



## Sense of purpose and academic engagement: The mediating role of future orientation

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**Abstract:** This study examined the role of future orientation in the association between sense of purpose and academic engagement among university students. Using a cross-sectional design, data were collected from 1174 undergraduate students (females = 64.4%) across five universities in China. Participants completed well-validated scales assessing sense of purpose, future orientation, and academic engagement. Mediation analyses showed that sense of purpose was associated with higher academic engagement, with future orientation partially mediating this association to be stronger. The indirect effect of sense of purpose on academic engagement through future orientation accounted for 33.8% of the total effect, indicating partial mediation with a practically meaningful indirect pathway. Specifically, students with a stronger sense of purpose were more likely to adopt future-oriented cognitive and behavioral strategies, which in turn facilitated sustained academic engagement. These findings provide empirical support for a motivational-self-regulatory pathway consistent with Goal-Setting Theory, demonstrating that purpose-related meaning enhances academic engagement through future-oriented cognition and planning. These findings suggest that educators and counselors could foster students' sense of purpose to encourage future-oriented thinking, thereby promoting sustained academic engagement.

**Keywords:** sense of purpose; academic engagement; future orientation; university students

### Introduction

Purpose in learning would be important to learning gains. Research has shown that when students hold a self-transcendent purpose for learning, they achieve higher GPAs in their courses and demonstrate greater self-regulation and persistence when facing tedious tasks (Yeager et al., 2014). Extending this line of research, recent studies with university students indicate that higher levels of purpose not only enhance academic performance and strengthen persistence in learning (Alderson et al., 2025a), but also directly predict students' enthusiasm and engagement in school-related activities (Yukhymenko-Lescroart & Sharma, 2022). However, how and what a learner perceives to be his or her futures would explain the strength of this relationship. Specifically, the level of future cognition significantly affects students' learning engagement: students who clearly plan, anticipate potential outcomes, and concretely envision their goals are more likely to devote effort and time, exhibiting higher levels of academic engagement (Peng & Zhang, 2022; Torres et al., 2024). Equally important is the content of future cognition. When students have a clear understanding of the significance of their future goals, such as career development or personal growth, they demonstrate higher initiative and engagement in learning while showing lower levels of disengagement (Burns et al., 2021). Thus, individuals' perceptions of their own future play a crucial role in translating purpose in learning into academic engagement, highlighting the need for studies examining how sense in learning and academic engagement may be explained by specific dimensions of future orientations. We aimed to examine this relationship in collectivistic Chinese culture.

### Sense of purpose and academic engagement

Sense of purpose refers to individuals' subjective perception of the personal significance and meaning of their goals (Ryff, 1989, 2013). According to Goal-Setting Theory, clearly defined goals play a regulatory role in guiding individuals' effort intensity and persistence (Locke & Latham, 2002). Sustained performance is promoted when goals are specific, future-oriented in time horizon, and supported by self-regulation processes such as planning, monitoring, and persistence. Conceptually, sense of purpose provides a meaningful long-term direction that strengthens goal commitment and persistence. Future orientation, in turn, reflects the temporality of goal pursuit by linking present actions to valued future outcomes and translating broad aims into more specific plans. Through these processes, future-oriented cognition and planning can facilitate self-regulation during academic goal pursuit. Existing empirical studies further support this theoretical framework, documenting a positive association between sense of purpose and academic engagement. For instance, Alderson et al. (2025b) found that a stronger sense of purpose predicted better university performance and lower attrition, suggesting that purpose may support sustained academic investment among university students. Similarly, Burrow et al. (2018) showed that adolescents whose sense of purpose was experimentally activated exhibited greater behavioral initiative and learning engagement compared with control groups. Taken together, these findings highlight the motivational function of sense of purpose and suggest that students with a stronger sense of purpose are more likely to demonstrate higher levels of academic engagement.



### ***The mediating role of future orientation***

Future orientation refers to individuals' tendency to anticipate, plan for, and invest in future goals through cognitive representations and behavioral action (Liu et al., 2010; Seginer & Lens, 2015). Conceptually, future orientation is related to but distinct from future time perspective (the extent to which individuals perceive the future as expansive/limited) and consideration of future consequences (the tendency to prioritize delayed outcomes). Future orientation emphasizes goal-related representations and future-directed actions, which makes it well-suited for explaining sustained academic investment (Nurmi, 1991; Seginer, 2000). According to the motivational-cognitive-behavioral framework proposed by Seginer (2000), future orientation comprises three interrelated processes: motivational drive, cognitive representations of imagined futures, and future-directed behavioral engagement. Within this framework, sense of purpose can be conceptualized as a core motivational resource that activates and organizes future-oriented cognitive and behavioral processes. Empirical evidence supports this theoretical linkage. For example, Do et al. (2025) found that students with a stronger sense of purpose reported greater clarity in future planning and engaged more frequently in future-oriented behaviors. These findings collectively indicate that a strong sense of purpose may play a formative role in shaping students' future orientation.

