Research Paper

Basic Psychological Need Satisfaction and Students' Well-being: The Mediating Role of Subjective Vitality

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ABSTRACT

Objectives: The self-determination theory (SDT) posits that basic psychological needs (BPNs) are indispensable and vital nutrients for well-being. The present research was done to apply SDT to understand students' well-being, which proposes that the realization and fulfillment of BPNs and subjective vitality significantly influence the overall well-being of an individual. Therefore, the current study analyzed the mediational effect of subjective vitality in the BPN satisfaction and well-being relationship.

Methods: This study included a sample of 219 (165 females and 54 males) university students with a mean age of 25 years. The basic psychological needs satisfaction and frustration scale (BPNSFS) was used to assess BPNs. Subjective vitality was assessed using a 6-item individual difference version subjective vitality scale by Ryan and Frederick, and well-being was evaluated by the WHO well-being index. Correlational and multiple regression analysis was done and mediational analysis was done using Hayes PROCESS macro.

Results: The results indicated that fulfillment of BPNs (β=0.413, P<0.01) and subjective vitality (β=0.208, P<0.01) are significant predictors of students› well-being. Mediation analysis showed that subjective vitality completely mediated the relationship between BPN satisfaction and well-being. Furthermore, the measures of BPNS (t=2.242) and well-being (t=2.154) differed significantly, while no significant differences were found in subjective vitality (t=0.108) with respect to gender.

Discussion: The findings of this study highlighted the role of BPN satisfaction and subjective vitality in the promotion of students' well-being. Moreover, the present study highlighted the underlying mechanism, through which BPNs influences students' well-being. This study contributes to the theoretical literature by emphasizing the vital role played by BPNs and subjective vitality in students' well-being.

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Highlights

• The present study highlights the need for the promotion of well-being among students and the importance of basic psychological needs (BPNs) for their well-being.

• Satisfaction of basic psychological needs enables students to feel vital, which ultimately improves their well-being.

• Results from this study may help students, educators, and other stakeholders to seek and develop supportive environments wherein basic psychological needs are satisfied.

• Helping students to gain initiative for greater independence in decision-making, increasing student competence, and developing relationship-building skills among students is necessary for their full performance.

Plain Language Summary

This study analyzed the relationship between basic psychological needs (BPNs), subjective vitality, and well-being among students. The study provides substantial support for BPNs and subjective vitality as predictors of well-being. Moreover, findings provide insight into the underlying mechanism of BPNs and well-being relationship by highlighting subjective vitality as a potential mediator. The findings from this research have direct implications when the well-being of students is considered. The results showed that subjective vitality mediates the effect of BPNs on well-being. In addition, gender differences were observed in the assessment of BPN in relation to well-being. The results from this study may help students, educators, and other stakeholders to seek and develop a supportive environment wherein BPNs are satisfied in general and domain-specific, which ultimately can improve their vitality and well-being. Universities and colleges should focus on helping students make more independent decisions by affirming their choices, promoting student competence in distinctive ways, and developing relationship-building skills among students. These can be achieved through curricular and co-curricular activities.

Introduction

The self determination theory (SDT) [1] identifies three fundamental psychological needs called basic psychological needs (BPNs), which are universal, the need for competence, the need for autonomy, and the need for relatedness. These needs indicate aspects of social factors that support or limit the healthy functioning of the self. Autonomy is defined as regulation by the self [1, 2] and exercising own choice, willingness, and psychological freedom [3]. Competence refers to an individual's efficacy and competence in interacting and transacting with the social environment and, in that interaction, exercising their capacities. Relatedness is the shared connection a person has with other people, aimed at giving and seeking care with a sense of belonging to significant others and the wider communities [4].

