Positive and Negative Affect in Studies Scale (PANASS): Proprietà psicometriche in studenti universitari

Annamaria Di Fabio[1] e Andrea Svicher[2]

Sommario

Il *Positive and Negative Affect Schedule* (PANAS) è uno strumento di auto-valutazione ampiamente riconosciuto per la misurazione dell'affettività positiva e negativa. Questa ricerca ha esaminato le proprietà psicometriche del *PANAS* adattato al contesto dello studio, denominato *Positive and Negative Affect in Studies Scale* (PANASS), con un focus particolare sugli studenti universitari. Trecentoventinove studenti universitari italiani (*N* = 329) hanno completato il PANASS, la *Study Satisfaction Scale* (SSS) e il *Work and Meaning Inventory for University students* (WAMI-U). L'Analisi Fattoriale Confermativa (AFC) ha supportato un modello a due fattori con *Positive Affect in Studies* (PAS) e *Negative Affect in Studies* (NAS), con indici di adattamento accettabili (CFI = .92; TLI = .91; RMSEA = .07; SRMR = .06). L'affidabilità è risultata buona per entrambe le dimensioni (PAS α = .89; NAS α = .88). La validità concorrente è stata confermata da correlazioni positive tra PAS e SSS (*r* = .38, *p* < .01), così come tra PAS e WAMI-U (*r* = .35, *p* < .01). Inoltre, il fattore NAS è risultato negativamente correlato con SSS (*r* = -.36, *p* < .01), così come negativamente correlato con WAMI-U (*r* = -.33, *p* < .01). I risultati suggeriscono che il PANASS è uno strumento valido e affidabile per la misurazione dell'affettività positiva e negativa in reazione allo studio tra gli studenti universitari italiani.

Parole chiave

PANAS, *Positive and Negative Affect in Studies Scale,* PANASS*, Positive Affect in Studies*, *Negative Affect in Studies*, Studenti universitari.

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Vol. 17, n. 3, novembre 2024
doi: 10.14605/CS1732408 — ISSN: 2421-2202 — pp. 90-100
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Positive and Negative Affect in Studies Scale (PANASS): Psychometric Properties in University Students

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Abstract

The *Positive and Negative Affect Schedule* (PANAS) is a widely recognized self-report instrument for assessing positive and negative affect. This research examined the psychometric properties of PANAS adapted to the study context, namely the *Positive and Negative Affect in Studies Scale* (PANASS), with a specific focus on university students. Three hundred and twenty-nine university students (n = 329) from Italy completed the PANASS, the *Study Satisfaction Scale* (SSS), and the Work and Meaning Inventory for University Students (WAMI-U). Confirmatory factor analysis (CFA) supported a two-factor model with Positive Affect in Studies (PAS) and Negative Affect in Studies (NAS) with acceptable fit indices (CFI = .92; TLI = .91; RMSEA = .07; SRMR = .06). Reliability was good for both dimensions (PAS: α = .89; NAS: α = .88). Concurrent validity was confirmed by positive correlations between PAS and SSS (r = .38, p < .01) as well as PAS and WAMI-U (r = .35, p < .01). Moreover, the factor NAS was negatively correlated with SSS (r = -.36, p < .01), as well as negatively correlated with WAMI-U (r = -.33, p < .01). The results suggest that PANASS is a valid and reliable instrument for assessing positive and negative affect in studies among Italian university students.

Keywords

PANAS, *Positive and Negative Affect in Studies Scale,* PANASS, Positive affect in studies, Negative affect in studies, University students.

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Vol. 17, Issue 3, November 2024
doi: 10.14605/CS1732408 — ISSN: 2421-2202 — pp. 90-100
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Introduction

The *Positive Affect and Negative Affect Schedule* (PANAS), a self-report measure of affective states, has garnered widespread recognition for its reliability and validity (Medvedev et al., 2021). Developed by Watson et al. (1988), the PANAS comprises 20 items (10 positive, 10 negative emotion words) assessed on a 5-point Likert scale. The original English version yielded substantial validity evidence accumulated over decades (Crawford & Henry, 2004), effectively capturing the theorized bidimensional structure, and categorizing emotions based on positive or negative valence (Díaz-García et al., 2020; Dufey & Fernandez, 2012; Galinha & Pais-Ribeiro, 2005; López-Gómez et al., 2015; Pandey & Srivastava, 2008; Robles & Páez, 2003; Terraciano et al., 2003; Torres et al., 2024).

