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Students' Strengths Use and Engagement: Exploring the Mediating Role of Basic Psychological Needs

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ABSTRACT

With the rise of positive psychology, the focus on individuals' strengths has become an innovative paradigm for enhancing both wellbeing and performance. While extensive research has demonstrated the positive effect of strengths use on work engagement, less is known about its impact on students' engagement and the psychological mechanisms underlying the effect of strengths use. This study examines the relationship between strengths use and engagement among university students, with a focus on the mediating role of Basic Psychological Needs (BPN). A sample of 57 participants, including both undergraduate and postgraduate students, completed online questionnaires assessing their strengths use, engagement, and BPN satisfaction. Data were analysed using structural equation modelling (SEM) mediation analysis. Results indicated a significantly positive relationship between strengths use and engagement, with BPN fulfilment fully mediating this relationship. This suggests that strengths use enhances students' engagement through the satisfaction of BPN. These results contribute to the literature by providing evidence for the mediating role of BPN and have significant implications for educational strategies aimed at enhancing students' engagement. The study recommends that future research replicates these findings across diverse demographics and educational settings.

KEYWORDS

Self-determination theory, positive psychology, strength perspective, strength-based education, university students

Introduction

The cornerstone of educational success lies in students' active engagement in learning (Trowler, 2010; Wang & Eccles, 2012). Students' engagement, defined as vigour, dedication, and absorption in academic activities, significantly influences the quality of their learning experience and academic performance (Alrashidi et al., 2016; Casuso-Holgado et al., 2013; Phan & Ngu, 2014; Schaufeli et al., 2002). The advent of positive psychology has introduced a unique perspective for enhancing engagement (Seligman & Csikszentmihalyi, 2000). It suggests that focusing on strengths may enhance overall wellbeing and performance (Lyubomirsky & Layous, 2013; Seligman et al., 2005).

Numerous research studies have developed diverse tools to identify individuals' strengths (Louis, 2012; Peterson et al., 2006) and advocated the use of strengths in various settings (Harzer & Ruch, 2013; Matsuo, 2020). Especially, the positive impact of strengths use (i.e. the active application of one's strengths in daily life) in improving work engagement has been consistently supported in the literature (Bakker et al., 2019; Van Woerkom et al., 2016; Wingerden & Stoep, 2018).

Nevertheless, the underlying mechanisms through which students' strengths use enhances their engagement remain largely unexplored. This gap in the literature limits the understanding of the potential benefits of strengths use in educational settings. Filling this gap is crucial for informing educational interventions aimed at promoting strengths use to effectively enhance students' engagement.

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According to the Self-Determination Theory (SDT), Basic Psychological Needs Satisfaction (BPNS), including autonomy, competence, and relatedness, is essential for optimal functioning (Ryan & Deci, 2017). When these needs are satisfied, individuals become motivated and engaged. Research studies support the role of strengths use in enhancing BPNS, suggesting that individuals may feel more autonomous, competent, and connected to others when they are encouraged to use their strengths, which in turn increases their engagement (Bai et al., 2021; Bai & Bai, 2023; Jin et al., 2022).

To our knowledge, the present study represents the first empirical attempt to explore the mediating role of BPNS in the relationship between strengths use and engagement among students. We focus on undergraduate and postgraduate students who typically have a higher level of maturity and a deeper understanding of their strengths than younger students. It makes them an ideal population for studying the relationship between strengths use and engagement. We hypothesise that students' strengths use positively influences their engagement, and this relationship is mediated by BPNS.

Strengths use

Strengths use involves the active utilisation of an individual's strengths, such as talents or what they are good at, in daily life (Duan et al., 2019). The strength-based paradigm is closely associated with positive psychology, which emphasises strengths to achieve optimal functioning and wellbeing (Seligman et al., 2005). Research studies have developed various frameworks to identify individuals' strengths (Louis, 2012; Louis & Lopez, 2014; Peterson & Seligman, 2004). Beyond strengths identification and recognition, the use of the strengths in everyday activities holds further significance. For example, if a student identifies gratitude as a strength, strengths use would involve actively expressing gratitude in everyday life.