Moreover, future orientation is closely associated with individuals' behavioral investment in academic and career-related domains. Prior research shows that future-oriented students are more likely to sustain learning engagement and to invest in career-related preparation and employability development (Peng & Zhang, 2022; Shen et al., 2024). They are also more likely to persist in learning activities and maintain sustained effort over time (Hill et al., 2016). Because future orientation links long-term goals to near-term decisions (e.g., prioritizing studying today to achieve future academic/career outcomes), it may serve as a proximal mechanism translating purpose-related meaning into day-to-day engagement behaviors. Overall, these findings suggest that future orientation is positively related to academic engagement and may function as a key psychological mechanism through which sense of purpose promotes sustained academic engagement.

Based on Goal-Setting Theory and the motivational-cognitive-behavioral framework, a sense of purpose provides the motivational "why" for learning by giving meaning to study behaviors through long-term goals. Future orientation translates this purpose into concrete cognitive and behavioral strategies, enabling individuals to sustain effort and engagement. In this framework, future orientation functions as a proximal mechanism linking purpose to ongoing investment in learning. Empirical evidence indicates that future orientation operates at both cognitive and behavioral levels. At the cognitive level, students with a stronger future orientation actively evaluate the relevance of their current study behaviors to long-term goals and strategically delay immediate gratification to support sustained learning effort, thereby translating the motivational significance provided by a sense of purpose into concrete learning strategies (Liu et al., 2023). At the

behavioral level, future orientation helps students recognize the link between current effort and future outcomes, enhancing persistence in academic tasks, completion of assignments, and proactive participation in classroom activities (Torres et al., 2024). Overall, future orientation functions through intertwined cognitive and behavioral pathways, concretizing a sense of purpose and facilitating its translation into sustained academic engagement.

### ***Goal of the study***

Grounded in Goal-Setting Theory and the motivational-cognitive-behavioral framework of future orientation, the present study aims to examine whether future orientation mediates the relationship between sense of purpose and academic engagement among university students. Based on the theoretical framework and prior empirical evidence, the following hypotheses are proposed:

*Hypothesis 1: Sense of purpose is positively associated with academic engagement.*

*Hypothesis 2: Future orientation mediates the relationship between sense of purpose and academic engagement.*

By testing this mediation model, the present study moves beyond simple associations and provides a process-based explanation of how an internal motivational resource can be converted into sustained academic engagement.

## **Method**

### ***Participants and setting***

A total of 1174 undergraduate students from Fujian, Guangdong, and Anhui provinces in China were participants. The sample comprised 418 males and 756 females, with participants from different academic years: 416 freshmen, 262 sophomores, 270 juniors, and 226 seniors. Participants ranged in age from 17 to 25 years ( $M = 19.6$ ,  $SD = 1.42$ ).

### ***Measurements***

The scales used in this study were previously validated Chinese versions and have been widely used in prior research.

#### *Sense of purpose*

Sense of purpose was assessed using the Sense of Purpose Questionnaire for University Students developed by Cai et al. (2024). The scale consists of 14 items (e.g., "I am actively working towards completing my current sub-goals") across three dimensions: purpose recognition, purpose experience, and purpose regulation. Responses were rated on a 5-point Likert scale ranging from 1 (strongly disagree) to 5 (strongly agree). Item responses were averaged to form the composite score after reverse-coding Item 5; higher scores indicate a stronger sense of purpose. The reliability of scores was 0.89.

#### *Future orientation*

Future orientation was measured using the Future Orientation Questionnaire revised by Zhang et al. (2006). The instrument contains 20 items (e.g., "I have a clear plan for my postgraduate study or employment after graduation") across three domains: education, career, and marriage/family. Items were rated on a 5-point Likert

scale ranging from 1 (never) to 5 (always). Item responses were averaged to compute the total future orientation score; higher scores indicate higher future orientation. The reliability of scores was 0.90.