Positive and negative affect are often assessed to understand intra-and interindividual processes, for instance, to analyse how individuals differ in their emotional expression or how interactions relate to emotions (Berry & Hansen, 1996; Watson, 1988; Willroth et al., 2023). Positive Affect (PA) is the extent to which a person feels active, alert, energized, pleasurably engaged, and able to concentrate. Low PA is characterized by sadness and lethargy (Watson et al., 1988). Negative Affect (NA) is conceptualized as subjective distress present in various aversive mood states, such as anger, distress, and fear. Low NA reflects calmness and serenity.

PA and NA are related but distinct, hence the PANAS was designed to measure them independently (Watson et al., 1988). The PANAS is based on the circumplex model of affect (Russell, 1980; Watson & Tellegen, 1985), where pleasantness and unpleasantness are opposite poles (Tellegen et al., 1999). Confirmatory factor analysis supports a two-factor correlated model (Serafini et al., 2016). Test-retest reliability is strong (one-week; ICCs: PA = .80, NA = .76), as is internal consistency (Cronbach's alphas: PA = .90, NA = .91) (Serafini et al., 2016). Thus, the PANAS has been translated and validated across various groups and populations (De Carvalho et al., 2013; Krohne et al., 1996; Von Humboldt et al., 2017).

Following its development and validation across diverse groups including students, university staff, community adults, and psychiatric patients (Brdar, 2024), the PANAS has been effective in measuring affect in both general and clinical populations, consistently demonstrating psychometrically sound properties (Crawford & Henry, 2004; Díaz-García et al., 2020; Serafini et al., 2016) and for which the Italian version by Terracciano et al. (2003) exists. However, there is a consensus on the need for further psychometric studies to deepen the understanding of the PANAS's psychometric properties across ages, genders, cultures, targets, and populations (Brdar, 2024).

According to this view, Di Fabio and Gori (2022) expanded the study of PANAS, developing the PANAS at work with a specific focus on the work context,

confirming its soundness (two-factor structure, concurrent validity with both hedonic well-being in terms of satisfaction with life and eudaimonic well-being in terms of meaning in life). Following this line of research, the present study aims to examine the psychometric properties of the Positive and Negative Affect in Studies Scale (PANASS) in Italian university students.

Methods

Participants and Procedures

The participants consisted of 329 university students from central Italy, with a mean age of 21.58 years (*SD* = 2.41). The gender distribution was 45.9% female (n = 151) and 54.1% male (n = 178). Participation was voluntary, and written informed consent was obtained in compliance with Italian privacy regulations (DL-196/2003) and the European Union General Data Protection Regulation (EU 2016/679). To prevent potential order effects, the administration of the questionnaires was counterbalanced.

Instruments

Positive and Negative Affect in Studies Scale (PANASS) by Di Fabio and Svicher is a self-report instrument developed following the PANAS by Watson et al. (1988) and the Italian version by Terracciano et al. (2003), which assesses PA and NA using two scales, each comprising ten items. The PANASS was obtained modifying PA and NA scales to fit the study context.

Participants rate adjectives on a five-point Likert scale, where 1 signifies «Very slightly» and 5 represents «Extremely». Participants are asked to indicate how much each adjective describes how they feel in relation to their studies. Overall, Positive Affect in Studies (PAS) and Negative Affect in Studies (NAS) scores are computed by summing the scores of the corresponding scale's items. Examples of items are: PAS = «Determined in my studies»; and «Active in my studies»; NAS = «Upset about my studies»; and «Afraid of my studies» (Appendix).

The Study Satisfaction Scale (SSS) (Di Fabio & Svicher, 2024) is a self-report tool developed following the Job Satisfaction Scale (Judge et al., 1998) and the Italian version (Di Fabio, 2018a), modifying it to fit the study context. The scale is composed of 5 items rated on a 7-point Likert scale (from 1 = «Strongly disagree» to 7 = «Strongly agree»). Cronbach's alpha is .83 in the study by Di Fabio and Svicher (2024) and .82 in the present study. Examples of items are: «Most days I am enthusiastic about my studies»; and «I find real enjoyment in my studies».