Previous studies have found that strengths use is associated with numerous positive outcomes, such as increased happiness, reduced depressive symptoms, and enhanced subjective and psychological wellbeing (Govindji & Linley, 2007; Seligman et al., 2005). Strengths use is also positively linked to work engagement and performance (Van Woerkom et al., 2016; Wingerden & Stoep, 2018). Meyers et al. (2019) highlighted the importance of strengths use especially for young employees in the phase of exploring their personal and career paths. For these individuals, proactively using strengths in work-related contexts can be particularly challenging because they are often perceived as newcomers who need to focus on addressing their weaknesses (e.g. what they are not sufficiently good at). Additionally, interventions designed to promote strengths use, such as engaging in discussions about their strengths with colleagues and intentionally practising them at work, have been successful in increasing strengths use and positively affecting work engagement (Bakker & Van Wingerden, 2021).

However, research linking strengths use to students' engagement is limited. Only one study has examined how supporting students' strengths use enhances their engagement in academic activities (Cantwell, 2005). Insights from the literature on work engagement suggest that students' strengths use positively impact their engagement and performance in education as well.

Engagement

Engagement is a complex concept that has been defined from various theoretical and practical approaches. It is often considered a meta-construct encompassing multiple dimensions of involvement, such as behavioural, emotional, and cognitive dimensions (Skinner et al., 2008). Engagement holds significant educational implications from a process-oriented perspective. Engagement is situated as a bridge between the motivation that triggers learning behaviour and the immersion into learning (Shernoff et al., 2003). Engagement is more sustained than participation, which is defined as involvement in activities or interactions with the environment (Almqvist et al., 2007). Additionally, engagement is broader and more enduring than flow, which typically describes a specific and short-term state of intense immersion (Csikszentmihalyi, 2008; Macey & Schneider, 2008). These distinctions highlight the importance of engagement as part of the process

of learning on a spectrum from participation to flow (Chu & Son, 2011).

The Utrecht Work Engagement Scale (UWES) defines engagement as a psychologically positive and fulfilling state characterised by vigour, dedication, and absorption (Schaufeli et al., 2002). Vigour encompasses energy and resilience during work, and the willingness to invest effort in overcoming challenges. Dedication involves a sense of significance, enthusiasm, confidence, and being inspired by challenges. Absorption refers to the concentration on a particular task, leading to individuals being deeply engrossed in their work. Recognising that students can experience vigour, dedication, and absorption in their academic activities, the UWES was extended to educational contexts and the UWES-Student was created to assess students' engagement (Schaufeli et al., 2002). University students' academic activities, such as attending lectures, writing, and preparing for exams, can be considered analogous to work, as they involve setting and achieving goals similar to those of employees. Early research viewed engagement as the opposite dimension of burnout (Maslach & Leiter, 2000). However, recent research studies have shown that engagement is a distinct construct (Trógolo et al., 2020).

The importance of students' engagement cannot be overstated. It is linked to a range of positive academic and life outcomes. Research studies have consistently shown that students who are more engaged in their studies tend to achieve better academic results (Bundick et al., 2014). Finn and Owings (2006) found that students with higher levels of engagement in school in eighth grade tended to matriculate into and graduate from college more even after controlling for academic achievement in high school. Other studies have suggested that cultivating engagement should be especially effective in reducing the achievement gap (Lee & Shute, 2009). Moreover, students' engagement in school has been associated with various indicators of individual wellbeing. Antaramian et al. (2010) found that all three dimensions of engagement were positively associated with indicators of subjective wellbeing. Another study suggests that students' engagement can serve as a protective factor against negative outcomes, such as delinquency and risky behaviour (O'Farrell & Morrison, 2003). Taken together, there is abundant evidence for the benefits of students' engagement toward desirable current and future academic and life outcomes.

