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# The mediating role of university mattering in the association between SEB skills and student wellbeing

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University life represents a pivotal developmental stage characterized by substantial academic and social demands. Although Social, Emotional, and Behavioral (SEB) skills are increasingly recognized as malleable resources for student functioning and adjustment, evidence on their associations with wellbeing remains fragmented, and the psychosocial mechanisms linking these competencies to wellbeing are still debated. This study examined the mediating role of university mattering in the associations between the five SEB skill domains and overall wellbeing in the university context. Data from 700 Italian university students were analyzed using structural equation modeling. SEB skills were assessed using the BESSI-I, university mattering using the University Mattering Scale (UM-S), and overall wellbeing at university using the overall score of the PERMA-Profiler. University mattering was positively associated with university wellbeing and mediated the associations between specific SEB domains and wellbeing. Social engagement showed an indirect-only association with wellbeing through mattering. Cooperation showed a more complex pattern, with a positive indirect association through mattering and a negative direct association with wellbeing, although this pattern was less stable across alternative measurement specifications. Emotional resilience and self-management were directly associated with wellbeing, while emotional resilience also showed a significant indirect association through mattering. The central pattern involving Social Engagement, Emotional Resilience, and Self-Management remained stable across sensitivity analyses. This pattern was broadly comparable across Bachelor's and Postgraduate students, although some residual structural heterogeneity could not be excluded. Overall, the findings suggest that SEB skills are differentially associated with wellbeing at university and that university mattering may represent one relevant psychosocial pathway through which some interpersonal and emotional competencies relate to students' wellbeing.

KEYWORDS
**university mattering, SEB skills, wellbeing, PERMA, university students, positive psychology, BESSI**

# 1 Introduction

The wellbeing of university students has become a central focus for scholars in recent years (Hernández-Torrano et al., 2020). This growing attention is supported by a cumulative body of research showing that this population experiences substantial psychological and emotional distress (Auerbach et al., 2018; Harrer et al., 2018; Hernández-Torrano et al., 2020), with some scholars suggesting that up to half of university students may be vulnerable to different forms of psychological difficulties (Chaudhry et al., 2024). In the Italian context, both reports and academic research confirm the relevance of this issue. A recent study by Nosè et al. (2025) conducted in an Italian sample predominantly composed of university students found that 88% reported significant levels of distress, while only 16.5% indicated satisfactory psychological wellbeing. Consistent with these findings, a report by the National Youth Council Study Center indicated that approximately 40% of young respondents reported that their mental health limited their ability to carry out daily activities (National Youth Council Study Center, 2023). More recently, Micheletto et al. (2026) in a qualitative content analysis supplemented by descriptive frequency analysis conducted within the same university context, found that references to student distress accounted for 85% of the coded experiential material, with academic anxiety, isolation and loneliness, peer competition, and negative future outlook emerging as prominent themes.

Scholars agree that the university period is a pivotal developmental stage in which students are often required to adapt to new academic, social, and personal demands while progressively developing autonomy (Hernández-Torrano et al., 2020). This transition is characterized by the interplay of academic pressure, the need to form new social networks, and concerns about future professional readiness (Brett et al., 2022). Within this context, motivational, emotional, and behavioral resources or skills may play a crucial role (Soto et al., 2020; Taylor et al., 2017; Napolitano et al., 2021). A recent taxonomy has organized these personal resources within the Socio-Emotional-Behavioral (SEB) Skills framework (Soto et al., 2022a), showing incremental validity over personality traits in explaining various academic outcomes and wellbeing (Feraco et al., 2025; Soto et al., 2023, 2025; Yoon et al., 2024; Pellegrino et al., 2025). However, several studies have demonstrated that individual resources often do not directly account for higher levels of wellbeing, but may be mediated by psychological and social mechanisms directly connected to the environmental features in which they are expressed (Collie and Martin, 2024a,b; Casali and Meneghetti, 2023; Beatty et al., 2025; Feraco et al., 2025). In particular, the satisfaction of psychological needs may serve as a fundamental bridge for transforming individual resources into greater wellbeing (Orkibi and Ronen, 2017). Among these dimensions, university mattering (Rosenberg and McCullough, 1981) may play a crucial role since it represents a fundamental need (Flett et al., 2019; France and Finney, 2010) that boosts overall wellbeing (Matera et al., 2024; Paradisi et al., 2024), but at the same time relies on a reciprocal mechanism where both the environment and individuals participate in co-creating and shaping its essence (Prilleltensky, 2019).

Building on the resource-based approach proposed by positive psychology (Seligman and Csikszentmihalyi, 2000) and the PERMA framework of wellbeing (Seligman, 2011), this study proposes a mediation analysis linking SEB skills to overall wellbeing at university through the lens of university mattering (Flett et al., 2016; France and Finney, 2010). Specifically, we hypothesize differential effects—both direct and indirect—of the five SEB skill dimensions on wellbeing, with mattering acting as a potential mediator.

## 1.1 Positive psychology and wellbeing

Positive Psychology (Seligman and Csikszentmihalyi, 2000) has shifted the focus from a predominantly pathogenic model of illness toward a resource-based approach centered on flourishing (Hernández-Torrano et al., 2020; Li, 2025). Flourishing is described as a state in which individuals feel good and function optimally, rather than merely as the absence of mental illness (Seligman, 2011; Keyes, 2007). Within this perspective, two broad traditions have been identified as supporting flourishing: a hedonic tradition, which emphasizes life satisfaction and the experience of positive affect (Diener et al., 1999), and a eudaimonic tradition, which stresses meaningful, purpose-oriented functioning and self-realization (Ryff, 1989). A closely related motivational account further locates this eudaimonic functioning in the satisfaction of the basic psychological needs for competence, autonomy, and relatedness (Deci and Ryan, 2000), while other perspectives have identified positive emotions as a potential bridge between the two, showing that momentary hedonic states can build the lasting resources that underpin eudaimonic functioning (Fredrickson, 2001). Building on these traditions, Seligman's PERMA framework (Seligman, 2011) integrates hedonic and eudaimonic components into a single, multidimensional model of flourishing, organized around five pillars: positive emotions, engagement, relationships, meaning, and accomplishment. Although multidimensional, this framework is also conceived by some authors as capturing an overall sense of wellbeing, which can be represented as a single, unitary dimension (Goodman et al., 2017; Butler and Kern, 2016). This framework has also been applied in the university context to measure students' university-related wellbeing (Chaves et al., 2023) and support practical interventions (Morgan and Simmons, 2021; Donaldson et al., 2022; Seligman et al., 2009).

## 1.2 Socio-Emotional-Behavioral (SEB) skills

Within this perspective, student wellbeing is increasingly understood not as a static state, but as a dynamic process shaped by the availability and mobilization of personal and social resources that may support flourishing and wellbeing (Chaudhry et al., 2024; Hernández-Torrano et al., 2020; Li, 2025; Soto et al., 2022b). For decades, the search for a definitive "set of resources" capable of predicting human flourishing has led to the proliferation of overlapping constructs, ranging from "soft skills" and "non-cognitive skills" to "character strengths" and "socio-emotional competencies" (Soto et al., 2020). However, this terminological fragmentation has often hindered the development of an integrated and psychometrically robust framework for educational intervention (Soto et al., 2020).