#### *Academic engagement*

Academic engagement was assessed using the Academic Engagement Scale developed by Schaufeli et al. (2002) and revised by Fang et al. (2008). The scale includes 17 items (e.g., “I feel a strong sense of accomplishment when making progress in my studies”) across three dimensions: vigor, dedication, and absorption. Responses were provided on a 7-point Likert scale ranging from 1 (never) to 7 (always). Item responses were averaged to compute the total academic engagement score; higher scores indicate greater academic engagement. The reliability of scores was 0.93.

#### *Procedure*

Ethical approval for the study was obtained from the Institutional Review Board of Minjiang University (Approval Number: 2025092403). Prior to data collection, participants were informed of the study objectives and procedures and provided written informed consent. Questionnaires were then administered and collected by trained research staff. Upon completion, participants received a small gift as compensation for their participation.

#### *Data analysis*

Descriptive statistics and inter-variable correlations were calculated using SPSS 25.0. Mediation analyses were conducted in Mplus 7.4, with model parameters estimated using the robust maximum likelihood method. The significance of indirect effects was examined using bootstrap resampling (5000 samples), with 95% bias-corrected confidence intervals not including zero indicating statistical significance (Wen & Ye, 2014). Specifically, we first examined descriptive statistics and correlations and estimated a direct-effect model to evaluate H1, and then tested the mediation model with future orientation as the mediator to evaluate H2 using bootstrapped confidence intervals.

Given the use of self-report measures, common method variance was assessed using Harman’s single-factor test (Zhou & Long, 2004). An exploratory factor analysis extracted 10 factors with eigenvalues greater than 1, accounting for 60.6% of the total variance. The first factor accounted for 27.5% of the variance, which is below the recommended 40% threshold, indicating that common method bias was unlikely to be a serious concern in the present study.

#### *AI-assisted writing*

During manuscript preparation, ChatGPT-5 (OpenAI, San Francisco, CA, USA) was used solely for language polishing and grammar checks to improve readability. All AI-generated suggestions were critically reviewed and finalized by the authors. The research design, methodology, data analysis, and conclusions were developed independently without AI assistance. No confidential or personally identifiable data were entered into the tool.

## **Results**

### *Descriptive statistics and correlations*

Table 1 presents the descriptive statistics and correlations among the variables. The mean scores for sense of purpose, future orientation, and academic engagement were 3.58, 3.16, and 4.26, respectively, all significantly above the scale midpoints ( $p < 0.001$ ). Correlation analyses further indicated that sense of purpose was positively associated with both future orientation ( $r = 0.52, p < 0.001$ ) and academic engagement ( $r = 0.58, p < 0.001$ ), and that future orientation was also positively correlated with academic engagement ( $r = 0.47, p < 0.001$ ). These correlations provide preliminary support for the proposed associations and justify subsequent structural model testing for Hypothesis 1 and 2.

### *Group differences*

Independent-samples *t*-tests were conducted to examine gender differences. The results indicated no significant gender difference in sense of purpose. However, male students reported significantly higher levels of future orientation ( $t = 3.28, p < 0.01, d = 0.21$ ) and academic engagement ( $t = 2.03, p < 0.05, d = 0.11$ ). A one-way ANOVA further revealed significant grade-level differences in sense of purpose, ( $F(3, 1170) = 15.09, p < 0.001, \eta_p^2 = 0.04$ ), future orientation ( $F(3, 1170) = 4.41, p = 0.004, \eta_p^2 = 0.01$ ), and academic engagement ( $F(3, 1170) = 15.48, p < 0.001, \eta_p^2 = 0.04$ ). Post hoc comparisons indicated that sophomores and juniors reported relatively lower levels across the three variables, whereas freshmen and seniors reported relatively higher levels. Detailed results are presented in Tables 2 and 3.

### *Mediating effect of future orientation*

Following the mediation testing framework proposed by Wen and Ye (2014), a direct-effect model was first estimated to examine the relationship between sense of purpose and academic engagement. The model showed good fit,  $\chi^2/df(27.04/8) = 3.38$ , RMSEA = 0.05, CFI = 0.99, TLI = 0.99, SRMR = 0.02, and revealed a significant positive association between sense of purpose and academic engagement ( $\beta = 0.68, SE = 0.02, p < 0.001$ ), supporting Hypothesis 1 (see Figure 1).