Basic Psychological Needs and its Mediating Role

SDT posits that individuals strive for growth and integration by making autonomous decisions about their actions (Ryan & Deci, 2017). The process of realising self-determination is crucial for enhancing psychological health, growth, and optimal functioning (Kim et al., 2022). Within SDT, BPN theory specifically elucidates that when individuals' basic psychological needs are satisfied, their behaviour becomes self-determined and intrinsically motivated. This theory identifies three basic psychological needs intrinsic to every individual, which are autonomy, competence, and relatedness (Ryan & Deci, 2017). Autonomy refers to the need for volitional choice and decision-making in one's actions. Competence reflects the need to effectively control and successfully execute tasks. Relatedness is the need to form meaningful relationships with others. Satisfaction with these needs may significantly influence an individual's psychological functioning.

Research studies have demonstrated that BPNS can profoundly impact students' engagement in their learning (Curran & Standage, 2017). For example, Mahmoudi et al. (2018) supported the significant impact of individuals' BPNS in decreasing academic alienation through a multilevel analysis. This shows the potential of BPNS in fostering students' engagement.

When individuals actively use their strengths, they are likely to fulfil their BPN. Several theories provide a theoretical foundation for the relationship between strengths use and BPNS. Recognising and utilising one's authentic strengths enables individuals to act by their true selves, supporting the need for autonomy (Peterson & Seligman, 2004). From the perspective of self-efficacy theory, strengths use can lead to a sense of mastery and fulfil the need for competence as individuals gain a sense of control over their environment (Bakker & Woerkom, 2018). Furthermore, when individuals use their strengths, they often seek social resources and collaborate with others, leading to fulfilling the need for relatedness (Berg et al.,

2013).

Supporting BPNS may serve as motivators for students and enhance their engagement (Ryan & Deci, 2017). BPNS has been shown to positively impact engagement. For example, Jin et al. (2022) explored the mediating role of BPNS in the relationship between teachers' strengths use and work engagement. Their results indicated a positive correlation between teachers' strengths use, work engagement, and BPNS and found that BPNS significantly mediated the impact of strengths use on teachers' work engagement. Despite these findings, there remains a gap in the literature regarding the mediating effect of BPNS on students' engagement. Further investigation to establish this relationship among students could potentially lead to the development of more effective educational strategies to promote students' engagement.

Method

Participants and Procedure

This study used an online survey to collect data from participants in South Korea. A total of 57 undergraduate and postgraduate students currently enrolled in universities participated in the study and completed the survey without any missing data. Therefore, a final sample of 57 participants was included in the analysis.

In terms of demographic characteristics, participants consisted of 23 males (40.4%) and 34 females (59.6%). Among these participants, 31 participants were undergraduate students (54.4%), and 26 were postgraduate students (46.4%). No other demographics were collected. This decision was based on several considerations. Collecting additional demographic information was not essential to address our research questions. Limiting demographic data collection helped ensure participant privacy and reduce the risk of any potential discomfort in participating.

Following the ethical approval by the Institutional Review Board (IRB) at Seoul National University, we used Google Forms to administer an online survey. The link to this survey was shared on various social media platforms. Participants were informed of the potential benefits and risks associated with their participation through a detailed information sheet outlining the purpose and procedures of the study and their rights as participants. Participation was entirely voluntary, and participants had the right to withdraw at any time without penalty. The survey was designed to ensure participant anonymity, and no identifiable information was collected. Before beginning the survey, participants were asked to provide electronic consent.

Instruments

Strengths use

Strengths use was assessed using the Korean version of the Strengths Use Scale (SUS). Originally developed by Govindji & Linley (2007), the SUS consists of 14 items that assess the frequency and effort of strengths use in various situations (e.g. I have many opportunities to use my strengths, I try my best to use my strengths). The SUS was selected due to its robust psychometric properties and its validation for the Korean population (Park & Lee, 2012). The Korean SUS has a two-factor structure. The first factor focuses on the opportunities and contexts in which individuals can use their strengths. The second factor emphasises the effort that individuals make to use their strengths. Participants provided their responses using a 7-point Likert scale, indicating the extent of their uses of strengths. Cronbach's alpha reliability coefficient of the strengths use scale was α=.93.

