education (PE) class met their needs for relatedness, autonomy, and competence were more likely to experience increases in both physical self-concept and global self-esteem compared to students with lower basic need satisfaction (Garn, McCaughtry, Shen, Martin, & Fahlman, 2013). Therefore an important purpose of the current study was to determine the relative importance of satisfying the three basic needs within exercise settings, as well as more globally, in predicting well-being.

Physical activity is typically associated with reduced negative emotional states (e.g., less stress), cognitive (e.g., enhanced neurocognitive function), physiological (e.g., reduced heart disease) and social benefits (Friedenreich & Orenstein, 2002; Sibley & Etnier, 2003; Martin & Mushett-Adams, 1996; USDHHS; 2000). Far fewer researchers have examined the role of PA in satisfying the 3 SDT basic needs and simultaneously linked the 3 basic needs to vitality and mindfulness. Hence the current study addresses this gap in the literature.

We selected mindfulness to represent one type of well-being. Mindfulness, while similar to consciousness, awareness and attention, is conceptualized as distinct from the historical definitions of those terms and a unique quality of consciousness (Brown & Ryan, 2003; Brown, Ryan, & Creswell, 2007a). Mindfulness is “a receptive attention to and awareness of present events and experience” (Brown, Ryan,
Mindfulness is positively related to a host of positive psychological qualities (i.e., open to experiences, self-esteem, pleasant affect, life satisfaction, optimism, and self-actualization) while negatively related to a plethora of unhealthy psychological states (i.e., depression, anxiety, hostility, rumination, stress, and negative affect; Brown & Warren, 2003). Mindfulness is thought to promote insight which can lead to enhanced choicefulness and equanimity reflecting a state of unconditional happiness (Brown et al., 2007b). Finally, mindfulness is believed to promote greater mind-body functioning via reduced stress and enhanced immune function (Brown et al., 2007b). While mindfulness may lead to a variety of beneficial outcomes it is also thought to be a product of other psychological conditions and facilitative factors. Facilitative factors include the key constructs of BNT: autonomy, competence and relatedness. For instance, Brown et al. (2007a, p. 279) suggest that parental autonomy support behavior may provide a “foundational capacity” for mindfulness. Furthermore, individuals who have meet their needs for autonomy and competence are more likely to be intrinsically motivated which leads to heightened vitality, well-being, and self-esteem which, in turn, are linked to mindfulness (Ryan & Deci, 2000).

Subjective vitality is our second well-being measure and reflects “organismic well-being” and is a positive feeling of aliveness and energy (Ryan & Frederick, 1997, p. 529). According to Ryan and Frederick (1997) conditions that support and result in self-determination produce vitality while having autonomy undermined, feeling incompetent and unloved results in reduced vitality. Both autonomy and relatedness basic needs have positively predicted vitality in older individuals (Ryan &
Frederick, 1997). Research with adult females has shown positive links (e.g., $r = .40 - .49$) between the three psychological needs in exercise settings and subjective vitality (Gunnell, Crocker, Wilson, Mack, & Zumbo, 2013). In summary, we sought to determine if basic needs satisfaction met in both general life and exercise specific domains predicted two forms of well-being: mindfulness and vitality.

**Method**

**Participants**

Participants were 121 health care professionals (82 females and 39 males) in eight hospitals in a major Midwestern city in the USA. Registered nurses ($n = 22$) and pharmacist’s ($n = 99$) participated and ranged in ages from 23 to 68 years ($M = 42.9, SD = 10.5$). Most were Caucasian (82.6%), followed by Asian (6.6%), other (4.1%), African American (2.5%), Arab American (2.5%), Chaldean (0.8%), and American Indian (0.8%).

**Measures**

**Demographic Scale.** The demographic information provided included participants occupation, gender, age, and ethnicity.