To address these conceptual limitations, recent research has introduced the framework of Social, Emotional, and Behavioral (SEB) skills (Soto et al., 2020), defined as individuals' functional capacities to maintain social relationships, regulate emotions, innovate, and manage goal- and learning-directed behaviors (Soto et al., 2020, 2022a; Napolitano et al., 2021). This framework organizes 32 specific facets into five broad domains that parallel the behavioral referents of the Big Five (John and Srivastava, 1999): Self-Management, Social Engagement, Cooperation, Emotional Resilience, and Innovation (Soto et al., 2020). Table 1 summarizes the

TABLE 1 Correspondence between Big Five personality traits and SEB skills domains.

| Big Five personality trait | SEB skills domain |
|---|---|
| Conscientiousness | Self-Management |
| Extraversion | Social Engagement |
| Agreeableness | Cooperation |
| Emotional stability/neuroticism | Emotional Resilience |
| Openness to experience | Innovation |

Each of the five SEB skills domains maps directly onto one of the Big Five personality traits following the conceptualization proposed by Soto et al. (2020, 2022a).

conceptualization proposed by Soto et al. (2020, 2022a). Self-Management refers to the capacities used to effectively pursue goals and complete tasks, including time management, goal regulation, and decision-making. Social Engagement comprises agentic capacities for actively engaging with others, such as leadership, persuasiveness, and conversational skills. Cooperation focuses on communal capacities for building and maintaining positive social relationships, including perspective-taking, trust, and teamwork. Emotional Resilience involves capacities for regulating emotions and moods, such as stress regulation, optimism, and anger management. Finally, innovation involves the capacities to engage with novel ideas and experiences, including abstract thinking, creativity, and cultural competence (Soto et al., 2020, 2022a).

The fundamental innovation of the SEB framework lies in its distinction between personality traits and functional skills (Soto et al., 2020). In the literature, this distinction is often characterized as the difference between typical and maximal performance. Whereas personality traits describe students' "typical" tendencies—how they usually act, think, and feel across different situations—SEB skills refer to their "maximal" capacities, namely what they are capable of doing when the situation requires it (Soto et al., 2020; Feraco et al., 2025; Yoon et al., 2024). Therefore, as proposed by the authors, SEB skills represent a "psychological toolbox," namely a set of dynamic resources that individuals may activate under specific circumstances (Soto et al., 2020). This distinction has important implications for university-wide wellbeing strategies. Unlike personality traits, which are characterized by relatively long-term stability, SEB skills are malleable resources that can be intentionally learned and developed through practice and experience (Feraco et al., 2025; Soto et al., 2025).

Given the relative novelty of this taxonomy, an ongoing debate is emerging about how SEB Skills may interact with academic and work-related outcomes, as well as with dimensions of wellbeing (Ringwald et al., 2025; Napolitano et al., 2025; Yoon et al., 2024; Feraco et al., 2025; Lechner and Urban, 2025; Pellegrino et al., 2025; Chen et al., 2024). The studies conducted with university students provide partial support for the role of specific skills in enhancing wellbeing outcomes. Pellegrino et al. (2026) identified emotional resilience and social engagement as the strongest predictors of life satisfaction, whereas cooperation showed a surprising negative pattern, driven by a positive association with burnout among students without learning disabilities. In a cross-cultural design, Sharabi et al. (2025) found that self-management and social engagement were the only predictors of academic success and satisfaction, although this relationship was fully mediated by self-regulated learning strategies and academic self-efficacy. Beatty et al. (2025) found that SEB skills do not automatically translate into wellbeing, but may be activated through psychosocial mechanisms such as a sense of purpose, with self-management emerging as one of the most important domains. The role of self-management, alongside social engagement and emotional resilience, was also supported by Soto et al. (2025) as a predictor of life satisfaction and a driver of well-being among university students.

However, to the best of our knowledge, no study has examined the full range of SEB skills as predictors of overall wellbeing within the PERMA framework, particularly among university students. In this regard, the fragmented evidence on the role of specific SEB skills and their direct associations with wellbeing-related dimensions raises an important question about how each skill relates to overall PERMA wellbeing.

## 1.3 The potential mediating role of university mattering

While SEB skills can be conceived as the internal "psychological toolbox" that students bring to the academic environment, their contribution to wellbeing is not necessarily direct or automatic (e.g., Collie and Martin, 2024a; Beatty et al., 2025; Orkibi and Ronen, 2017). Indeed, individual resources interact with other contextual resources to reach a state of flourishing (Collie and Martin, 2024a). Within this perspective, socio-emotional competencies may play a crucial role in enhancing the sense of flourishing, with a potential crossover effect on other domains (Collie and Martin, 2024a,b). Indeed, individual capacities are enacted within relational and institutional contexts that may acknowledge, validate, or fail to recognize students' presence, actions, and contributions (France and Finney, 2010; Moschella and Banyard, 2021; Flett et al., 2019), partially accounting for the satisfaction of psychological needs that may act as a bridge between competencies and wellbeing (Orkibi and Ronen, 2017).

A fundamental but malleable need within this perspective is the concept of mattering (Rosenberg and McCullough, 1981; Flett, 2021). Mattering reflects the need to feel important to others (Flett, 2021), elicited by individuals' perception of being significant, noticed, and valued (Rosenberg and McCullough, 1981). It has also been conceptualized as the psychological counterpart of marginality, namely the experience of feeling peripheral, invisible, or voiceless within a social or institutional context (Schlossberg, 1989), with a reciprocal mechanism of having value to others and giving value to others that justifies its importance in life (Prilleltensky, 2019). This dimension differs from self-esteem because mattering is intrinsically interpersonal, reflecting the perception that one's presence is meaningful and consequential to others (Flett and Nepon, 2019). Crucially, mattering does not merely reflect perceived inclusion, acceptance, and connectedness within a social group; rather, it implies that one is valued, acknowledged, and relied upon by others (Flett et al., 2019; Flett, 2021).

Building on the crucial role that psychological needs may have in mediating the relationship between resources and wellbeing (Orkibi and Ronen, 2017), and on the agentic role required by this reciprocal mechanism (Flett, 2021; Prilleltensky, 2019), we propose that SEB skills may foster university mattering by enabling students to transform their personal capacities into observable forms of participation, contribution, and relational exchange within the academic environment (Ma, 2026; Collie and Martin, 2024b). In doing so, students may be more likely to initiate interactions, maintain relationships, seek and provide support, and remain involved in academic activities, thereby achieving higher levels of wellbeing (Matera et al., 2024). Indeed, a recent meta-analysis of 30 studies involving more than 18,000 participants reported a significant medium-sized association between

mattering and global wellbeing ($r = 0.41$), observed across hedonic, eudaimonic, and holistic conceptualizations (Paradisi et al., 2024). Consistently, in the Italian validation of the University Mattering Scale (UM-S) (France and Finney, 2010), Matera et al. (2024) found not only a positive correlation between mattering and overall PERMA-based wellbeing, but also incremental validity of mattering in predicting wellbeing while controlling for social support. However, Matera et al. (2024) reported substantially different correlation magnitudes across samples ($r = 0.24$ in the Italian sample and $r = 0.53$ in the Hungarian sample), suggesting some variability in the strength of the association between university mattering and overall PERMA wellbeing. This variability may also partly reflect the contribution of the Relationships component within the aggregated PERMA score.

Although no previous studies have examined whether university mattering mediates the relationship between SEB Skills and overall university PERMA wellbeing, past evidence on personality traits and SEB-like skills further supports this interpretation. Previous research has confirmed the roles of extraversion and agreeableness in predicting social status and peer acceptance (DesJardins et al., 2015; Vater and Schröder–Abé, 2015), as well as the role of emotion regulation processes in predicting relationship quality (Andrei et al., 2015). Indeed, past studies have shown that mattering is associated with higher extraversion and agreeableness and lower neuroticism (Flett et al., 2016; Besser et al., 2022; Flett, 2021). Feraco et al. (2025) found that cooperation might be one of the strongest predictors of peer-acceptance. Therefore, in this study, mattering is conceptualized as a socio-relational mediator between individual resources and overall wellbeing in the university context.

## 1.4 The present study

This study represents a novel attempt to connect the new taxonomy of SEB Skills with the overall wellbeing of university students in Italy through the PERMA framework. In doing so, it proposes a mediation analysis through an underexplored mechanism: university mattering.

Since previous studies using both hedonic and eudaimonic dimensions of wellbeing do not fully converge on the specific pattern of skills that may influence wellbeing (Pellegrino et al., 2026; Soto et al., 2025; Beatty et al., 2025; Sharabi et al., 2025), we rely on a comprehensive measure such as overall PERMA-based wellbeing and ask:

> *RQ1:* Which SEB skills are directly associated with overall PERMA-based wellbeing among university students?