Basic Psychological Needs Satisfaction

We employed the Basic Psychological Needs Satisfaction and Frustration Scale (BPNSFS) developed by Chen et al. (2015) to assess BPNS, including autonomy, competence, and relatedness. This tool was chosen as it is widely validated across various contexts and cultures. For this study, we used the Korean version of the BPNSFS, focusing only on the satisfaction scales to align with our research aim of exploring the positive

influence of BPNS on engagement (Lee, 2020). Each sub-factor comprises four questions, resulting in a total of 12 items. Participants were asked to rate their responses on a 5-point Likert scale. Cronbach's alpha reliability coefficient of the BPNS scale was α=.85.

Engagement

The study employed the Utrecht Work Engagement Scale for Students (UWES-S) developed by Schaufeli et al. (2002) to assess students' engagement. This scale was selected as it captures the psychological dimensions of engagement, which aligns with our research focus. Moreover, when using self-report questionnaires, it might be more appropriate to measure psychological dimensions than behavioural. The UWES-S includes three dimensions including vigour, dedication, and absorption. For this study, we utilised the Korean version of the UWES-S scale, which was validated for the Korean population by Chu & Sohn (2011). The Korean version of the scale consists of 13 questions. Cronbach's alpha reliability coefficient of the Engagement scale was α=.93.

Data Analysis

The analysis began with an examination of the normal distribution assumption for the data by reviewing descriptive statistics, including mean, standard deviation, skewness, and kurtosis of the variables. This was followed by the Shapiro-Wilk test of normality (Shapiro & Wilk, 1965). In addition, a correlation analysis was performed to investigate the relationships between each variable. This aimed to identify associations among variables and detect potential multicollinearity.

The structural relationships among the variables were further examined through the maximum likelihood method for parameter estimation. The analysis followed the two-step approach proposed by Anderson & Gerbing (1988), involving the evaluation of the measurement model and then the structural model. During the verification of the structural model, the partially mediated model was compared with the fully mediated model. This step aimed to determine the optimal model that best fits the data.

According to the criteria outlined by Hu and Bentler (1999), a good model fit is indicated by Tucker-Lewis Index (TLI) and Comparative Fit Index (CFI) close to .95, and Root Mean Square Error of Approximation (RMSEA) close to .06. These thresholds ensure a rigorous evaluation process confirming that the hypothesised model accurately represents the observed data. Furthermore, bootstrapping, a robust non-parametric resampling technique proposed by Chan (2007), was employed to test the significance of the mediating effect. The lavaan package (Rosseel, 2012) on the R software (R Core Team, 2023) was used for the data analysis.

Results

Preliminary Analysis

Prior to conducting SEM analyses using the maximum likelihood estimation, it was necessary to assess whether the assumption of normal distribution was met for the data. Descriptive statistics of strengths use, BPNS, and engagement were computed. Table 1 presents the descriptive statistics and the correlations for the variables.

The results demonstrated that the assumption of normal distribution was met, as indicated by skewness within the range of ±2 and kurtosis within ±7 for all variables (Bryne, 2010; Hair et al., 2010). Additionally, the Shapiro-Wilk test of normality (Shapiro & Wilk, 1965) showed that the data were normally distributed, with non-significant results for strengths use (p=.05), BPNS (p=.09), and engagement (p=.12).

Moreover, the correlation analysis revealed significant relationships among all variables. More specifically, strengths use was significantly correlated with BPNS, r (55)=.43, p<.001, and with engagement, r (55)=.54, p<.001. Additionally, BPNS was significantly correlated with engagement, r (55)=.54, p<.001.