Well-being encompasses an individual's capacity for optimal functioning and addresses not only physical health but also an individual's engagement with his/her surroundings and a person's desire to face obstacles so that s/he thrives through everyday hassles and feels good about it [1, 5]. In the hedonic view, well-being refers to the condition a person experiences subjectively as good, full of happiness, and blooming in the light of life experiences [6]. Considering well-being through a eudaimonic lens, on the other hand, rejects enjoyment as an indicator of well-being [1]. In the eudaimonic view, well-being surpasses the hedonic idea of happiness, implying that just experiencing positive emotions is not the same as being well-functioning in psychological and social aspects of life. Emphatically, eudaimonic well-being values a person actualizing his/her potential and living well by those standards [5]. World Health Organization's (WHO) concept, as well as the SDT perspective of well-being, revolves around the eudaimonic conceptualization [1, 7]. Well-being, thus, cannot be conceptualized for an individual having psychopathologies, like anxiety and depression [8]. Rather it considers the amount of positive psychological experiences an individual has.

Subjective vitality is defined in literature as an exhilarating and vigorous life force that originates from within an individual. This vigorous life force makes an individual experience a feeling of liveliness full of enthusiasm and energy [9]. Vitality plays a crucial part in an individ-

ual's healthy physical and emotional functioning. Ryan and Frederick [9] stated that with healthy functioning, mental vitality increases. Subjective vitality is a person's subjective feeling radiating positivity in psychological realms and encapsulating a sense of liveliness and energy [1, 9, 10]. This corresponds to the WHO's definition of wellness as well, which states wellness is not just the absence of illness and deformity but a condition, in which a person experiences goodness and wellness in all spheres of life, i.e. the person is fit and doing well physically, psychologically, and socially [11].

The university student community constitutes one of the important proportions of the population. According to the UNESCO Institute for Statistics, there were 99.9 million students enrolled in higher education worldwide in 2000. By 2030, it is expected to rise to 377.4 million, indicating an increase of 281% over 30 years [12]. Considering the number and importance of university students in a population indicates the need to deliberate on their mental health. There are growing concerns worldwide in connection to the mental health of the student community [13], due to the challenges this population faces in today's world. Students' vulnerability to the pressures they face draws attention to understanding their mental health and well-being [14, 15]. The challenges faced by students, which have been shown to affect their mental health and well-being range from academic stress [16], financial stress [17], rising unemployment, and unemployment anxiety [18], to uncertainty about the future [19].

In particular, for the university student community in Kashmir, the challenges are more complex owing to multiple factors [20], such as political instability of the place [21], rising unemployment [22], economic uncertainties corresponding to career pursuits [23], and limited job opportunities and the regular challenges of the student community within universities threaten their mental health and compromise their well-being [24]. The continuous instability has affected every section of society, individuals, groups, institutions, and public and private sectors. Apart from the common challenges, living in a politically unstable place has adverse consequences on students' mental health [25]. Furthermore, the prevailing instability has caused significant harm to the education system, from infrastructure to quality, which consequently affects the well-being of students [26]. Educational institutions are the prime place of socialization for students. Prolonged and frequent closure of these deprives them of the same. Confined to homes for months makes them dull and irritated as the BPNs seems to be thwarted, affecting their mental health and well-being [25, 27]. Economic uncertainties and limited opportunities, partly due to political instability, add to the mental tension among students. Furthermore, the post-pandemic period poses additional challenges, wherein the students have lost considerable control over their environment, thereby building more uncertainties [28]. Research suggests a considerable increase in mental health adversities due to the pandemic and the experience of uncertainties among students [29]. Taking the above discussion into consideration, it is of critical importance to determine the protective factors for the development of students' well-being. Their identification can lead to the development of intervention programs that can help students who live in an environment of politically unstable places and are exposed to a wide variety of challenges.

Therefore, this study, while aiming at applying SDT, tried to understand students' well-being, which proposes that BPNs and subjective vitality significantly influence the overall well-being of an individual. While there are compelling evidence establishing a significant association between basic psychological need (BPN) satisfaction and subjective vitality with increased well-being [30, 31], the application of self-determination theory (SDT) to predict well-being among students in the context of severe instability, such as the COVID-19 pandemic [32], represents a distinctive endeavor. Furthermore, the current research tried to analyze the mediational role of subjective vitality in the BPNs and well-being relationship, as it is unclear how BPNs influence students' well-being through increasing subjective vitality.