The analysis was then extended to a structural mediation model including future orientation as the mediating variable. This model also showed good fit,  $\chi^2/df(104.92/24) = 4.37$ , RMSEA = 0.05, CFI = 0.98, TLI = 0.96, SRMR = 0.03. As shown in Figure 2, sense of purpose was significantly associated with future orientation ( $\beta = 0.71, SE = 0.03, p < 0.001$ ) and academic engagement ( $\beta = 0.45, SE = 0.05, p < 0.001$ ), and future orientation was also significantly associated with academic engagement ( $\beta = 0.33, SE = 0.05, p < 0.001$ ).

When future orientation was included in the model, the direct effect of sense of purpose on academic engagement decreased from  $\beta = 0.68$  to  $\beta = 0.45$ , indicating partial mediation. Bootstrap analyses further confirmed that the indirect effect was statistically significant ( $\beta = 0.23, SE = 0.04, p < 0.001$ ), accounting for 33.8% of the total effect (see Table 4). The reduction in the direct effect after

**Table 1.** Descriptive statistics and correlations for the main study variables (N = 1174)

	<i>M ± SD</i>	1	2	3
Sense of purpose	3.58 ± 0.53	1		
Future orientation	3.16 ± 0.53	0.52***	1	
Academic engagement	4.26 ± 0.79	0.58***	0.47***	1

Note. \*\*\**p* < 0.001.

**Table 2.** Scores and differences in variables and their dimensions by gender (M ± SD)

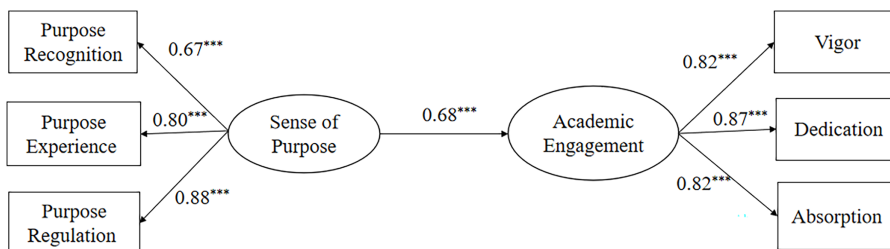
	Male (n = 418)	Female (n = 756)	<i>t</i>	<i>d</i>
Sense of purpose	3.61 ± 0.54	3.56 ± 0.52	1.47	0.09
Future orientation	3.23 ± 0.56	3.12 ± 0.51	3.28**	0.21
Academic engagement	4.32 ± 0.83	4.23 ± 0.77	2.03*	0.11

Note. \**p* < 0.05, \*\**p* < 0.01.

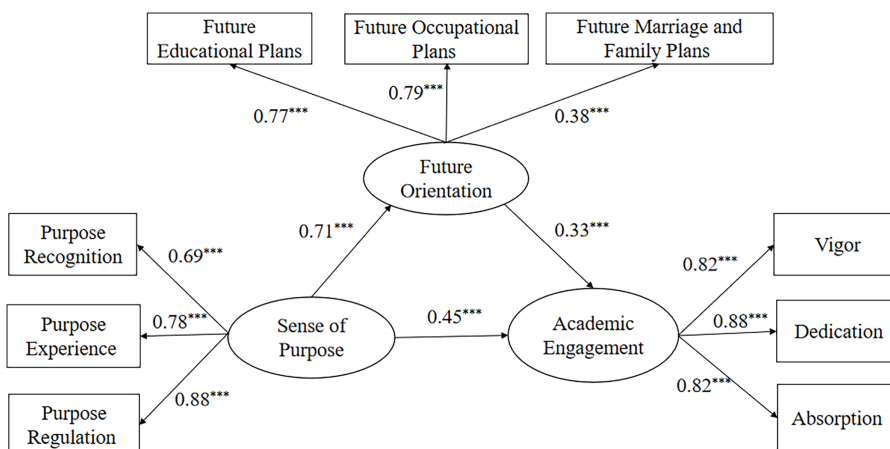
**Table 3.** Comparison of scores and differences in sense of purpose by grade (M ± SD)

	Freshman (n = 416) I	Sophomore (n = 262) II	Junior (n = 270) III	Senior (n = 226) IV	<i>F</i>	$\eta_p^2$	<i>LSD</i>
Sense of Purpose	3.62 ± 0.52	3.42 ± 0.50	3.56 ± 0.50	3.73 ± 0.57	15.09***	0.04	IV > I, III > II
Future Orientation	3.19 ± 0.53	3.07 ± 0.45	3.15 ± 0.59	3.24 ± 0.53	4.41**	0.01	I, IV > II
Academic Engagement	4.42 ± 0.79	4.03 ± 0.65	4.17 ± 0.78	4.34 ± 0.88	15.48***	0.04	I, IV > III > II

Note. \*\**p* < 0.01, \*\*\**p* < 0.001.