**Psychological Needs Satisfaction in General (PNSG).** The PNSG is a 21 item, 3 subscales, questionnaire originally developed by La Guardia, Ryan, Couchman, and Deci (2000) and refined by Deci and colleagues (Deci, Ryan, Gagné, Leone, Usunov, & Kornazheva, 2001). The subscales, number of items and example questions are as follows: autonomy (7; I feel pressured in my life), competence (6; I often do not feel very capable) and relatedness (8; People in my life care about me).
Respondent’s answer 1 (not at all true) to 7 (very true) according to how generally satisfied they are. Nine items are reversed scored.

**Psychological Needs Satisfaction in Exercise (PNSE).** The PNSE is an 18 item, 3 subscales, questionnaire developed by Wilson et al. (2006). The subscales, number of items, and example questions are as follows: autonomy (6; I feel free to exercise in my own way), competence (6; I feel capable of completing exercises that are challenging to me) and relatedness (6; I feel close to my exercise companions who appreciate how difficult exercise can be). Respondents answer 1 (false) to 6 (true) according to how they typically feel during exercising. Wilson et al. (2006) provided evidence of reliability and construct validity via two studies using confirmatory factor analyses.

**Mindful Attention Awareness Scale (MAAS).** The MAAS is a 15 item questionnaire developed by Brown and Ryan (2003). A sample question is, “It seems I am “running on automatic” without much awareness of what I’m doing.” Respondents answer 1 (almost always) to 6 (almost never) according to how frequently or infrequently they currently have had each experience. Evidence of reliability and construct validity was provided via a series of 5 studies (Brown & Ryan, 2003).

**Subjective Vitality (SV).** The SV is a 7 item questionnaire developed by Ryan and Frederick (1997) that was refined to a stronger 6 item scale by Bostic, Rubio and Hood (2000). An example question is, “I feel alive and vital.” Respondents answer 1 (not at all true) to 7 (very true) according to how each statement is true for
them in general in their life. Evidence of reliability and construct validity via confirmatory factor analyses was established by Bostic et al (2000).

**Procedure**

We received approval from the University Internal Review Board, the hospitals where our participants worked and obtained informed consent from each participant. Participants were a convenience sample recruited through each hospital’s pharmacy and nursing department chairperson by the first author. The first author visited each hospital 4-5 times to recruit participants and describe the study to interested participants who were on-site during her visit. During the initial visit departmental secretaries were also briefed on the nature of the study and their cooperation in recruiting participants was enlisted. Interested participants completed questionnaires during work breaks throughout the day and night. If the first author was not present upon completion, the completed surveys were put in an envelope, sealed, and returned to the departmental secretary who collected them for pickup by the first author. With the departmental secretary’s permission, surveys were also left in qualified participant’s mailbox with instructions for completion attached. Three hundred questionnaires were distributed and 121 were completed for a return rate of 40%. Participants received no reimbursement for their participation.

**Data Analysis**

The Statistical Package for the Social Sciences 20.0 was used for all analyses. Descriptive statistics, missing data analysis, internal reliability coefficients, and group differences were calculated. Hierarchical multiple regression equations were run to predict mindfulness and vitality. In the first step of each model, the 3 general
psychological needs satisfaction predictors were block entered, followed by the
psychological needs satisfaction in exercise predictors. This analytical strategy was
chosen to determine if a domain specific measure of need satisfaction (i.e., exercise)
would contribute to predicting additional variance in our well-being measure beyond
variance accounted for by the more general need satisfaction measures. If the
variance accounted for significantly increased in the second block this would provide
support for the value of exercise in contributing to mindfulness and vitality beyond
the value of meeting basic needs in general life domains. Furthermore, such an
approach would also elucidate which specific basic need (i.e., autonomy, competence,
and relatedness) met in general or exercise settings was most important in predicting
mindfulness and vitality.