The mediating role of subjective vitality

In the psychological literature, subjective vitality is regarded as an energy reserve, which is debated to materialize from within an individual having the locus of causality as internal and being impacted by internal psychological as well as external environmental factors [9]. Several studies have reported that an individual with increased levels of subjective vitality experiences increased levels of resilience [33], greater positive affect [34], and overall improved psychological functioning [35]. Vitality and well-being are related constructs in the literature. Vitality has been shown as one of the aspects that reflect well-being. However, well-being corresponds to full human functioning and not just the absence of psychopathology or the experience of happiness. Subjective vitality acts as an energy source for adaptive functioning [36] and is a constituent of well-being [1, 37]. Mental vitality is an important construct for assessing positive experiences and mental health. Therefore, an individual with greater vitality experiences increased motivation to conduct purposeful activities [38] and effectively deal

with uncertain and stressful situations [39]. Research has revealed that subjective vitality is an important component of self-esteem, life skills, and satisfaction with life, which ultimately leads to increased well-being [40].

Gender differences in well-being

Many studies have shown differences in satisfaction with BPNs, well-being, and mental vitality between genders, for example, men and women. The probable reasons for these differences can be due to the diverse aspects of BPN satisfaction, well-being, and subjective vitality in both genders. For example, women are more influenced by social environments and relations, and men are more affected by the professional environment [41]. Women's participation limited to certain areas seems to be only one determining factor for their BPN frustration. Since the entrance of women into the workforce, it has been found that women share the maximum workload with an unreasonable and unjust share of domestic chores along with childbearing and rearing, consequently thwarting their health and well-being [42]. In one study, it was found that well-being in women is affected by age, moderated by women's social role [43]. In another study by Escribà-Agüir and Tenías-Burillo, it was found that being a woman and devoting more than 30 hours a week to home chores caused diminished well-being [44]. Furthermore, reports from politically volatile areas also show differences in women's well-being. Due to safety and security concerns, many women unwillingly miss certain activities and opportunities, which affect their vitality and well-being [24].

Rationale for current study

Previous research has shown a thorough relationship between BPNs and well-being [45, 46]. Furthermore, research has also indicated a significant role of subjective vitality in increasing the levels of well-being [9, 47, 48]. However, there is a dearth of literature analyzing the combined role of BPN satisfaction and subjective vitality in well-being among students. However, it is unclear how BPN satisfaction promotes well-being through increasing the levels of subjective vitality and whether the course of action in light of this association changes when gender differences in terms of males and females are considered. Therefore, this study investigated the mediational role of subjective vitality in the BPNs and well-being relationship. The present study is one such attempt to explicate how BPN satisfaction or frustration affects well-being. In light of the preceding deliberation, follow the below-mentioned hypotheses.

H_1: BPN satisfaction has a significant positive effect on well-being.

H_2: Subjective vitality has a significant positive effect on well-being.

H_3: Subjective vitality mediates the effect of BPNs on well-being.

H_4: There is a significant difference in BPNs, subjective vitality, and well-being between males and females.

Materials and Methods

Participants and procedure

The participants for this study were 219 students (165 females and 54 males) from different universities from the Kashmir division of UT of Jammu & Kashmir, India, with a mean age of 25.2 years in December 2021. All the respondents ensured the confidentiality of their responses, and informed consent was taken. They completed questionnaires that required 10-15 minutes to complete individually in the campus. No benefits, monetary, etc. were offered to those who participated in this study.

Measures

Scales used

For measuring variables of the study, the scales corresponding to each construct were adopted from their respective validated scales [49]. The instrument's reliability was confirmed by conducting a pilot study. The reliability of the measures used was established by examining the internal consistencies using Cronbach's α. Results of internal consistencies indicated moderate to high internal consistency: BPN: α=0.78, subjective vitality: α=0.73, well-being: α=0.83. The main study was done only after getting satisfactory results from the pilot study.

Basic psychological needs satisfaction and frustration scale (BPNSF)

The 24-item BPNSF [49] was utilized to measure BPNs in three dimensions, including autonomy, competence, and relatedness. Instructions were given to the participants to go through all the items of the five-point Likert scale and mark their responses from one to five (one="not true at all" to five="completely true"). For the BPNSF scale, Cronbach's α was found to be 0.78 for the current study.