Table 1
Descriptive statistics and correlations for all variables

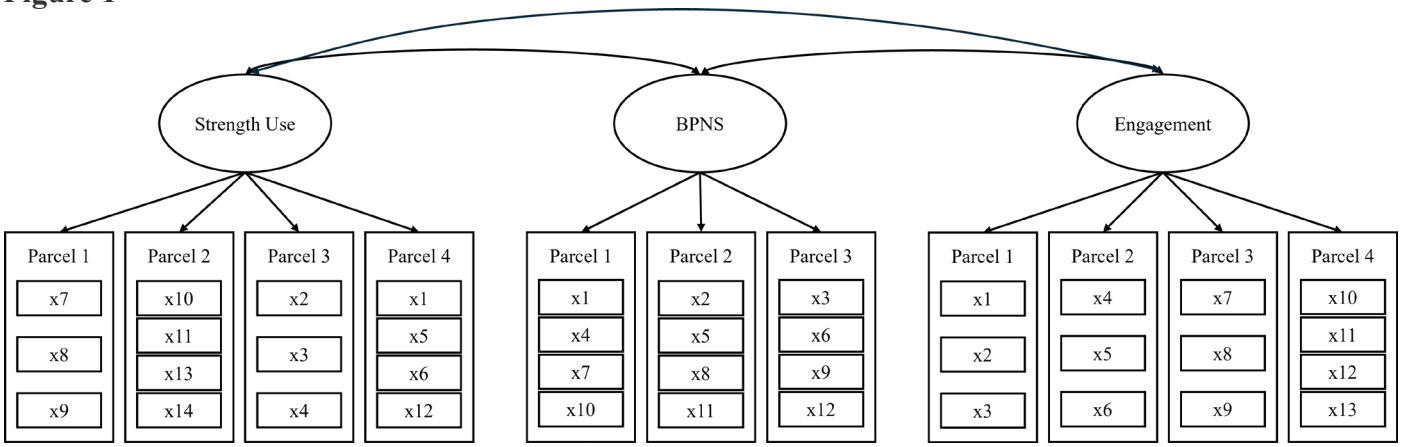
Variable	Mean	SD	Skewness	Kurtosis	1	2	3
1. Strengths use	5.44	.87	-.38	2.29	1		
2. BPNS	4.13	.53	-.52	2.81	.43***	1	
3. Engagement	3.37	.86	-.52	2.84	.52***	.54***	1

Note. N=57. ***p<.001.

Measurement Model

The measurement model was evaluated using the item parcelling technique for all scales employed in the study, including strengths use, BPNS, and engagement. Item parcelling was implemented due to the constraints of the sample size and the potential for increased estimation error in Confirmatory Factor Analysis (CFA) with numerous items (Bentler & Chou, 1987; Hau & Marsh, 2004; Matsunaga, 2008). Research suggests that item parcelling enhances reliability, stabilises estimates, and mitigates issues related to the sample size ratio (Bandalos & Finney, 2001). Parcelling was conducted by systematically grouping three or four items within each dimension identified in prior research studies (see Figure 1). This facet-representative parceling approach was chosen to reflect the conceptual distinctiveness of each sub-factor (e.g., autonomy, competence, relatedness), as they represent unique dimensions of the overarching construct. This method ensures the preservation of the theoretical clarity of the sub-factors.

Figure 1



Following parcelling, CFA was performed to examine the measurement model. The model included all latent variables with corresponding parcels as indicators. The chi-square test of model fit indicated a favourable fit, $\chi^2(41)=49.06$, $p<.18$. Additionally, the results of CFA indicated acceptable model fit indices, CFI = .98, TLI = .97, and RMSEA = .06 (Hu & Bentler, 1999). Moreover, factor loadings for the latent variables ranged from .71 to .88. Hair et al (1998) suggested a threshold of .70 for factor loading for practical significance corresponding to a required sample size of 60, which aligns with the sample size of the current study. These findings indicate adequate measurement of the underlying constructs.

Structural Model

The structural models that best explain the relationship between strengths use, BPNS, and engagement were compared. Two distinct models were evaluated to assess their fit with the data. The first model, referred to as the partially mediated model, proposed both a direct path from strengths use to engagement and an indirect path mediated by BPNS (see Figure 2). The second model, the fully mediated model, posited the path