**Results**

**Descriptive Statistics**

None of the variables had more than 5% or more missing values, and means,
SDs, kurtosis, skewness, and alphas can be found in Table 1. Internal consistency
(i.e., Cronbach’s alpha; Cronbach, 1951) for all variables were adequate (i.e., > .69).
Skewness ranged from -2.25 to -.27 and kurtosis from -.29 to 5.71. With five
exceptions both skewness and kurtosis values fell between -1.0 and +1.0 indicative of
normality (Cramer, 1998). Furthermore, with large samples slight deviations from
normality do not make significant differences in analyses (Tabachnick & Fidell,
2001, p.74). We next examined for differences between nurses \( n = 22 \) and
pharmacist’s \( n = 99 \) with a Multiple Analysis of Variance which was significant \( F \)
\( (16, 222) = 2.09, p < .01 \). Follow-up univariate tests indicated only one significant
difference (F (2, 118) = 6.56, p < .002) with pharmacists being slightly higher than nurses (M’s = 5.39 vs. 5.29) for psychological need satisfaction in exercise - autonomy. Given there were no differences for vitality or mindfulness and the other five remaining BNT independent variables, we combined data from both groups for correlation and regression analyses.

**Correlational and Regression Analyses**

Correlation and multiple regression results can be found in Table 1 and 2, respectively. Multicollinearity was examined using both tolerance (.33–.74) and variance inflation factors (VIF: 1.36–3.04), and were acceptable as tolerance values were not under .10 and the VIF was not over 10 (Cohen, Cohen, West, & Aiken, 2003, p. 423-424). The regression equations predicting mindfulness (F (6, 114) = 6.05, p < .001) and vitality (F (6, 114) = 15.00, p < .001) were both significant. Model summaries with $R$, $R^2$, $R^2$ change, $F$ change, and significance of $F$ change, and standardized Beta coefficients, t’s and significance levels can be found in Tables 2 and 3. Basic needs in general accounted for 34% of the variance and exercise specific needs predicted an additional 10% of the variance in subjective vitality. For mindfulness the three basic needs in general life contexts was significant accounting for 20% of the variance in mindfulness. Meeting basic needs via exercise was not significant. Based on significant beta-weights, it was clear that the basic need satisfaction of competence in both general and exercise settings was more important than autonomy and relatedness.

**Discussion**
The major purpose of this investigation was to predict two forms of well-being (i.e., mindfulness and vitality) using SDT and more specifically, BNT. We were interested in whether meeting basic needs in an exercise setting contributed additional variance in predicting vitality and mindfulness, beyond that obtained via basic need satisfaction met in general life settings. In general we found support for our hypotheses via the simple correlations, such that nearly all relationships were significant and in the expected directions with moderate-sized correlations. However, of more importance for elucidating the salience of specific psychological needs within a general life or exercise specific context are the multiple regression results.

In the equation predicting mindfulness only the block of constructs containing the three basic needs in general life contexts was significant and accounted for 20% of the variance in mindfulness. The addition of the second block representing the meeting of basic needs via exercise settings was not significant and did not add any additional variance to the equation. Within the first block of basic needs in general life settings, competence, was the only construct with a significant beta-weight. Both relatedness and autonomy were not significant. This set of findings indicates that individuals who have their basic needs for competence satisfied (e.g., “most days I feel a sense of accomplishment from what I do”) tend to report being more mindful compared to participants who do not have their basic need for competence met as satisfactorily.

In the second regression equation we sought to predict subjective vitality and both blocks (i.e., general and exercise) of basic needs were significant. The initial block containing the basic needs in general accounted for 34% of the variance and the
second exercise specific block was also significant and predicted an additional 10% of the variance in subjective vitality. Researchers have found that physical activity often results in people feeling that they have more energy (Martin, 2012). Because the assessment of subjective vitality has questions that tap into feelings of energy (e.g., “I have energy and spirit” and “I feel energized”) it is plausible that meeting basic needs via exercise is more likely to contribute to subjective vitality compared to mindfulness. Mindfulness questions such as, “I find myself doing things without paying attention”, are less logically related to the dynamics of exercise although certainly some physical activities (e.g., running) are conducive to producing flow which shares some similarity with being mindful and being self-determined (Martin & Cutler, 2002). The basic need for competence in both life and in exercise settings was significant in predicting subjective vitality. All other basic needs in exercise and in life in general did not have significant beta-weights although the basic need for autonomy in exercise approached ($p < .08$) the conventional $p$ value for significance. The findings for subjective vitality indicated that the basic need for competence obtained in exercise and non-exercise settings are both of value. Given that our participants, if representative of state averages, were likely not very physically active (USDHHS, 2000) the basic need satisfaction of competence obtained from exercise is valuable given its link to subjective vitality.