The Work and Meaning Inventory for University Students (WAMI-U) (Di Fabio & Kenny, 2020) is a scale developed following the Work and Meaning Inventory (WAMI) (Steger et al., 2012) and the Italian version (Di Fabio, 2018b), adapting it to detect meaning making through study at university. It comprises ten items to which respondents indicate their level of agreement on a seven-point scale, ranging from «Strongly disagree» to «Strongly agree». The WAMI-U assesses three factors (Positive meaning, Meaning making through study, and Greater good motivations), allowing also a total score. Regarding reliability, Cronbach's alpha for the total score is .81 in the study by Di Fabio and Kenny (2020) and .87 in the present study. Examples of items are: "I have a good sense of what makes my study meaningful"; and «I view my study as contributing to my personal growth».

Data Analysis

Data analysis was performed using RStudio (2022.12.0) with the *Lavaan* package (version 0.6-18) for confirmatory factor analysis (CFA), *SemPlot* (version 1.1.6) for model visualization, and *Psych* (version 2.3.3) for reliability testing. The structure of the Positive and Negative Affect in Studies Scale (PANASS) was evaluated using CFA to test the two-factor model — Positive Affect in Studies (PAS) and Negative Affect in Studies (NAS) — based on the model by Watson et al. (1988). Model fit was assessed with the comparative fit index (CFI), Tucker-Lewis index (TLI), root mean square error of approximation (RMSEA), and standardized root mean square residual (SRMSR) using the robust maximum likelihood estimator (MLR). Fit indices greater than .90 for CFI and TLI, RMSEA below .06, and SRMSR below .08 were considered indicators of an acceptable fit (Hu & Bentler, 1999). Internal consistency was evaluated using Cronbach's alpha, with values higher than .70 indicating adequate reliability. Concurrent validity was assessed by examining correlations between PANASS scores and the Study Satisfaction Scale (SSS) (Di Fabio & Svicher, 2024) as well as between PANASS the Work and Meaning Inventory for University Students (WAMI-U) (Di Fabio & Kenny, 2020).

Results

The confirmatory factor analysis (CFA) testing the two-factor model of Positive Affect in Studies (PAS) and Negative Affect in Studies (NAS) based on the model by Watson et al. (1988) for PANAS demonstrated an acceptable fit: χ^2 = 322.63 (158) ($p < .001$); CFI = .92; TLI = .91; RMSEA = .07 [90% CI = .05, .08]; SRMR = .06 (Figure 1). Internal consistency was good for both PAS (Cronbach's α = .89)

and NAS (Cronbach's $\alpha = .88$), confirming the reliability of the two dimensions. The correlation between the PAS factor and NAS factor was $r = -.22$ ($p < .01$). Positive Affect in Studies (PAS) showed statistically significant and positive correlations with SSS ($r = .38$, $p < .01$) and WAMI-U ($r = .35$, $p < .01$), indicating that higher Positive Affect in Studies (PAS) is associated with greater study satisfaction as well as that higher PAS is associated with higher meaning making through study. Conversely, Negative Affect in Studies (NAS) was negatively correlated with SSS ($r = -.36$, $p < .01$) and WAMI-U ($r = -.33$, $p < .01$), suggesting that higher NAS is associated with lower study satisfaction as well as higher NAS being associated with lower meaning making through study (Table 1).

Discussion

The current research investigates the psychometric properties of the Positive and Negative Affect in Studies Scale (PANASS) in Italian university students. Results illustrate a factor structure composed of two inversely correlated factors (Positive Affect in Studies and Negative Affect in Studies) with adequate reliability and concurrent validity within Italian university students.

The two-factor model of the PANASS comprising Positive Affect in Studies (PAS) and Negative Affect in Studies (NAS) was adequately supported by our results, in accordance with the original PANAS model advanced by Watson et al. (1988), which separates positive and negative affect as distinct but related constructs.