Past studies have consistently identified emotional resilience and social engagement as predictors of hedonic measures of wellbeing, such as life satisfaction (Pellegrino et al., 2026; Soto et al., 2025; Feraco et al., 2025). Conversely, goal-oriented studies have highlighted the predominant role of self-management (Sharabi et al., 2025; Beatty et al., 2025). Feraco et al. (2025), in a sample of over 5,000 high school students, also found a direct effect of emotional resilience and social engagement on life satisfaction, along with a positive effect of self-management. Therefore, since overall PERMA-based wellbeing includes both hedonic and eudaimonic dimensions (Seligman, 2011; Butler and Kern, 2016), we hypothesize that:

> *H1:* Self-Management, Social Engagement, and Emotional Resilience will show a direct positive association with students' overall PERMA-based wellbeing.

The mechanism through which SEB skills may enhance university mattering is hypothesized on the basis of previous evidence concerning skill-like SEB capacities and related Big Five dimensions. Accordingly, the second research question is:

> *RQ2:* Which SEB skills are directly associated with university mattering?

Mattering encompasses affective, social, and relational dimensions (Matera et al., 2024; Flett et al., 2019; France and Finney, 2010). Previous studies suggest that emotional self-regulatory processes and social tendencies may support relationship quality, social status, and peer acceptance (DesJardins et al., 2015; Vater and Schröder–Abé, 2015; Andrei et al., 2015; Feraco et al., 2025). In addition, mattering has been associated with higher extraversion and agreeableness, and with lower neuroticism (Besser et al., 2022; Flett, 2021; Flett et al., 2016). Based on this evidence, we hypothesized that:

> *H2:* Emotional Resilience, Cooperation, and Social Engagement will show the strongest direct positive associations with university mattering.

Stronger evidence in the literature supports the view that mattering is linked to overall wellbeing, both eudaimonic and hedonic (Paradisi et al., 2024; Flett, 2021). Matera et al. (2024) also found a positive predictive effect of university mattering for the overall measure of wellbeing through the PERMA framework, even when accounting for social connections. Therefore, we hypothesize:

> *H3:* University mattering will be positively associated with students' overall wellbeing.

Since university mattering may represent an important mediator between SEB Skills and overall wellbeing, we ask:

> *RQ3:* Which SEB skills exert an indirect effect on overall wellbeing through university mattering?

Previous research suggests that interpersonal and relational skills are fundamental for building peer acceptance and relationship quality (DesJardins et al., 2015; Vater and Schröder–Abé, 2015; Feraco et al., 2025), potentially acting as a central dimension that may produce a cross-over effect on other domains to reach wellbeing (Collie and Martin, 2024a,b). Since the few previous studies on personality traits and mattering have shown stronger associations with higher extraversion and agreeableness and lower neuroticism (Flett, 2021; Flett et al., 2016; Besser et al., 2022), emotional resilience, cooperation, and social engagement may be expected to exert indirect effects on wellbeing through university mattering. However, since both social engagement and emotional resilience have been identified in previous studies as directly associated with wellbeing, we hypothesize that:

> *H4:* The associations between Social Engagement, Cooperation, and Emotional Resilience and students' overall PERMA-based wellbeing will be mediated by university mattering, with partial mediation expected for Social Engagement and Emotional Resilience, and full mediation expected for Cooperation.

Finally, as an exploratory analysis, we compared students enrolled in bachelor's and postgraduate degree programs. This comparison is consistent with previous research suggesting that wellbeing may vary across stages of the university pathway (Nosè et al., 2025; Cobo-Rendón et al., 2020), with evidence of a progressive decline in optimal functioning among older students (Pellegrino et al., 2026; Sharabi et al., 2025). At the same time, accumulated academic experience may be associated with different levels of mattering (Flett et al., 2019; Cao et al., 2025) and socio-emotional resources (Soto et al., 2020). Therefore, we ask as exploratory final research question:

> *RQ4:* Does the proposed mediation model show comparable patterns among bachelor's and postgraduate students?

# 2 Methods

## 2.1 Research design

The study adopted a quantitative, cross-sectional, survey-based design. Data were collected at a single time point through an anonymous online self-report questionnaire administered to university students. As no experimental manipulation or random assignment was implemented, the study should be considered observational and correlational.

## 2.2 Sample and data collection

Participants were recruited from Ca′ Foscari University of Venice as part of *PRISMA 2.0* (*Promuovere Risorse Individuali e Sociali nel Mondo Accademico – Università per il Benessere*), a university wellbeing research project funded under the Italian Ministry of University and Research *PRO-BEN 2024* program. The single-university recruitment reflected the institution-based implementation of the project rather than an assumption of representativeness of the broader Italian university population. Eligible participants were currently enrolled in either a bachelor's or postgraduate degree program and were native Italian speakers, to ensure consistent comprehension of the Italian-language questionnaire. The survey link was distributed by Ca′ Foscari University of Venice through an institutional e-mail campaign, and data were collected anonymously via Google Forms.

All questionnaire items were presented in Italian and set as mandatory; therefore, no item-level missing data were present in the final dataset. The form was configured not to collect identifying information, and no email addresses, IP addresses, or response-duration indicators were available to the researchers. Once initiated, the questionnaire required approximately 20 min to complete.

To assess the presence of potentially careless or aberrant response patterns, we computed two complementary response-quality indices: the even–odd consistency index (Johnson, 2005; Curran, 2016) and respondent-level Mahalanobis distances based on item-response vectors (Meade and Craig, 2012; Curran, 2016). Even–odd consistency was high across respondents (Mdn = 0.92, IQR = 0.87–0.95). Following a conservative multiple-hurdle approach, respondents were considered eligible for exclusion only if they showed evidence of problematic responding on both indices. No respondent met these combined criteria; therefore, all cases were retained for the analyses.

The final sample consisted of 700 Italian students from Ca′ Foscari University of Venice. The sample included 504 (72.0%) females, 171 (24.4%) males, and 25 (3.6%) participants who preferred not to disclose their gender. The mean age was 24.4 years ($SD$ = 6.0; $n$ = 697), after excluding three implausible values. Of the total sample, 435 participants were bachelor's degree students (62.1%), and 265 were postgraduate students (37.9%). A chi-square test of independence indicated that gender distribution did not differ significantly between bachelor's and postgraduate students, $\chi^2(2) = 0.50$, $p = 0.780$. Welch's $t$-test indicated that postgraduate students were significantly older than bachelor's students, $t(647.34) = 7.53$, $p < 0.001$, $d = 0.56$.

## 2.3 Ethical considerations

Participation was voluntary and anonymous. Before completing the questionnaire, participants read an informed consent form and provided consent by ticking an acceptance box. The form described the data collection procedures, participants' right to withdraw at any time without consequences, the anonymous and aggregated dissemination of findings, and the researchers' contact details for further questions. All procedures were conducted in accordance with the Declaration of Helsinki (World Medical Association, 2025), and the experimental protocol was approved by the Ethical Commission for Research of Ca′ Foscari University (V.N. 10/2025).

## 2.4 Measures

*PERMA-Profiler*. Wellbeing was assessed using the *PERMA-Profiler* (Butler and Kern, 2016), based on the Italian validation conducted by Giangrasso (2018) and adapted to the university context (Chaves et al., 2023). The instrument included 15 items measuring the five core dimensions of the PERMA model: Positive Emotions, Engagement, Relationships, Meaning, and Accomplishment. Items were rated on an 11-point Likert scale ranging from 0 to 10, with higher scores indicating greater wellbeing. In the present study, the overall wellbeing score was used as the primary outcome variable (Goodman et al., 2017; Giangrasso, 2018; Matera et al., 2024), according to the psychometric performance of the aggregate score in academic settings ($\alpha = 0.94$; $\omega = 0.93$) (Chaves et al., 2023).