It is also important to note our non-significant findings. The basic need for relatedness via life in general or specific to exercise was mostly (5 of 6 simple correlations) related to both mindfulness and subjective vitality supporting our hypotheses. However, in the multiple regression equations it did not contribute to
predicting variance in mindfulness or vitality. While contrary to our predictions, the inability of relatedness to account for variance in mindfulness or vitality is consistent with a review by Wilson and colleagues (Wilson, Mack, Gunnell, Oster, & Gregson, 2008). Wilson et al. (2008) noted that relatedness often doesn’t predict outcomes when autonomy and competence needs are considered. If our participants were not particularly active an inability to meet their relatedness needs specifically within an exercise context seems plausible. Additionally, a socially based need like relatedness is not likely to be met if someone obtains exercise in a non-group setting (e.g., going for a run alone). The mean score for relatedness in exercise was the lowest of all basic needs scores suggesting this explanation is plausible. Exercise as a context is most likely to meet individual’s needs for relatedness if exercise is a meaningful and important part of their life.

We identified the most important basic needs, their associated contexts, and their links to well-being via mindfulness and subjective vitality. However, it is also important to consider the meaningfulness of our findings and effect size is one way to do that. We accounted for 24% and 44% of the variance in mindfulness and subjective vitality, respectively. Accounting for 44% of the variance is equivalent to a Cohen’s f² of .79 whereas 24% of the variance accounted for represents a Cohen’s f² of .32 (Soper, 2013). Based on Cohen’s (1988) convention of .02, .15, and 0.35 for small, medium and large effect sizes, both R² values approximate large effect sizes (Fritz, Morris, & Richler, 2012). In summary, we obtained moderate support for the value of basic needs theory in predicting mindfulness and vitality with the basic need for competence standing out as particularly important. Both general life and exercise
specific domains were of value in meeting our participant’s basic needs. Regular physical activity (PA) can help health care professionals attenuate common negative psychological states (e.g., reduced stress, depressed mood). Moreover, the current findings suggest that exercise settings, as well as non-exercise environments, can contribute to increased positive psychological states such as vitality and mindfulness, when those settings are structured so that they meet participants needs for competence.

Like most research our study has both strengths and limitations. Research using a positive psychology approach with health care workers is rare and thus adds to the extant literature. The highly specific sample of health care professionals working in large inner city and suburban hospitals likely makes our findings sample specific. Some of our speculations revolved around our participant’s level of physical activity. Future researchers should consider assessing physical activity levels in order to link it with basic need satisfaction. There are suggestions that some sport settings can promote social comparison of physical abilities and body image in ways that might thwart basic need satisfaction. Similarly, exercise settings can also thwart individuals basic psychological needs (Bartholomew, Ntoumanis, Ryan, & Thøgersen-Ntoumani, 2011). As Gunnell et al. (2013) suggest, not meeting one’s basic needs is not synonymous with having those needs thwarted. Hence, assessing basic need satisfaction and if particular settings such as the work place or exercise thwart those needs is another avenue for future investigation.
References


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Running Head: WELL-BEING


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### Table 1

*Means, Standard Deviations, Ranges, Skewness, Kurtosis, Alpha’s and Pearson Product-moment Correlations for all Variables.*