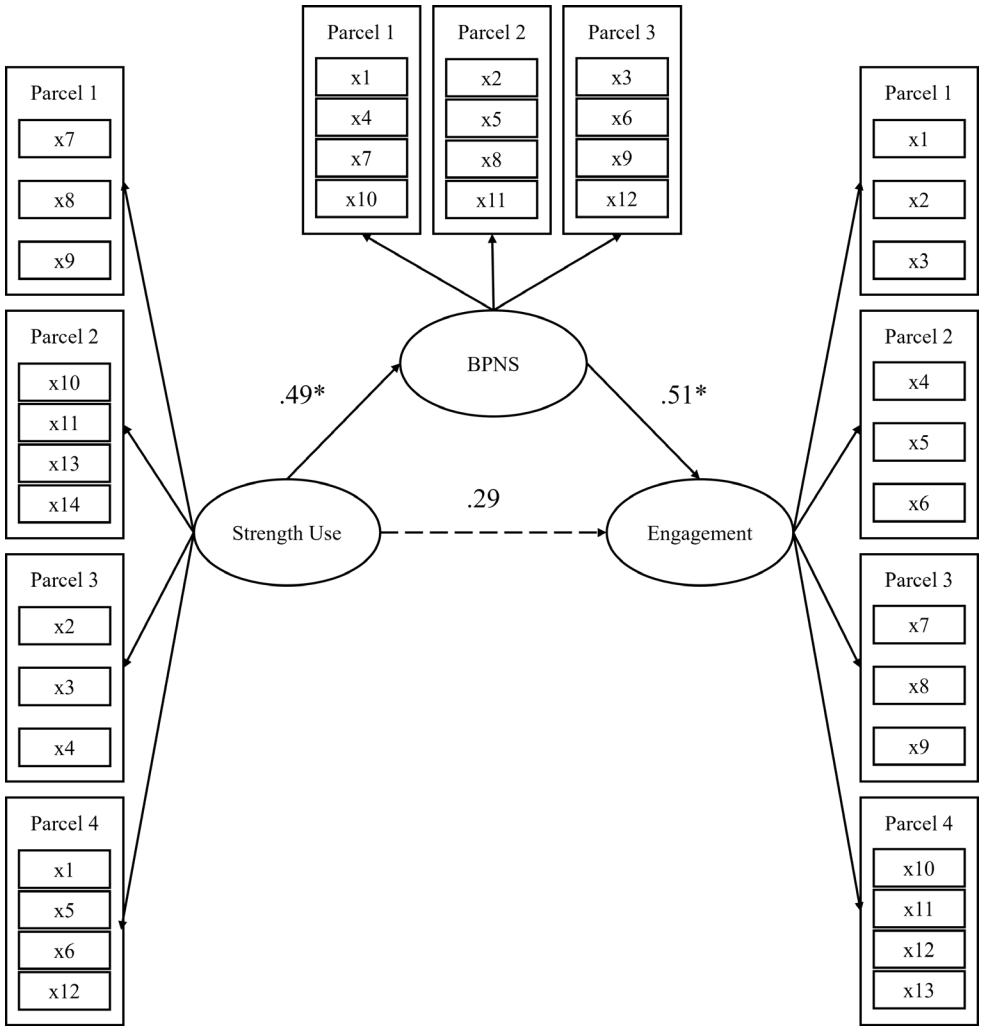
from strengths use to engagement through BPNS, without a direct path from strengths use to engagement (see Figure 3).

A comparison of goodness-of-fit indices between these two models was conducted to determine which model best represents the relationships. The comparison revealed that there was no statistically significant difference between the partially mediated model and the fully mediated model. The chi-square difference test yielded a non-significant result $\Delta\chi^2(1) = 3.43$, $p = .06$ (see Table 2), indicating that the partially mediated model did not provide a significantly better fit to the data than the fully mediated model. Given that the difference was not statistically significant, the more parsimonious fully mediated model may be preferred.