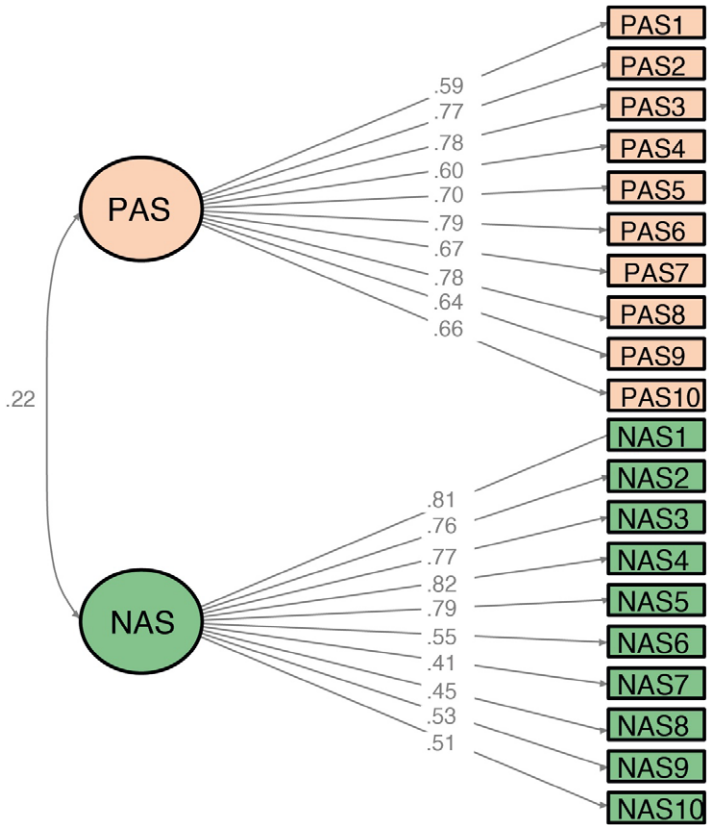
The good internal consistency observed for both PAS and NAS suggests that the scale is a reliable instrument. It is consistent with results observed in the PANAS (e.g., Serafini et al., 2016) and in the PANAS at Work (Di Fabio & Gori, 2022). The positive correlations between PAS and both study satisfaction (SSS) and meaning making through study (WAMI-U) as well as the negative correlations between NAS and both SSS and WAMI-U suggested satisfactory concurrent validity.

Therefore, this study contributes to research that explores PANAS in specific contexts, responding to the most recent calls in the literature (Brdar, 2024), indicating that PANAS, in terms of the PANASS, is a promising tool also in a specific target such as university students, by underling the relevance of the PANASS in assessing positive and negative affect also in relation to study. Moreover, future research could further explore the psychometric properties of the PANASS in other educational contexts and targets, such as high school students.

In conclusion, the PANASS was found to be a reliable and valid instrument for assessing positive and negative affect in studies, suggesting its use for research and interventions in Italian university students.

Figure 1

Confirmatory Factor Analysis. Path diagram of the *Positive and Negative Affect in Studies Scale* (PANASS) (*N* = 329)



Note: PAS = Positive Affect in Studies; NAS = Negative Affect in Studies.

Table 1

Pearson's correlations of the *Positive and Negative Affect in Studies Scale* (two dimensions — Positive Affect in Studies and Negative Affect in Studies) with the *Study Satisfaction Scale* and the *Work and Meaning Inventory for University Students* (*N* = 329)

	SSS	WAMI-U
PAS	.38**	.35**
NAS	-.36**	-.33**

Note: PANASS = *Positive and Negative Affect in Studies Scale;* PAS = Positive Affect in Studies; NAS = Negative Affect in Studies; SSS = *Study Satisfaction Scale;* WAMI-U = Work and Meaning Inventory for university students. *$p < .05$. **$p < .01$.

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APPENDIX

Items in Italian of the *Positive and Negative Affect in Studies Scale* (PANASS)

1. Interessato ai miei studi
2. Angosciato per i miei studi
3. Eccitato per i miei studi
4. Turbato per i miei studi
5. Forte nei miei studi
6. Colpevole per i miei studi
7. Spaventato per i miei studi
8. Ostile verso i miei studi
9. Entusiasta per i miei studi
10. Orgoglioso dei miei studi
11. Irritabile per i miei studi
12. Concentrato nei miei studi
13. Con vergogna dei miei studi
14. Ispirato dai miei studi
15. Nervoso per i miei studi
16. Determinato nei miei studi
17. Attento nei miei studi
18. Agitato per i miei studi
19. Attivo nei miei studi
20. Impaurito dai miei studi