*University Mattering Scale (UM-S)*. University Mattering was assessed using the University Mattering Scale (UM-S) (France and Finney, 2010), based on its Italian validation (Matera et al., 2024). The version proposed by Matera et al. (2024) consists of a 10-item scale divided into three dimensions: Awareness (4 items), Importance (4 items), and Reliance (2 items). Each item was rated on a 1–6 scale according to the degree of agreement with each statement (1= "totally disagree"; 6 = "totally agree"). In the structural equation model, a composite index was created for each theoretical sub-dimension, using them as indicators of a single latent University Mattering factor, following the conceptualization of the original scale (Matera et al., 2024; France and Finney, 2010).

*Socio-Emotional-Behavioral Skills (BESSI-I)*. Socio-Emotional-Behavioral skills were assessed using the 45-item version of the BESSI (Sewell et al., 2024), using items from the validated Italian adaptation (Feraco et al., 2024). The five dimensions of Self-Management, Social Engagement, Cooperation, Emotional Resilience, and Innovation each consisted of 9 items, rated on a 1–5 Likert scale on which students evaluated how well they were able to perform the stated activity (1 = not at all; 5 = very well). In accordance with the validation and

common practice when using BESSI-I, the five SEB-Skills were treated as separate predictors (Feraco et al., 2024, 2025; Pellegrino et al., 2026; Soto et al., 2025). Indeed, the original BESSI-45 validation also showed that the five-domain structure may require relatively flexible measurement models, as strict CFA fit varied across samples and improved under targeted ESEM specifications allowing limited cross-loadings among the intentionally broad and partially overlapping domains (Sewell et al., 2024).

## 2.5 Statistical analysis

All analyses were conducted in R (R Core Team, 2025), using lavaan (Rosseel, 2012) for structural equation modeling. Prior to analysis, negatively worded items of the Importance subscale of the University Mattering Scale (UM-S) were reverse-coded so that higher scores indicated greater perceived importance. Each of the five Socio-Emotional and Behavioral skills (SEB) was operationalized as an observed composite, computed as the mean of its nine items. The UM-S was represented by three dimensions corresponding to its subscales (Awareness, Importance, Reliance), each computed as the mean of the relevant items. The PERMA-Profiler was aggregated into a single 15-item composite, representing a global indicator of wellbeing.

The measurement properties of the two main scales were first examined through item-level confirmatory factor analyses (CFAs). The PERMA-Profiler was modeled as a second-order structure, whereas the UM-S was specified as a three-factor correlated structure, in line with the Italian validation (Matera et al., 2024; Giangrasso, 2018). Internal consistency estimates (Cronbach's $\alpha$ and McDonald's $\omega$) for the composites entering the structural model and for the three UM-S sub-dimensions, and Pearson correlations among all model variables are reported in Tables 2, 3; full CFA indices as well as single PERMA dimensions' descriptive statistics are reported in Supplementary material.

The hypothesized mediation model specified the five SEB composites as predictors of latent Mattering, which in turn predicted the PERMA composite. Direct paths from SEB skills to PERMA were also estimated, allowing for partial mediation. The model was estimated using robust maximum likelihood estimation (MLR). To evaluate the robustness of the partial mediation structure, an alternative full mediation model was compared with the partial mediation model using a scaled Satorra-Bentler $\chi^2$ difference test (Satorra and Bentler, 2001), complemented by ΔAIC, ΔBIC, and ΔCFI.

In the retained model, standard errors and 95% confidence intervals for the standardized coefficients ($\beta$) were obtained using non-parametric bootstrapping with 5,000 resamples and percentile-based confidence intervals. Bootstrap estimates ($\beta$, *SE*, 95% CI) are reported in Tables 4, 5. In addition, given the self-report and cross-sectional nature of the data, potential common method variance was examined through Harman's single-factor test and a common latent factor approach (Podsakoff et al., 2003). Multicollinearity among the five SEB predictors was assessed using variance inflation factors (VIFs) (Hair et al., 2019).

Additionally, multi-group structural equation modeling was used to test whether the mediation model generalized across educational levels, comparing Bachelor and Postgraduate students. Measurement invariance of the latent University Mattering factor was assessed sequentially through configural, metric, and scalar models. Invariance was evaluated using changes in approximate fit indices, following the criteria proposed by Cheung and Rensvold (2002) and Chen (2007), with decreases in CFI not exceeding 0.010 and increases in RMSEA not exceeding 0.015 interpreted as indicating negligible worsening in model fit. Satorra–Bentler scaled chi-square difference tests were also reported as complementary evidence (Satorra and Bentler, 2001). After scalar invariance was established, structural comparability across groups was examined by comparing the scalar model with a model in which the structural paths were constrained to equality across groups, using changes in approximate fit indices and the Satorra–Bentler scaled chi-square difference test. In addition, an omnibus Wald test was used to assess whether the set of structural paths differed across groups, followed by exploratory path-specific Wald tests with Holm correction for multiple comparisons. Latent mean differences in University Mattering were estimated under scalar invariance, whereas mean differences in the PERMA composite were tested using Welch's *t*-test.

To estimate the robustness of findings, two sensitivity analyses and a robustness check were conducted. First, the asymmetric treatment of measurement error in the primary model was addressed using two complementary specifications. In a reliability-corrected model, the five SEB domain composites and the overall PERMA composite were represented as single-indicator latent variables, with loadings fixed to 1 and residual variances fixed to $(1 - \omega) \times \mathrm{Var}(X)$ using the reliability coefficients reported in Table 2 (Cole and Preacher, 2014); university mattering retained the same latent specification as in the primary model. In a second specification, the five SEB domains were modeled

TABLE 2 Descriptive statistics and reliability estimates for the variables included in the mediation model.

| Construct | Score | *M* | SD | Skew. | Kurt. | $\alpha$ | $\omega$ |
|---|---|---|---|---|---|---|---|
| Self-Management (SEB) | 1–5 | 3.64 | 0.73 | −0.57 | 0.09 | 0.84 | 0.84 |
| Social Engagement (SEB) | 1–5 | 3.03 | 0.80 | −0.07 | −0.59 | 0.83 | 0.83 |
| Cooperation (SEB) | 1–5 | 3.64 | 0.68 | −0.48 | −0.03 | 0.82 | 0.83 |
| Emotional Resilience (SEB) | 1–5 | 2.93 | 0.82 | 0.08 | −0.42 | 0.87 | 0.87 |
| Innovation (SEB) | 1–5 | 3.39 | 0.72 | −0.12 | −0.33 | 0.81 | 0.81 |
| Awareness (UM–S) | 1–6 | 2.89 | 1.51 | 0.30 | −1.10 | 0.94 | 0.94 |
| Importance (UM–S) | 1–6 | 4.01 | 1.46 | −0.42 | −0.89 | 0.88 | 0.88 |
| Reliance (UM–S) | 1–6 | 2.81 | 1.45 | 0.43 | −0.75 | 0.91 | – |
| Wellbeing (PERMA) | 0–10 | 6.00 | 1.68 | −0.34 | −0.34 | 0.93 | 0.93 |

SEB = Social, Emotional, and Behavioral Skills; UM-S = University Mattering. Score = response scale range. $\alpha$ = Cronbach's alpha; $\omega$ = McDonald's omega. Omega was not computed for Reliance because it consisted of two items.

