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The impact of sense of belonging, resilience, time management skills and academic performance on psychological well-being among university students

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Abstract: This online survey study of 141 university students examined the impact of sense of belonging, resilience, time management skills, and academic performance on their psychological wellbeing. Results showed that resilience significantly predicted psychological well-being. Resilience and time management predicted environmental mastery. Both resilience and time management skills also predicted autonomy, but time management seemed to be more important than resilience in predicting autonomy. Sense of belonging and academic performance added a minimal significant amount of variance to self-acceptance, but neither were significant predictors for the measure. The inconsistency between some of our findings and the current literature may be attributed to the use of more senior tertiary students who experienced high pressure to perform well academically and displayed less variability in their academic achievement. This study is correlational

Agnes Au

ABOUT THE AUTHORS

Agnes Au is a retired academic from James Cook University. Her research interests include bilingualism, music, and psychosocial research. As Australia is experiencing skills shortages in the labour market, increasing retention rate in tertiary education is crucial to producing quality employees for the society. Examining factors that impact on psychological well-being among university students has implication on how to assist these students to complete their tertiary education and upskill themselves.

Nerina Jane Caltabiano is an Adjunct Professor of Psychology in the College of Healthcare Sciences, at the James Cook University Nguma-bada campus. As a Social Psychologist, her research interests incorporate multidisciplinary perspectives from social, educational, and developmental psychology. She too is highly passionate in finding ways to help and support university students in their academic endeavours.

Oleg Vaksman, a student from the Institute for Social Neuroscience in Victoria, was primarily responsible for the research's data collection.

PUBLIC INTEREST STATEMENT

This is an online survey study examining how sense of belonging, resilience, time management skills and academic performance influence psychological well-being among university students. This paper has implications on wider issues such that important factors relating to psychological well-being can be identified, particularly in senior tertiary students. Therefore, education establishments can work on these factors to enhance the psychological well-being of students who persist in their study and proceed to graduation.

and cannot imply any causality. It would be beneficial to carry out experimental studies to see how training on resilience, time management, sense of belonging and academic performance affect one's psychological well-being.

Subjects: Educational Psychology; Study Skills; Educational Research; Education Studies; Higher Education

Keywords: Psychological wellbeing; sense of belonging; resilience; time management; academic performance

1. Introduction

This study examined the impact of sense of belonging, resilience, time management skills, and academic performance on psychological wellbeing among university students. Psychological well-being refers to a positive psychological functioning with aspects of self-acceptance, positive relations with others, autonomy, personal growth, environmental mastery, and purpose in life. There are significant age-related differences in psychological well-being scores (Ryff & Keyes, 1995; Ryff, 1989). For instance, positive well-being declines progressively across the academic semester among a group of dental students (Preoteasa et al., 2016). Lane (2020) showed that identifying emerging adulthood as a time of negativity and instability strongly predicts psychological well-being. Promoting character strengths and social group participation can benefit subjective well-being (Koch et al., 2020). This study focuses on the following factors that are related to psychological well-being, as discussed below.

2. Sense of belonging

Sense of belonging is defined as a sense of connectedness, engagement, and commitment to the tertiary institute that the student is attending. Connectedness reflects the perception of being treated fairly and feeling closeness with the institute and the peers. Engagement includes enjoyment of the classes and willingness to attend. Commitment refers to a combination of the perceived importance of the program, interest in activity, and effort (Anderson-Butcher & Conroy, 2002). Students who feel personally accepted, respected, included, and supported in the school social environment so that their educational participation is not limited will have a better sense of belonging (Finn, 1989; Goodenow & Grady, 1993).

In examining preservice teachers, Dewhurst et al. (2020) showed that sense of belonging can be categorised into four themes: 1) being welcomed; 2) settings and procedures; 3) interpersonal interactions and 4) strategic behaviours. The authors suggested that fostering a sense of belonging is important to develop preservice teachers' cognition, well-being and learning during practicums. Similarly, Karaman and Tarim (2018) found that identification, expectation and motivation are sub-dimensions of sense of belonging among university students. The three sub-dimensions accounted for 15% of the variance explained in psychological well-being. The authors concluded that as the sense of belonging to university increases, student's well-being levels also increase.