Table 2
Fit indices for the research model and the comparison model

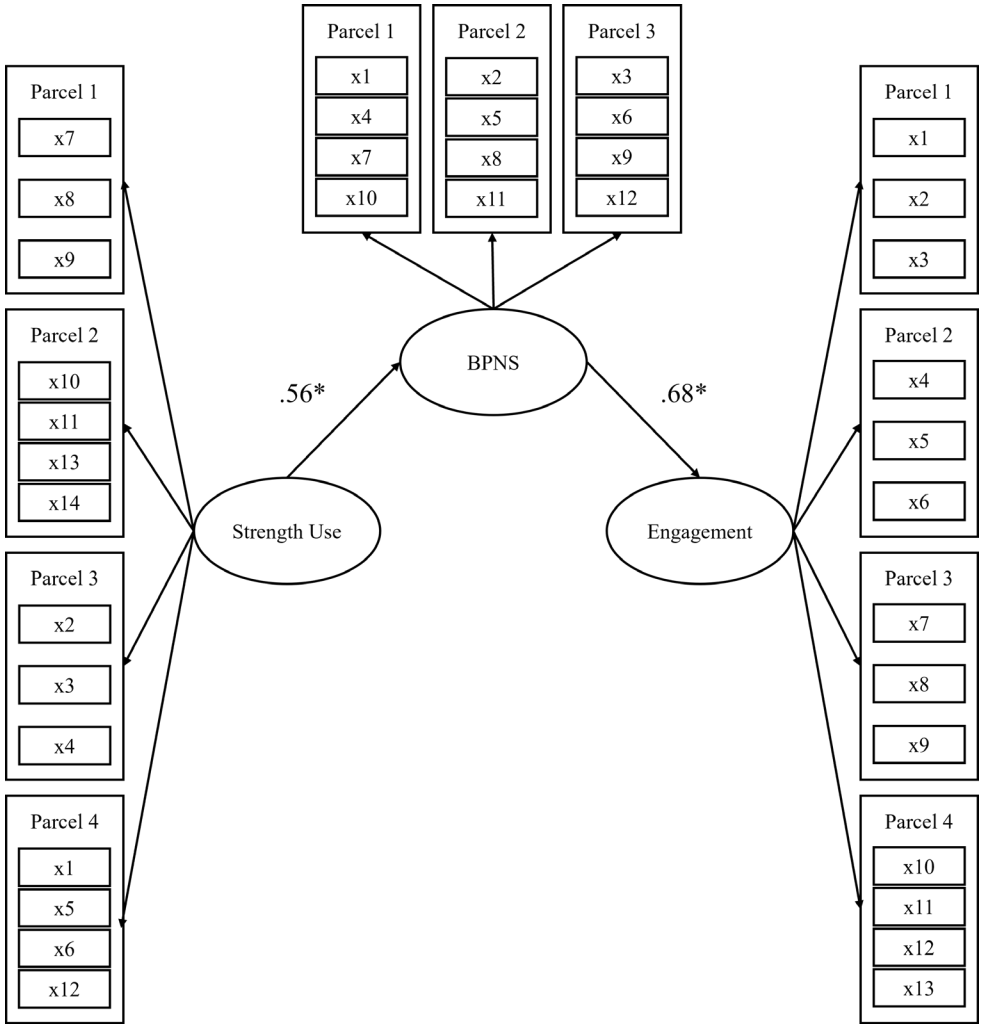
Model tested	χ^2	df	TLI	CFI	RMSEA
Partially mediated model	49.06	41	.97	.98	.06
Fully mediated model	52.48	42	.96	.97	.07
χ^2 statistics	$\Delta\chi^2(1) = 3.43$				

Figure 2
The partially mediated model (the research model)



Note. N=57. *p<.05

Figure 3
The fully mediated model (the preferred model)



Note. N=57. *p<.05, ***p<.001

The standardised path coefficients for the selected fully mediated model are presented in Table 3. All coefficients are standardised regression coefficients, with statistical significance levels.

Table 3
Standardised path coefficients for the fully mediated model

Variables	B	S.E.	β	z
Strengths use → BPNS	.35	.15	.56	2.33* (p=.02)
BPNS → Engagement	1.26	.34	.68	3.68*** (p<.001)

Significance Test of the Mediating Effect

The bootstrapping method proposed by Shrout and Bolger (2002) was employed to examine the indirect effect. Bootstrapping estimates the standard error of the indirect effect and provides confidence intervals for this measure (Chan, 2007). The absence of zero within the interval indicates significance. The results are presented in Table 4. The mediating effect of BPNS on the relationship between strengths use and engagement was statistically significant, as the confidence interval did not include zero.

Table 4
Bootstrapping results of the indirect effect

Paths	Estimates	SE	95% CI	
Strengths use → BPNS → Engagement	.44	.21	.11	.93

Note. N=57. Standardised estimation of 10,000 bootstrap samples

Discussion

The purpose of this study was to investigate the mediating role of BPNS in the relationship between strengths use and engagement among university students. The results of the present study support a fully mediated model, suggesting that BPNS fully mediates the relationship between strengths use and engagement.