TABLE 3 Pearson bivariate correlations among the variables included in the mediation model.

| Variable | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 |
|---|---|---|---|---|---|---|---|---|---|
| 1. Self-Management (SEB) | – | 0.446*** | 0.453*** | 0.423*** | 0.352*** | 0.134** | 0.112** | 0.212*** | 0.452*** |
| 2. Social Engagement (SEB) | | – | 0.562*** | 0.435*** | 0.436*** | 0.293*** | 0.202*** | 0.298*** | 0.371*** |
| 3. Cooperation (SEB) | | | – | 0.502*** | 0.459*** | 0.253*** | 0.251*** | 0.269*** | 0.288*** |
| 4. Emotional Resilience (SEB) | | | | – | 0.398*** | 0.237*** | 0.231*** | 0.181*** | 0.429*** |
| 5. Innovation (SEB) | | | | | – | 0.119** | 0.091* | 0.132*** | 0.230*** |
| 6. Awareness (UM–S) | | | | | | – | 0.500*** | 0.518*** | 0.492*** |
| 7. Importance (UM–S) | | | | | | | – | 0.320*** | 0.449*** |
| 8. Reliance (UM–S) | | | | | | | | – | 0.369*** |
| 9. Wellbeing (PERMA) | | | | | | | | | – |

SEB = Social, Emotional, and Behavioral Skills; UM-S = University Mattering. Values are Pearson correlation coefficients. *$p < 0.05$, **$p < 0.01$, ***$p < 0.001$.

as multi-indicator latent factors using the published BESSI-45 item-level measurement structure, including the prespecified interstitial cross-loadings and within-facet residual covariances (Sewell et al., 2024). University mattering was again left unchanged, whereas overall PERMA wellbeing was represented as a reliability-corrected single-indicator latent outcome.

Second, to examine whether the association between university mattering and wellbeing was influenced by the potential overlap with the Relationships component of PERMA, the primary model was re-estimated using a 12-item wellbeing composite excluding the three Relationships items.

Finally, as a robustness check, the primary model was re-estimated including age and gender simultaneously as covariates of both university mattering and overall wellbeing. This analysis was conducted on 673 complete cases, excluding participants with missing age data and those preferring not to disclose gender, given the small size of these categories.

All sensitivity models followed the same analytic framework as the primary analysis. Complete estimates of the two sensitivity analyses on measurement error and reduced PERMA are reported in Supplementary Tables S4, S5.

# 3 Results

## 3.1 Preliminary analyses and model selection

Descriptive statistics (*M*, SD, skewness, and kurtosis), reliability estimates (Cronbach's alpha and McDonald's omega) are reported in Table 2. Pearson bivariate correlations among the variables included in the mediation model are reported in Table 3. The composite measures showed satisfactory reliability, with both Cronbach's α and McDonald's ω values ranging from 0.81 to 0.94.

Preliminary item-level CFA models were conducted as supplementary measurement checks. The second-order CFA of the *PERMA-Profiler* showed an acceptable fit to the data, $\chi^2(85) = 343.04$, $p < 0.001$, CFI = 0.953, TLI = 0.942, RMSEA = 0.075, 90% CI [0.067, 0.083], SRMR = 0.035, although RMSEA indicated some departure from close fit. These results were broadly consistent with the expected five-domain structure and provided support for the use of an overall wellbeing composite in the present mediation model. For University Mattering, the item-level CFA showed a good fit to the data, $\chi^2(32) = 65.04$, $p < 0.001$, CFI = 0.993, TLI = 0.990, RMSEA = 0.041, 90% CI [0.027, 0.055], SRMR = 0.022, supporting the expected three-factor structure. Accordingly, the three subscale scores—Awareness, Importance, and Reliance—were used as indicators of a global latent University Mattering factor in the mediation model. Full item-level CFA results are reported in Supplementary material.

Model fit comparison favored the partially mediated model, which showed a significantly better fit than the fully mediated model ($\Delta\chi^2(5) = 140.60$, $p < 0.001$; ΔCFI = 0.146, ΔTLI = 0.203, ΔRMSEA = −0.059, ΔSRMR = −0.029, ΔAIC = −139.57; ΔBIC = −116.82).

The partially mediated model was therefore retained, showing an acceptable to good overall fit to the data, $\chi^2(12) = 42.32$, $p < 0.001$, robust CFI = 0.966, robust TLI = 0.927, robust RMSEA = 0.063, 90% CI [0.043, 0.084], SRMR = 0.026. VIF values ranged from 1.40 for Innovation to 1.80 for Cooperation, indicating no problematic multicollinearity among the predictors. Harman's single-factor test yielded a first unrotated factor accounting for 23% of the variance, and a common latent factor extracted on average 16% of the variance, both below the 50% threshold.

## 3.2 Associations between SEB skills, university mattering, and wellbeing

Table 4 shows the direct effects of the model. Among the SEB Skill composites, Social Engagement showed the strongest positive association with UM-S ($\beta = 0.259$, $SE = 0.054$, 95% CI [0.151, 0.365]), followed by Cooperation ($\beta = 0.189$, $SE = 0.054$, 95% CI [0.085, 0.297]) and Emotional Resilience ($\beta = 0.153$, $SE = 0.051$, 95% CI [0.051, 0.254]). By contrast, Self-Management ($\beta = -0.031$, $SE = 0.051$, 95% CI [−0.132, 0.070]), and Innovation ($\beta = -0.089$, $SE = 0.048$, 95% CI [−0.185, 0.005]) did not show significant association with UM-S. UM-S was strongly and positively associated with overall wellbeing ($\beta = 0.560$, $SE = 0.040$, 95% CI [0.484, 0.640]). The direct associations between the SEB Skill composites and overall wellbeing showed that Self-Management ($\beta = 0.320$, $SE = 0.034$, 95% CI [0.254, 0.388]) and Emotional Resilience ($\beta = 0.187$, $SE = 0.037$, 95% CI [0.117, 0.259]) were positively associated with wellbeing. Surprisingly, Cooperation showed a negative direct association with wellbeing ($\beta = -0.174$, $SE = 0.041$, 95% CI [−0.255, −0.096]), whereas Social Engagement ($\beta = 0.023$, $SE = 0.039$, 95% CI [−0.053, 0.102]) and Innovation ($\beta = 0.022$, $SE = 0.037$, 95% CI [−0.050, 0.096]) did not show significant direct effects. Overall, the model explained 19.3% of

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TABLE 4 Direct effects from the retained partially mediated model.

| Relation | *B* | *β* | SE | 95% Boot. CI | |
|---|---|---|---|---|---|
| | | | | LL | UL |
| Self-Management → Mattering | −0.047 | −0.031 | 0.051 | −0.132 | 0.070 |
| Social Engagement → Mattering | 0.362 | **0.259** | 0.054 | 0.151 | 0.365 |
| Cooperation → Mattering | 0.309 | **0.189** | 0.054 | 0.085 | 0.297 |
| Emotional Resilience → Mattering | 0.207 | **0.153** | 0.051 | 0.051 | 0.254 |
| Innovation → Mattering | −0.137 | −0.089 | 0.048 | −0.185 | 0.005 |
| Mattering → Wellbeing | 0.843 | **0.560** | 0.040 | 0.484 | 0.640 |
| Self-Management → Wellbeing | 0.730 | **0.320** | 0.034 | 0.254 | 0.388 |
| Social Engagement → Wellbeing | 0.048 | 0.023 | 0.039 | −0.053 | 0.102 |
| Cooperation → Wellbeing | −0.427 | **−0.174** | 0.041 | −0.255 | −0.096 |
| Emotional Resilience → Wellbeing | 0.383 | **0.187** | 0.037 | 0.117 | 0.259 |
| Innovation → Wellbeing | 0.052 | 0.022 | 0.037 | −0.050 | 0.096 |

*B* = unstandardized point estimate; *β* = fully standardized bootstrap estimate; SE and 95% CI (percentile, 5,000 resamples) refer to *β*. Bolded *β* values indicate that the 95% bootstrap CI excludes zero.