Subjective vitality scale

Individual difference level version vitality scale [50] was utilized to assess vitality. Instructions were given to the participants to go through all the items of the seven-point Likert scale and mark their responses from one to seven, where one implied "not true at all" and seven implied "very true". For the vitality scale, the calculated Cronbach's α was found to be 0.73 for the current study.

Well-being

Well-being was assessed using the WHO well-being index [51]. The scale has five items and participants rated how they felt about themselves over the last two weeks. The participants rated themselves along a six-point Likert scale where a score of five meant "all of the time" and a score of zero "meant no time". Cronbach's α was calculated to be 0.83.

Data analysis

SPSS software, version 24 was used for processing and data analysis. Initially, the data were examined for outliers using Q-Q plots, and around 0.7% of data was imputed by performing the neutralization method. Moreover, the normality of the data was established by Garson's (2009) criteria. The skewness and kurtosis values were found to be below the Garson's range of -2.00 to +2.00, which indicates scope for further analysis. The main analysis was performed in four steps. First descriptive analysis was conducted to analyze the Mean±SD, and internal consistency reliabilities of each measure used. The inter-correlations were also measured. Second, to explicate the differences in BPNs, subjective vitality, and well-being with respect to gender, an independent t-test was carried out. Third, to analyze the impact of BPNs and subjective vitality on well-being, multiple regression analysis was conducted. Fourth, to test the mediation model, Hayes PROCESS macro [52] for SPSS was used. The present study considered a significance level at a 95% confidence interval (CI) if the resulting 95% CI did not contain zero.

Results

The results of descriptive statistics, including Pearson's correlation BPNs, subjective vitality, and well-being, are reported in Table 1. Results indicated that BPNs (r=0.517, P<0.01) and subjective vitality (r=0.414, P<0.01) were positively and significantly related to well-being. Moreover, the strength of all the relationships was found to be moderate.

Table 2 represents the results of the t-test, which indicates that the calculated t-values of BPNs (t=2.242) and well-being (t=2.154) were significant, which represents that males and females perceived BPNs and well-being differently. The t of subjective vitality (t=0.108) was found to be insignificant, which represents that the males and females did not differ in subjective vitality. Therefore, the fourth hypothesis that there is a significant difference in BPNs, subjective vitality, and well-being between males and females is partially accepted.

Multiple regression analysis results indicated that BPNs and subjective vitality significantly predicted well-being, and the proposed model was significant (adjusted R^2=0.293, R^2=0.547, F=46.093, and P<0.01) (Table 3). Furthermore, BPNs (β=0.413, P<0.01) and subjective vitality (β=0.208, P<0.01) significantly predicted well-being. The results reflected that BPN is more crucial in establishing one's level of well-being than subjective vitality. The suggested model was able to account for 29% of the variance for well-being. Thus, H1 and H2 were accepted.

The mediation analysis was tested using PROCESS MACRO with a Bootstrap estimation procedure. The present study used a Bootstrap sample of 5,000 cases with a CI of 95% to test the mediation effect. The mediation results, as depicted in Table 4, indicated the significant positive direct effect of BPNs on subjective vitality (β=0.3090, SE=0.0373, P<0.01), indicating that higher degrees of BPN satisfaction are related to overall levels of subjective vitality. The direct effect of BPN satisfaction on well-being was significant (β=0.1875,

Table 1. Descriptive and inter-correlations of the measures (n=219)

Variables	Mean±SD	Cronbach's α	1	2	3
1. Basic psychological needs	80.4±8.16	0.78	1.00		
2. Subjective vitality	29.19±5.18	0.73	0.501**	1.00	
3. Well-being	18.39±3.69	0.83	0.517**	0.414**	1.00

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**Significant at the 0.01 level (2-tailed).