**Figure 1.** The effect of sense of purpose on academic engagement. Note. \*\*\**p* < 0.001.



**Figure 2.** Plot of the mediating effect of future orientation operating between sense of purpose and academic engagement. Note. \*\*\**p* < 0.001.

**Table 4.** Bootstrapping analysis of the mediating effects

	Effect	SE	Boot 95% CI		Proportion
Indirect effect	0.23	0.04	0.16	0.30	33.8%
Direct effect	0.45	0.05	0.35	0.55	66.2%
Total effect	0.68	0.02	—	—	—

Note. SE = standard error; CI = confidence interval.

including the mediator further supports a partial mediation pattern. These results support Hypothesis 2 and identify future orientation as a key psychological pathway through which sense of purpose promotes academic engagement.

### Discussion

The present study examined whether future orientation mediates the association between sense of purpose and academic engagement. Overall, the findings supported both hypotheses: sense of purpose was positively associated with academic engagement (H1), and future orientation partially mediated this relationship (H2).

Consistent with prior research (Alderson et al., 2025b; Burrow et al., 2018), the findings demonstrated a significant positive association between sense of purpose and academic engagement. Students with a stronger sense of purpose tended to exhibit greater enthusiasm for learning, stronger dedication to academic tasks, and deeper absorption in their studies. These results provide empirical support for Goal-Setting Theory (Locke & Latham, 2002), which posits that clearly defined and personally meaningful goals enhance effort, persistence, and self-regulation during goal pursuit. Interpreted through a self-regulation lens, purpose may operate as an “organizing resource” that helps students prioritize tasks, sustain effort under difficulty, and maintain consistency between long-term aims and daily study behaviors (Zimmerman, 2000; Pintrich, 2004). Moreover, self-determination theory suggests that when goals are experienced as self-endorsed and meaningful, individuals are more likely to sustain autonomous motivation and persist in challenging tasks (Deci & Ryan, 2000). In addition, purpose may strengthen adaptive individual beliefs (e.g., perceived competence and controllability), which have been shown to support engagement by increasing students’ willingness to invest effort and persist (Bandura, 1997).

Beyond this direct association, the present study further revealed that future orientation partially mediated the relationship between sense of purpose and academic engagement. Specifically, sense of purpose was significantly associated with future orientation, which in turn was significantly associated with academic engagement. This pattern is consistent with Seginer’s (2000) motivational-cognitive-behavioral framework, which conceptualizes future orientation as a process involving motivational activation, cognitive representation of future goals, and future-directed behavioral investment.

When students have a clear sense of purpose, they may be more likely to form coherent future plans and evaluate present academic tasks in terms of their long-term value, thereby increasing persistence and proactive study behavior (Nurmi, 1991; Seginer, 2000; Peng &

Zhang, 2022; Shen et al., 2024). As noted by Zhang et al. (2006), future orientation enables individuals to integrate personal resources and environmental opportunities into coherent future pathways, thereby guiding sustained behavioral investment. Taken together, these findings identify future orientation as a key psychological mechanism through which purpose-related meaning is translated into sustained academic engagement. Notably, the indirect pathway via future orientation accounted for approximately one-third (33.8%) of the total association, indicating that future-oriented cognition and planning represent a meaningful mechanism linking purpose to sustained academic engagement. This mechanism is consistent with Goal-Setting Theory in that purpose-related meaning may sustain commitment to long-term goals, while future orientation supports temporality and goal specificity through planning, thereby strengthening self-regulation and engagement.

The partial mediation indicates that future orientation is an important mechanism, but other mechanisms may also contribute. Other motivational resources, such as self-regulated learning strategies and autonomous motivation, may operate in parallel, which future studies could test by incorporating additional mediators or moderators (e.g., self-efficacy, self-regulation) into the model (Deci & Ryan, 2000; Zimmerman, 2000; Pintrich, 2004).