TABLE 5 Indirect and total effects of SEB skills on wellbeing via university mattering.

| Effect | *B* | *β* | SE | 95% Boot. CI | |
|---|---|---|---|---|---|
| | | | | LL | UL |
| Indirect effects (SEB Skill → Mattering → Wellbeing) | | | | | |
| Self-Management | −0.040 | −0.017 | 0.029 | −0.075 | 0.039 |
| Social Engagement | 0.305 | **0.145** | 0.032 | 0.084 | 0.210 |
| Cooperation | 0.261 | **0.106** | 0.033 | 0.046 | 0.175 |
| Emotional Resilience | 0.175 | **0.085** | 0.029 | 0.029 | 0.145 |
| Innovation | −0.115 | −0.050 | 0.028 | −0.107 | 0.003 |
| Total effects on wellbeing (direct + indirect) | | | | | |
| Self-Management | 0.690 | **0.302** | 0.038 | 0.227 | 0.374 |
| Social Engagement | 0.353 | **0.168** | 0.043 | 0.084 | 0.253 |
| Cooperation | −0.166 | −0.067 | 0.045 | −0.155 | 0.020 |
| Emotional Resilience | 0.557 | **0.273** | 0.041 | 0.192 | 0.355 |
| Innovation | −0.063 | −0.027 | 0.042 | −0.108 | 0.056 |

*B* = unstandardized point estimate; *β* = fully standardized bootstrap estimate; SE and 95% CI (percentile, 5,000 resamples) refer to *β*. Bolded *β* values indicate that the 95% bootstrap CI excludes zero.

the variance in University Mattering ($R^2 = 0.193$) and 54.4% of the variance in the composite PERMA wellbeing ($R^2 = 0.544$).

## 3.3 Mediation effect of university mattering

University Mattering (UM-S) significantly mediated the associations between specific SEB Skills and PERMA overall wellbeing. Significant positive indirect associations were observed for Social Engagement ($\beta = 0.145$, $SE = 0.032$, 95% CI [0.084, 0.210]), Cooperation ($\beta = 0.106$, $SE = 0.033$, 95% CI [0.046, 0.175]), and Emotional Resilience ($\beta = 0.085$, $SE = 0.029$, 95% CI [0.029, 0.145]). By contrast, the indirect associations of Self-Management ($\beta = -0.017$, $SE = 0.029$, 95% CI [−0.075, 0.039]) and Innovation ($\beta = -0.050$, $SE = 0.028$, 95% CI [−0.107, 0.003]) were not statistically significant. Table 5 shows both indirect and total effects.

## 3.4 Multi-group analysis across educational levels

The model showed an acceptable to good fit when estimated separately in each group (Bachelor: robust CFI = 0.982, robust TLI = 0.961, robust RMSEA = 0.047, SRMR = 0.021; Postgraduate: robust CFI = 0.973, robust TLI = 0.941, robust RMSEA = 0.054, SRMR = 0.029). Tests of measurement invariance supported full scalar invariance of the latent UM–S across groups, with changes in approximate fit indices within recommended thresholds (Configural → Metric: ΔCFI = −0.002, ΔRMSEA = 0.000; Metric → Scalar: ΔCFI = −0.004, ΔRMSEA = 0.001), and non-significant Satorra–Bentler scaled chi-square difference tests (metric: $p = 0.213$; scalar: $p = 0.085$). The constrained structural model also showed acceptable fit and only minimal changes in approximate fit indices relative to the scalar model

(ΔCFI = −0.008, ΔRMSEA = −0.002, ΔSRMR = 0.007), with a marginal but non-significant scaled chi-square difference test, $\Delta\chi^2(11) = 19.10$, $p = 0.059$. Although the omnibus Wald test suggested some degree of structural heterogeneity, $\chi^2(11) = 20.58$, $p = 0.038$, exploratory path-specific tests did not identify robust group differences after correction for multiple comparisons. Overall, the structural pattern was therefore interpreted as broadly comparable across educational levels.

The model explained comparable amounts of variance in both groups (Mattering: $R^2 = 0.20$ vs. 0.21; PERMA: $R^2 = 0.54$ vs. 0.57). Comparisons of construct levels likewise revealed no significant differences in Mattering ($\Delta M = -0.43$, $p = 0.491$) or PERMA (Welch t-test: $\Delta M = 0.17$, $p = 0.206$).

## 3.5 Sensitivity and robustness analyses

Across the alternative measurement specifications, the central pattern for Social Engagement, Emotional Resilience, and Self-Management was preserved (Supplementary Table S4). Cooperation and Innovation were less stable: the indirect association for Cooperation was not significant in the latent-SEB model ($\beta = 0.098$, 95% CI [−0.030, 0.236]), while its total effect became significantly negative in both alternative specifications ($\beta = -0.163$, 95% CI [−0.303, −0.032] in the reliability-corrected model; $\beta = -0.222$, 95% CI [−0.439, −0.040] in the latent-SEB model); for Innovation, a significant negative indirect effect emerged only in the reliability-corrected model ($\beta = -0.087$, 95% CI [−0.169, −0.017]).

Excluding the Relationships component from PERMA reduced the mattering–wellbeing association from $\beta = 0.560$, 95% CI [0.484, 0.640], to $\beta = 0.375$, 95% CI [0.290, 0.457], while the significant indirect effects for Social Engagement ($\beta = 0.097$, 95% CI [0.055, 0.145]), Cooperation ($\beta = 0.067$, 95% CI [0.024, 0.115]), and Emotional Resilience ($\beta = 0.056$, 95% CI [0.019, 0.096]) were attenuated but retained (Supplementary Table S5); the total effect of Cooperation became significantly negative ($\beta = -0.163$, 95% CI [−0.247, −0.076]).

Finally, adjustment for age and gender yielded a central pattern consistent with the primary model, although the total effect of Cooperation again became significantly negative ($\beta = -0.101$, 95% CI [−0.189, −0.013]). Age was negatively associated with university mattering ($\beta = -0.188$, 95% CI [−0.273, −0.109]), whereas the remaining demographic covariate paths were nonsignificant.

# 4 Discussion

The present study examined whether university mattering accounts for the associations between the five SEB skill domains and overall PERMA-based wellbeing among university students, and whether this pattern was comparable across academic levels. Overall, the findings positioned university mattering as a relevant correlate of students' wellbeing and revealed a differentiated pattern in which SEB skills were associated with wellbeing through distinct pathways.

Regarding the direct associations between SEB skills and overall wellbeing (RQ1), self-management and emotional resilience were positively associated with PERMA wellbeing, thereby partially supporting H1. These associations are consistent with prior evidence identifying self-management as a key correlate of goal-oriented functioning (Sharabi et al., 2025; Beatty et al., 2025) and emotional resilience as a recurrent correlate of hedonic wellbeing and life satisfaction (Feraco et al., 2025; Soto et al., 2025; Pellegrino et al., 2026). Self-management skills refer to the capacity to define goals, organize time and tasks effectively, and persist in working toward them (Napolitano et al., 2021; Yoon et al., 2024). These resources may strengthen students' sense of self-efficacy (Sharabi et al., 2025), which, in turn, can enhance both their sense of achievement (Feraco et al., 2025) and their engagement in meaningful, purpose-oriented actions (Beatty et al., 2025). In this sense, self-management may represent an important resource for both hedonic and eudaimonic outcomes (Soto et al., 2025; Feraco et al., 2025; Beatty et al., 2025; Sharabi et al., 2025). Emotional resilience refers to the ability to regulate and manage one's emotional experiences, closely related to emotional stability as opposed to neuroticism (Diener et al., 1999). This ability may function as both a buffer and a self-regulatory resource, helping protect students' internal world by supporting the management of stress, anxiety, and anger (Pellegrino et al., 2026; Feraco et al., 2025; Soto et al., 2025). Indeed, Pellegrino et al. (2026) found that emotional resilience was not only the skill most strongly associated with life satisfaction, but also the most important protective factor against burnout among university students across the five SEB domains. The positive direct associations of both Self-Management and Emotional Resilience with wellbeing were retained across the alternative measurement specifications, supporting the robustness of these findings.