Our findings corroborate the existing literature indicating a positive association between strengths use and engagement (Matsuo, 2020; Van Woerkom et al., 2016). Consistent with strengths theories, this research further provides evidence that strengths use positively impacts students' engagement, albeit indirectly through BPNS (Clifton & Harter, 2003; Peterson & Seligman, 2004; Wood et al., 2011).

The findings support the positive activity model suggesting that strengths use can fulfil BPN. More specifically, using strengths enables individuals to act authentically, which promotes satisfaction with the need for autonomy (Peterson & Seligman, 2004). It may also enhance competence by fostering mastery experiences and a sense of control over their environment (Bakker & Van Wingerden, 2021). Furthermore, it could support the need for relatedness by encouraging social resource-seeking and collaboration while using strengths (Berg et al., 2013). Similar to these results, recent studies have found BPNS to mediate the relationship between teachers' strengths use and work engagement (Jin et al., 2022) and strengths use and reduced depressive symptoms and job satisfaction among nurses (Bai et al., 2021; Bai & Bai, 2023). The present study extends these insights by focusing on students' strengths use, engagement, and BPNS as the psychological mechanisms explaining the relationship between those two.

The educational implications of this study are significant as its population is students. Educators can enhance students' engagement by leveraging their strengths and facilitating their BPNS, which might be key factors in their academic success and overall wellbeing (Lyubomirsky & Layous, 2013; Mahomed & Rothmann, 2020). For example, educators could design personalised projects based on students' strengths, allowing them to use their strengths in ways that they find meaningful and thereby fulfilling their need for autonomy. These projects could also be structured to challenge students at an appropriate level they find rewarding, facilitating a sense of mastery and competence. Additionally, encouraging collaboration through educator support, peer support, or mentorship can satisfy students' need for relatedness. Moreover, educators might implement strengths-based sessions where students freely discuss their strengths with supervisors, tutors, or peers and intentionally practice them within academic settings.

Limitations and Directions for Future Studies

Although the present results clearly support the relationship between strengths use, BPNS, and engagement, it is appropriate to recognise several potential limitations. One notable limitation of our study is the relatively small sample size. Despite the application of advanced statistical techniques, the limited sample size may affect the generalisability of the findings. Item parcelling technique was used to mitigate the constraints of the sample size and the estimation error. From the strict empiricist tradition of classical statistics, item parcelling may not provide as stringent analyses as those based on individual items (Kishton & Widaman, 1994). However, this research follows a general pragmatic approach to scientific inquiry, which emphasises flexibility in modelling data and the use of theory to guide empirical decision-making (Little et al., 2013). From this perspective, modelling is a form of craftsmanship, which a researcher uses for a given

situation. Furthermore, the statistical significance of the observed effects even with the sample size constraint supports the robustness and validity of our results.

Another limitation lies in the lack of detailed demographic information within the sample. Future research could employ larger and more diverse samples to further validate and extend the current findings. For example, future studies can explore the differences between undergraduate and postgraduate students to understand their potential influence on the findings. In work contexts, Meyers et al. (2019) highlighted the importance of strengths use for young employees in the early stages of their careers. This potentially implies that undergraduates, who are often in an earlier process of exploring their personal and career paths than postgraduates, might experience unique benefits from strengths use in educational contexts.

Moreover, while our study focused on adult students who generally possess a clearer understanding of their strengths, future research could investigate the applicability of these findings to younger students. Younger students are still in the developmental stage of strengths awareness and identification. Initiatives aimed at enhancing strength awareness and supporting strengths use, alongside facilitating BPNS, are anticipated to significantly improve engagement among younger students. Future studies could investigate the effectiveness of early interventions in fostering strengths awareness and utilisation in younger populations.

Conclusion

In conclusion, this study contributes to the existing literature by providing initial evidence for the mediating role of BPNS in the relationship between strengths use and engagement among adult students within the university context. The findings inform educational strategies employing strengths use to promote students' BPNS and engagement. Moving forward, future investigations could aim to replicate these findings across different demographics and educational settings.

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