<table>
<thead>
<tr>
<th>Variable</th>
<th>1</th>
<th>2</th>
<th>3</th>
<th>4</th>
<th>5</th>
<th>6</th>
<th>7</th>
<th>8</th>
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</thead>
<tbody>
<tr>
<td>1. PNSG-A</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
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<tr>
<td>2. PNSG-C</td>
<td>.61</td>
<td>-</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
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<tr>
<td>3. PNSG-R</td>
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<td>.53</td>
<td>-</td>
<td></td>
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<td></td>
<td></td>
</tr>
<tr>
<td>4. PNSE-A</td>
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<td>.24</td>
<td>.13</td>
<td>-</td>
<td></td>
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<td></td>
<td></td>
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<tr>
<td>5. PNSE-C</td>
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<td>.32</td>
<td>.22</td>
<td>.54</td>
<td>-</td>
<td></td>
<td></td>
<td></td>
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<tr>
<td>6. PNSE-R</td>
<td>.02</td>
<td>.24</td>
<td>.16</td>
<td>.28</td>
<td>.38</td>
<td>-</td>
<td></td>
<td></td>
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<tr>
<td>7. SV</td>
<td>.47</td>
<td>.56</td>
<td>.36</td>
<td>.40</td>
<td>.48</td>
<td>.18</td>
<td>-</td>
<td></td>
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<tr>
<td>8. MAAS</td>
<td>.31</td>
<td>.44</td>
<td>.22</td>
<td>.25</td>
<td>.30</td>
<td>.25</td>
<td>.XX</td>
<td>-</td>
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Mean  
- 5.34  
- 5.60  
- 5.80  
- 5.34  
- 4.56  
- 4.27  
- 5.11  
- 4.47  

SD    
- 0.84  
- 0.85  
- 0.79  
- 0.97  
- 1.25  
- 1.44  
- 1.10  
- 0.75  

Skewness 
- -0.99  
- -1.06  
- -0.59  
- -2.25  
- -0.96  
- -0.61  
- -0.84  
- -0.27  

Kurtosis 
- 1.99  
- 2.28  
- 0.41  
- 5.71  
- 0.48  
- -0.38  
- 0.49  
- -0.29  

Alphas 
- 0.75  
- 0.69  
- 0.81  
- 0.98  
- 0.97  
- 0.97  
- 0.92  
- 0.89  

**Note.**  

**Note.**  
r > .25 = p < .001; r > .21 = p < .01; r > .16 = p < .05.
Table 2

Multiple regression results predicting Mindfulness:

Model Summary

<table>
<thead>
<tr>
<th>Step</th>
<th>Variable</th>
<th>R</th>
<th>$R^2$</th>
<th>F</th>
<th>df</th>
<th>$p &lt;$</th>
<th>$\Delta R^2$</th>
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<th>Sig of F change</th>
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<td>.199</td>
<td>9.71</td>
<td>.001*</td>
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<td>2</td>
<td>PNSE</td>
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<td>.242</td>
<td>6.05</td>
<td>6,114</td>
<td>.001*</td>
<td>.042</td>
<td>2.12</td>
<td>.102</td>
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</table>

Note. PNSG = Psychological Needs Satisfaction in General; PNSE = Psychological Needs Satisfaction in Exercise

Multiple regression results predicting Mindfulness:

Coefficients

<table>
<thead>
<tr>
<th>Step</th>
<th>Variable</th>
<th>B</th>
<th>SE B</th>
<th>$\beta$</th>
<th>t</th>
<th>$p$</th>
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<td>PSNG-C</td>
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<td>.42</td>
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<td>.11</td>
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Table 3

Multiple regression results predicting Vitality:

Model Summary

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<tr>
<th>Step</th>
<th>Variable</th>
<th>R</th>
<th>R²</th>
<th>F</th>
<th>df</th>
<th>p</th>
<th>ΔR²</th>
<th>F change</th>
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<td>20.00</td>
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<td>.102</td>
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<td>.001*</td>
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</table>

Note. PNSG = Psychological Needs Satisfaction in General; PNSE = Psychological Needs Satisfaction in Exercise

Multiple regression results predicting Vitality:

Coefficients

<table>
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<tr>
<th>Step</th>
<th>Variable</th>
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<th>SE B</th>
<th>β</th>
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