However, a more complex pattern emerged for cooperation and social engagement. Contrary to H1, cooperation showed a negative direct association with wellbeing and a positive indirect association through mattering. These two pathways had opposite signs, resulting in a non-significant total association in the primary model. Social engagement, in turn, did not show a positive direct association with wellbeing, but showed an indirect-only association through university mattering. The pattern observed for cooperation is consistent with competitive mediation or suppression, whereby the direct and indirect components operate in opposite directions. A similar negative direct pattern was reported by Pellegrino et al. (2026). From a person–environment fit perspective, highly cooperative students may experience strain or frustration in academic contexts that provide limited opportunities for collaborative engagement (Pawlowska et al., 2014; Collie and Martin, 2024b). Since mattering captures not only the degree of environmental acceptance, but also the need for individual centrality and recognition within the environment (Matera et al., 2024; Flett, 2021), within a reciprocal mechanism (Prilleltensky, 2019), it is possible that the activation of cooperative skills, oriented toward group goals, perspective taking, and group work, needs to be translated into environmental recognition in order to be translated into wellbeing (Pellegrino et al., 2026). Conversely, when this mechanism is not activated, the residual negative association may reflect the effort required to remain cooperative and group-oriented in an environment that does not adequately recognize the individual and their contributions (Pawlowska et al., 2014; Casali and Meneghetti, 2023; Pellegrino et al., 2026). This interpretation is consistent with the potentially maladaptive outcomes that may emerge when personal resources are not supported by the environment (Collie and Martin, 2024a). Nevertheless, the sensitivity analyses showed that the positive indirect association of Cooperation was not retained when the SEB domains were modeled as latent factors, while its total association became significantly negative across the alternative specifications and after excluding Relationships from PERMA. Thus, the person–environment fit explanation should be considered tentative, as the sign reversal may also partly reflect statistical suppression due to shared variance among correlated SEB domains. Future studies should better

disentangle the unique and shared contributions of Cooperation and clarify the conditions under which its association with wellbeing varies.

A related mechanism may also help explain why no direct association was found for social engagement, despite its positive indirect association with wellbeing through university mattering. Indeed, while social engagement may function as an agentic resource for visibility and relationship-building, cooperation may represent a more "costly" competency (Feraco et al., 2025; Pellegrino et al., 2026), for which recognition from the environment plays a particularly important role. This interpretation is consistent with the "bridge" mechanism proposed in Sharabi et al. (2025), according to which interpersonal skills may require an intervening psychological state to translate into satisfaction. In the present study, university mattering represented one potential psychosocial pathway linking social engagement to wellbeing, with this indirect-only pattern remaining stable across the alternative measurement specifications.

In the primary model, university mattering was positively associated with cooperation, social engagement, and emotional resilience (RQ2), thereby supporting H2. This pattern is coherent with the interpersonal nature of mattering: prior work has linked relational and emotion-regulatory capacities to relationship quality, peer acceptance, and social status (DesJardins et al., 2015; Vater and Schröder–Abé, 2015; Andrei et al., 2015), with cooperation representing a crucial component of peer acceptance (Feraco et al., 2025). Similarly, previous findings on personality traits have associated mattering with higher extraversion and agreeableness, as well as with lower neuroticism (Flett et al., 2016; Besser et al., 2022; Flett, 2021). Therefore, in line with the definition of mattering and with the nature of these three SEB skill domains, emotional self-regulation, cooperative competencies, and social engagement may be relevant for building and reinforcing students' sense of mattering. However, this association was more consistently supported across measurement specifications for Social Engagement and Emotional Resilience than for Cooperation.

Consistently, mattering also accounted for significant indirect associations with overall PERMA wellbeing for social engagement, cooperation, and emotional resilience in the primary model (RQ3, H4). While the more complex patterns observed for cooperation and social engagement have already been discussed, emotional resilience showed both direct and indirect associations with wellbeing through university mattering. These results are consistent with the idea that emotional resilience may support wellbeing through a dual pathway: directly, by reducing the immediate impact of negative emotions, stress, and anxiety (Soto et al., 2022a; Feraco et al., 2025; Pellegrino et al., 2026, 2025), and indirectly, by preserving students' sense of mattering, thereby allowing internal stability to translate into a more enduring perception of value and belonging (Paradisi et al., 2024; Matera et al., 2024; Flett et al., 2016; Flett, 2021). Notably, the indirect associations for Social Engagement and Emotional Resilience remained significant across the alternative measurement specifications. They also remained significant when the Relationships component was excluded from PERMA, although both the association between mattering and wellbeing and the corresponding indirect effects were attenuated. Thus, the overlap between mattering and relational wellbeing appears to contribute to the magnitude of these associations without fully accounting for them. By contrast, Innovation did not show a consistent indirect association across measurement specifications.

The positive association between mattering and wellbeing also supported H3. However, this association was attenuated when the Relationships component was excluded from PERMA ($\beta = 0.560$ in the primary model vs. $\beta = 0.375$ in the sensitivity analysis), suggesting that some shared relational content contributes to the strength of the association without fully accounting for it. Moreover, the modest proportion of variance explained in university mattering suggests that it should be regarded as one relevant psychosocial pathway rather than a central or exhaustive mechanism linking SEB skills to wellbeing. This more circumscribed interpretation remains consistent with the conceptualization of mattering as an important psychological need associated with identity and personal value (Flett et al., 2019, 2016), lower vulnerability (Schlossberg, 1989), and self-esteem and goal-oriented action (France and Finney, 2010), as well as with its widely recognized positive association with both hedonic and eudaimonic components of wellbeing (Paradisi et al., 2024).

Finally, although the covariate analysis conducted on a subsample showed a small negative association between age and university mattering, potentially consistent with developmental variation in needs for recognition, belonging, and significance across life stages (Flett et al., 2019; Flett, 2021; Cao et al., 2025), the multi-group analysis (RQ4) indicated that the overall structure of associations was broadly comparable between Bachelor and Postgraduate students. These analyses should be considered complementary rather than directly comparable, as they addressed different questions and were conducted on different analytic samples. Although the omnibus multi-group test suggested some degree of structural heterogeneity, no path-specific group difference remained significant after Holm correction, and the model explained similar proportions of variance in mattering and wellbeing across groups; neither latent mattering nor PERMA wellbeing differed significantly across educational levels. This pattern is consistent with the view that, although perceptions and needs for mattering may vary across developmental and educational stages (Flett et al., 2019; Flett, 2021; Cao et al., 2025), mattering remains a relevant psychosocial resource associated with wellbeing (Paradisi et al., 2024; Matera et al., 2024) and may become particularly salient in the university context as students face greater autonomy and reduced structured support (Cao et al., 2025). Within the SEB skills framework, the findings are therefore compatible with the idea that social–emotional skills operate as functional personal capacities whose associations with wellbeing may involve context-sensitive psychosocial mechanisms such as mattering (Soto et al., 2020; Feraco et al., 2025; Pellegrino et al., 2026), while remaining broadly similar across educational stages. However, the significant omnibus test precludes conclusions of complete structural equivalence, and future studies should examine more directly whether these pathways vary across degree levels.

Taken together, these results are consistent with conceptualizations of psychological needs as one potential pathway through which individual capacities may be associated with wellbeing (Orkibi and Ronen, 2017). More broadly, they suggest that personal skills may relate to wellbeing both directly and through psychosocial processes within the university context (Collie and Martin, 2024a,b; Feraco et al., 2025; Sharabi et al., 2025; Casali and Meneghetti, 2023). However, the sensitivity analyses indicate that these pathways were not equally robust across SEB domains: the patterns involving Social Engagement, Emotional Resilience, and Self-Management were comparatively stable, whereas those involving Cooperation and Innovation were more dependent on measurement specification.

## 5 Theoretical and practical implications

From a theoretical standpoint, this study seeks to connect the SEB skills taxonomy (Soto et al., 2020) with overall PERMA-based wellbeing (Seligman, 2011; Butler and Kern, 2016) through the lens

of university mattering (France and Finney, 2010; Matera et al., 2024). In particular, the study responds to recent calls for a more in-depth examination of how different psychosocial mechanisms may shape the complex dynamics between individual resources and students' overall wellbeing (Collie and Martin, 2024a,b). The findings support previous work suggesting that SEB skills may relate to wellbeing not only directly, but also through psychosocial processes that can function as intermediate pathways to wellbeing-related outcomes (Feraco et al., 2025; Beatty et al., 2025; Sharabi et al., 2025; Orkibi and Ronen, 2017). Within this framework, our results support the relevance of university mattering as one such psychosocial dimension, consistent with authors who conceptualize mattering as a basic psychological need (Flett et al., 2019; Prilleltensky, 2019).