In addition to the hypothesized model, gender and grade-level differences were observed. Male students reported higher levels of future orientation and academic engagement, which may be partly explained by social role theory (Eagly, 1987) and gendered expectations for future planning and sustained academic and career investment in the Chinese context (Qian et al., 2023). Grade-level differences followed a U-shaped pattern, with freshmen and seniors reporting higher levels across all three variables, whereas sophomores and juniors reported lower levels. This suggests a possible motivational decline during the middle years of university, highlighting the need for targeted educational support during these periods.

### Implications for education practice

Given that future orientation partially explains how sense of purpose translates into academic engagement, interventions may be more effective when they simultaneously strengthen students’ purpose clarity (the “why”) and future-oriented planning (the “how”).

To enhance academic engagement, universities should prioritize targeted interventions for sophomores and juniors, who typically exhibit lower levels of engagement and future orientation. Providing tailored support through initiatives such as career planning workshops, academic advising, and goal-setting programs can help

these students maintain motivation. Since sense of purpose strongly influences academic engagement, universities could implement structured goal-setting courses, mentorship programs, and opportunities for self-reflection to encourage students to commit more deeply to their academic goals. Additionally, future orientation is essential for translating a sense of purpose into tangible academic behaviors. Universities should offer opportunities, such as internships and career counseling, that facilitate future-oriented thinking and planning. Such experiences may help students translate abstract future goals into concrete plans and actions, thereby strengthening the future-oriented pathway that supports sustained engagement. By fostering both sense of purpose and future orientation, institutions can promote sustained academic engagement and support students' long-term academic and career development.

#### **Limitations of the study and future research directions**

Several limitations of this study should be acknowledged. First, participants were recruited from three provinces in China, which may restrict the generalizability of the findings. Future studies would benefit from more diverse, multi-regional sampling. Second, the cross-sectional design prevents causal inferences, highlighting the need for longitudinal or experimental designs. Third, although procedural controls were applied, self-report bias cannot be ruled out; future work should include objective indicators (e.g., attendance records) and multi-source data (e.g., teacher evaluations). Finally, demographic factors such as socioeconomic status were not examined, and future research should also test potential moderating variables (e.g., gender, academic major) to refine the model.

#### **Conclusion**

This study investigated the associations among sense of purpose, future orientation, and academic engagement among university students. The findings indicated that sense of purpose was significantly associated with academic engagement, with future orientation partially mediating this relationship. In addition, lower levels of these variables among sophomores and juniors highlight the middle years of university as a critical period for sustaining motivation and engagement. Together, the results underscore the importance of fostering both sense of purpose and future orientation as key psychological resources for promoting sustained academic engagement in higher education.

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**Author Contributions:** The authors confirm contribution to the paper as follows: Study conception and design: Jingxue Cai, Wanru Lin; data collection: Xi Chen, Yilei Wu; analysis and interpretation of results: Xi Chen, Yilei Wu; draft manuscript preparation: Jingxue Cai; critical revision of the manuscript: Jingxue Cai, Wanru Lin. All authors reviewed and approved the final version of the manuscript.

**Availability of Data and Materials:** Subject to reasonable justification, the corresponding author may provide access to the datasets employed for analysis in this investigation.

**Ethics Approval:** All procedures performed in studies involving human participants were in accordance with the ethical standards of the institutional and/or national research committee. This study was approved by the Academic Ethics Committee of Minjiang University, China (Approval Number: 2025092403). Participants were informed of the study objectives and procedures and provided written informed consent. Questionnaires were then administered and collected by trained research staff. Upon completion, participants received a small gift as compensation for their participation.

**Conflicts of Interest:** The authors declare no conflicts of interest.

#### **Appendix A Administered Instruments and Scoring Scheme**

1. Sense of Purpose (Cai et al., 2024): 14 items; 3 dimensions (purpose recognition, purpose experience, purpose regulation); response anchors 1 (strongly disagree) to 5 (strongly agree); reverse-coded item: Item 5; composite score = mean of 14 items after reverse coding.
2. Future Orientation (Zhang et al., 2006): 20 items; 3 domains (education, career, marriage/family); response anchors 1 (never) to 5 (always); composite score = mean of 20 items.
3. Academic Engagement (Schaufeli et al., 2002; Fang et al., 2008): 17 items; 3 dimensions (vigor, dedication, absorption); response anchors 1 (never) to 7 (always); composite score = mean of 17 items.

\*Cronbach's  $\alpha$  values  $\geq 0.70$  were considered acceptable for internal consistency.

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