Table 2. Mean differences in basic psychological needs, subjective vitality, and well-being with respect to gender

Variables	Gender	No.	Mean±SD	df	t	P
Basic psychological needs	Male	53	82.58±8.74	216	2.242	0.026*
	Female	165	79.71±7.89			
Subjective vitality	Male	53	29.26±4.69	216	0.108	0.914
	Female	165	29.17±5.35			
Well-being	Male	53	19.33±3.09	216	2.154	0.032*
	Female	165	18.09±3.83			

*P≤0.05

Table 3. Summary of multiple regressions for basic psychological needs, subjective vitality, and well-being

Path	Beta Coefficient	Standard Error	t	P	Hypothesis Validation
Basic psychological needs→Well-being	0.413	0.030	6.267	<0.000**	Supported
Subjective vitality→Well-being	0.208	0.047	3.154	<0.002**	Supported

**P<0.01.

Adjusted R^2=0.293; F=46.093; R^2=0.547.

SE=0.0295, and P<0.01) and the effect was found to be positive. In addition, the direct effect of subjective vitality on well-being was positive and significant (β=0.1496, SE=0.0468, and P<0.01), indicating that students with increased levels of subjective vitality reflect increased well-being. The indirect effect of BPN satisfaction on well-being via subjective vitality (β=0.0462; 95% CI, 0.0164%-0.0772$) was found to be significant. All the required criteria for mediation analysis were satisfied; thus, the third hypothesis was confirmed (Figure 1).

Discussion

The main aim of this research was to test subjective vitality as the mediator of the association between BPN satisfaction and well-being among university students. We also examined the gender differences in the relationship between BPNs, subjective vitality, and well-being. The results depicted a positive and significant association between BPN satisfaction, subjective vitality, and well-being among students. The results from this study are in agreement with the results of previous research on these variables and the related constructs [1, 53]. Results revealed that BPN satisfaction and subjective vitality were positively and significantly related to well-being. According to the results, with the realization of independence, competence, and connection, the individual's well-being increases, and neutralizing these needs leads to a decrease in well-being. Thus, having a supportive

Table 4. Mediation analysis results

Model Pathways	Direct Effect	Indirect Effect	95% CI	
			Lower Limit	Upper Limit
Basic psychological needs→Subjective vitality	0.3090	-	0.2355	0.3826
Basic psychological needs→Well-being	0.1875	-	0.1292	0.2457
Subjective vitality→Well-being	0.1496	-	0 .0573	0.2420
Basic psychological needs→Subjective vitality→Well-being	-	0.0462	0.0164	0.0772

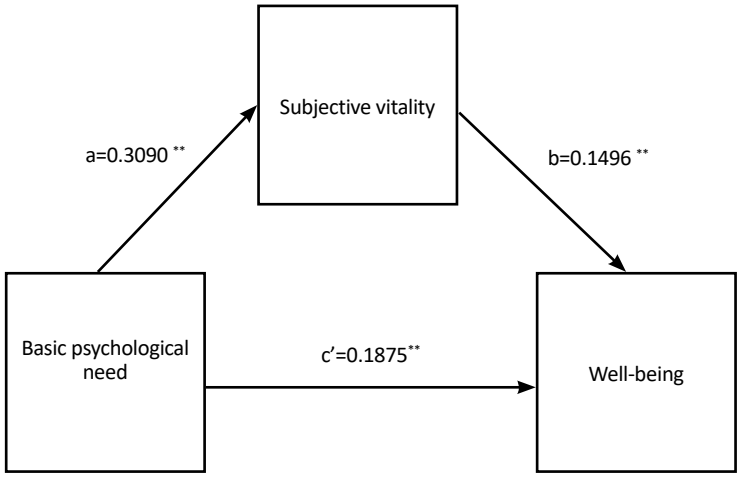

Figure 1. Mediation analysis

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**P<0.01.

context, which helps in fulfilling these needs is essential. Results from this study put forth that both psychological needs satisfaction and vitality significantly predicted well-being. Additionally, the regression model was observed as significant.