These findings contribute to the ongoing debate about which psychological needs or psychosocial dimensions may help bridge SEB skills and wellbeing, while also highlighting how different SEB domains may relate to wellbeing through distinct pathways. Indeed, while the findings for self-management and emotional resilience were consistent with previous evidence (Soto et al., 2025; Pellegrino et al., 2026; Feraco et al., 2025; Beatty et al., 2025), a more complex pattern emerged for social engagement and cooperation. In particular, the negative direct association of Cooperation with overall wellbeing, alongside its positive indirect association through mattering in the primary model, may tentatively suggest that cooperative capacities are more beneficial when expressed within an environment that recognizes and values the student. Conversely, when such recognition is lacking, less adaptive outcomes may emerge (Casali and Meneghetti, 2023; Collie and Martin, 2024a), potentially contributing to negative psychological consequences (Pellegrino et al., 2026; Pawlowska et al., 2014). However, because the Cooperation pathways were sensitive to measurement specification, this interpretation should remain tentative and may partly reflect statistical suppression rather than a stable substantive mechanism. In line with previous studies (Feraco et al., 2025; Casali and Meneghetti, 2023), these findings more generally suggest that domain-related psychosocial processes may alter the pattern of associations between personal resources and academic or life outcomes (Sharabi et al., 2025). In the present study, Social Engagement showed a consistent indirect-only association with wellbeing through university mattering across the alternative measurement specifications.

Additionally, both SEB skills and university mattering are conceptualized as malleable dimensions that may represent potential targets for intervention (Soto et al., 2025; Flett, 2021). This also points to the practical relevance of the present findings, as recent research has highlighted socio-emotional competencies as an important component of flourishing, including through their crossover effects on more technical competencies (Collie and Martin, 2024a,b). In line with Flett et al. (2019), universities may therefore benefit from providing students with roles and opportunities that strengthen their sense of mattering and responsibility within the academic environment. More broadly, since SEB skills represent malleable resources that can be targeted through intervention, the present study is consistent with the view that skills training and wellbeing-oriented psychoeducational programs may constitute meaningful components of the university experience (Casali and Meneghetti, 2023; Feraco et al., 2025; Soto et al., 2025). At the same time, the measurement sensitivity observed for some domain-specific pathways suggests that the present study may provide a useful starting point for future research aimed at further clarifying when and for which SEB domains university mattering operates as a relevant pathway to wellbeing.

## 6 Limitations and future research

This study has several limitations that should be considered when interpreting the results. First, the cross-sectional and correlational design does not allow the causal direction of the modeled associations to be established. The hypothesized ordering of SEB skills, mattering, and wellbeing was theoretically grounded, and the data were consistent with this mediation pattern; however, the design cannot rule out reciprocal or reverse relations. Therefore, the indirect effects should be interpreted as associations compatible with the proposed model rather than as evidence of causal mediation. Longitudinal or experimental designs are needed to test the directionality of these relations. Second, all measures were self-reported and collected through a single instrument, raising the possibility of common method variance, although Harman's single-factor test and the common latent factor approach did not provide clear evidence of substantial bias. Third, wellbeing was modeled as an aggregate PERMA score, consistent with its established use (Butler and Kern, 2016; Giangrasso, 2018), whereas university mattering was modeled as a higher-order latent factor, in line with its dual operationalization (Matera et al., 2024). Although the supplementary second-order CFA provided generally acceptable support for the aggregation of PERMA dimensions, its RMSEA indicated some departure from close fit. Moreover, the asymmetric treatment of measurement error in the primary model represents a methodological limitation, although the central pattern involving Social Engagement, Emotional Resilience, and Self-Management was preserved across alternative measurement specifications. Future studies may further examine these associations using alternative multidimensional measurement models. Fourth, the sensitivity analyses indicated lower stability of the Cooperation and Innovation pathways across alternative model specifications. Accordingly, the corresponding coefficients should be interpreted with caution, as these associations may be more sensitive to measurement choices and to the partitioning of shared variance among correlated SEB domains. The unexpected negative direct association between cooperation and wellbeing, although consistent with prior evidence (Pellegrino et al., 2026), was interpreted *post hoc* through a person–environment fit lens (Pawlowska et al., 2014) and should be tested directly, ideally by assessing features of the academic environment that may moderate this association. Fifth, some conceptual overlap between university mattering and the Relationships component of the PERMA-Profiler should be acknowledged. Excluding Relationships attenuated the association between mattering and overall wellbeing, as well as the corresponding indirect effects, suggesting that shared relational content contributes to their magnitude. However, these associations remained statistically significant, indicating that the observed mediation pattern was not solely attributable to this overlap. Sixth, the sample was drawn from a single university, restricted to native Italian-speaking students, and characterized by an unbalanced gender distribution. These features may limit the generalizability of the findings beyond the specific institutional and demographic context examined. As participation was voluntary, self-selection may also have influenced the composition of the sample. Future studies should therefore replicate these findings across institutions and linguistic and cultural contexts, using more demographically balanced and heterogeneous samples. Seventh, from a methodological perspective, the UM-S Reliance subscale comprises only two items, as defined in the validated scale by Matera et al. (2024), which precluded computing McDonald's ω and limited

assessment of its internal consistency. Finally, the model explained only a modest proportion of variance in university mattering ($R^2 = 0.193$), indicating that mattering should be considered one relevant pathway rather than an exhaustive mechanism linking SEB skills to wellbeing. Future research should therefore examine additional contextual, relational, and psychosocial predictors of students' sense of mattering.

## 7 Conclusion

This study sought to connect the recently proposed taxonomy of social, emotional, and behavioral skills with overall PERMA-based wellbeing among university students, examining university mattering as a potential socio-relational pathway. Across the primary and sensitivity analyses, a comparatively consistent pattern emerged for Self-Management, Social Engagement, and Emotional Resilience: Self-Management showed a direct association with wellbeing, Social Engagement an indirect-only association through mattering, and Emotional Resilience both direct and indirect associations. By contrast, the pathways involving Cooperation and Innovation were more sensitive to measurement specification and should therefore be interpreted cautiously. University mattering was consistently positively associated with wellbeing, although this association was attenuated when the Relationships component of PERMA was excluded, suggesting that mattering represents one relevant, but not exhaustive, psychosocial pathway linking personal resources to student wellbeing. The overall pattern was broadly comparable across bachelor's and postgraduate students, although some residual structural heterogeneity across educational levels cannot be excluded. Given the cross-sectional design, these findings should not be interpreted causally, but they highlight the value of considering both students' personal resources and their perceptions of being noticed, valued, and relied upon within the academic environment. Future longitudinal and intervention-based research may build on these findings to clarify when, and for which SEB domains, university mattering contributes to student wellbeing.

## Data availability statement

The raw data supporting the conclusions of this article will be made available by the authors, without undue reservation.

## Ethics statement

The studies involving humans were approved by the Ethical Commission for Research of Ca′ Foscari University (V.N. 10/2025). The studies were conducted in accordance with the local legislation and institutional requirements. The participants provided their written informed consent to participate in this study. Written informed consent was obtained from the individual(s) for the publication of any potentially identifiable images or data included in this article.

## Author contributions

AF: Conceptualization, Investigation, Data curation, Formal analysis, Methodology, Writing – original draft and Writing – review & editing. VM: Conceptualization, Validation, Writing – original draft and Writing – review & editing. VR: Validation, Supervision, Writing – review & editing. AJ: Project administration, Resources, Validation, Supervision, Funding acquisition, Writing – review & editing.

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## Conflict of interest

The author(s) declared that this work was conducted in the absence of any commercial or financial relationships that could be construed as a potential conflict of interest.

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## Supplementary material

The Supplementary material for this article can be found online at: https://www.frontiersin.org/articles/10.3389/fpsyg.2026.1926451/full#supplementary-material

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