Although previous research has studied mediators between BPNs and well-being, the mediating role of subjective vitality among university students has not been explored much. As indicated from the results of the current study, BPN satisfaction and subjective vitality are found to be significant predictors of students' well-being, in which BPNs is found to have more potency in defining overall well-being. Also, of the total variance, 29% variance was explained by the model for well-being, which happens to be quite significant. The findings indicated that subjective vitality fully mediated the association between BPNs and well-being. The result seems to be consistent with previous studies. Uysal et al. [54] confirmed the meditational role of subjective vitality in the life satisfaction and subjective happiness relationship. Their study showed how subjective vitality enhances subjective happiness through life satisfaction [54]. Therefore, the students whose BPNs were fulfilled tend to have greater subjective vitality resulting in overall enhanced well-being. Thus, subjective vitality is a significant factor in enhancing well-being. Teachers, parents, educators, researchers, and other stakeholders may be able to provide supportive learning conditions and opportunities for students, such conditions in which they can spell their hearts and minds out, feel connected to themselves and others, and feel important and competent. This is well explained by how fulfilling these basic needs of autonomy, competence, and belonging transforms people into their true selves, thereby becoming more autonomous with more advanced skills to manage their lives and their surroundings [55]. Individuals with this authenticity happen to be self-regulated with an enhanced sense of vitality and well-being. With respect to gender, the present study showed significant differences in BPNs and well-being. However, no significant differences were found in subjective vitality. These results indicate that males and females perceive BPNs and well-being differently. From the results, it was observed that women had low BPN fulfillment as compared to men and also reported low on well-being than men. These results are consistent with the previous research [56, 57]. The possible reason for this can be explained by the differential experiences of men and women in a given context. For example, men have more access to certain experiences than women, like sports and outdoor activities, which directly or indirectly fulfill their other needs, thereby leaving women behind. Also, gender roles play a significant role in the observed differences [58].

Implications

This research added insights into understanding the dynamics of BPN, subjective vitality, and the well-being of students and provides strong evidence for BPN satisfaction and subjective vitality as predictors of well-being and the meditational effect of subjective vitality for the relationship of BPN with well-being. Our findings have direct implications when the well-being of students is considered, as revealed by the results that fulfilling BPNs is vehemently associated with increased well-being.

Conclusion

The current study presents the defining role of BPNs in subjective vitality and well-being among students. Subjective vitality mediates the effect of BPN on well-being. Additionally, remarkable differences were observed with respect to gender for BPN and well-being. The findings from the present paper call attention to the significant role of BPN satisfaction, its relation to subjective vitality, and its role in enhancing the well-being of students. The results may help students, educators, and other stakeholders to seek and develop a supportive environment wherein BPNs are satisfied in general and domain-specific, which ultimately can improve their vitality and well-being. Universities and colleges should focus on helping students take the initiative to be more autonomous in making decisions, enhance the competence of students in distinct ways, and develop relationship-building skills among students. These can be achieved through curricular and co-curricular activities.

Limitations of the study

Despite several advantages and pros of the study, the study lacks in some aspects. The current study used only self-report tools, which have the issue of social desirability bias. Although the reliability of all the measures used in the present study was well established, the social desirability bias cannot be ignored. Therefore, researchers are recommended to use multiple measures to lessen the subjectivity. Second, the present was a cross-sectional study, which limits the chances of drawing any causal relationship among variables. Longitudinal or experimental studies can help researchers examine the effect of BPN and subjective vitality on students' well-being over time. Third, the present study used a small sample size of 219. Therefore, it would be prudent to proceed with caution when extending our findings. Future studies might replicate the current study on a large sample size to enhance the generality and external validity of the study's findings. Lastly, this study explicated the mediational role of subjective vitality in the relationship between BPNs and students' well-being. Future researchers could investigate the mediating cum moderating role in the proposed relationship to enrich the literature.

Ethical Considerations

Compliance with ethical guidelines

All ethical principles are considered in this article. The participants were informed of the purpose of the research and its implementation stages. They were also assured about the confidentiality of their information and were free to leave the study whenever they wished, and if desired, the research results would be available to them. A written consent has been obtained from the subjects. principles of the Helsinki Convention was also observed.

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Authors' contributions

All authors equally contributed to preparing this research article.

Conflict of interest

The authors declared no conflict of interest.

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