High sense of belonging is also related to better health, longevity, psychological well-being and disease recovery (Allen et al., 2021). For instance, Steger and Kashdan (2009) found a strong link between sense of belonging and well-being, especially in people with high levels of depressive symptoms. Positive relationships have been found between sense of belonging, psychological well-being and resilience (Aydiner & Kalender, 2015; Hasan & Channa, 2021; Karaman & Tarim, 2018).

Won et al. (2018) found that a sense of belonging functioned as a significant predictor of self-reported metacognitive and academic time management strategies among college students. Moreover, mastery goals mediated the relations between sense of belonging to school and metacognitive and academic time management strategies. Nevertheless, Battistich et al. (1995) found that sense of belonging was positively associated with task orientation (also referred to as

mastery goal orientation) but negatively associated with ego orientation (also referred to as performance goal orientation).

Research indicates that students' sense of belonging to school community decreases as they progress through the education ladder (Sulkowski et al., 2012). Students who are actively involved in recreational activities provided by the institute are more likely to complete their course (S. A. Forrester et al., 2018; S. Forrester, 2015). Alternatively, students who often report attaining their study goals also report better psychological well-being (Davis & Hadwin, 2021). Yet, the relationship between sense of belonging and psychological well-being tends to be unidirectional. To illustrate, institutional connectedness is often overlooked because universities face significant pressures to achieve good academic performance. In fact, academic success makes individuals feel emotionally engaged and connected to the academic environment. Supporting students' academic performance and emotional well-being results in increased institutional connectedness and sense of belonging (Sulkowski et al., 2012). Consequently, the findings of S. Forrester (2015) and S. A. Forrester et al. (2018) can be interpreted as academically well-performed students are more likely to have time for recreational activities in their institution. Their increased involvement in recreational activities in their institution is indicative of increased sense of belonging. To date, studies that investigate the predictive ability of sense of belonging on psychological well-being are lacking. So, this study attempted to examine this issue.

3. Resilience

Resilience is defined as the healthy integration, adaptation, and positive functioning over time in response to the experience of adversity and challenge. It comprises emotional stamina and the ability to manifest adaptive behavior (G. M. Wagnild & Young, 1993; G. Wagnild, 2009; Sigley-Taylor et al., 2021). A high level of resilience is related to more positive psychological well-being, especially for boys and young students (Andreou et al., 2020). In contrast, higher education students generally have lower resilience and well-being (O'Brien et al., 2020). Resilience explained 48.2% variance in psychological well-being (Idris et al., 2019). Nevertheless, there are two types of resilience: 1) objective measures such as heart rate, and 2) subjective measures that include optimism, happiness, and perseverance (Sigley-Taylor et al., 2021). Sigley-Taylor et al. (2021) found that while there is no relationship between objective resilience and psychological well-being, subjective measures significantly predict psychological well-being. Qi et al. (2021) found that resiliency and spirituality partially mediated the relationship between social support and psychological well-being. Also, resilience partially mediated social support, institutional connectedness, and acculturation with mental well-being among a group of culturally and linguistically diverse (CALD) students (Khawaja et al., 2017). Expressing emotions affects psychological well-being by means of psychological resilience (Eldeleklioglu & Yildiz, 2020). Nevertheless, the relationship between resilience and psychological well-being seems to be reciprocal. To illustrate, Ngui and Lay (2020) found that emotional intelligence, self-efficacy and subjective well-being explained resilience with good predictive accuracy.

Research indicates that certain interventions can enhance resilience and psychological well-being (Brewer et al., 2019). For instance, proactivity buffers the negative effect of parentification on resilience and psychological well-being (Eskisu, 2021). When studying the well-being of postgraduate students majoring in English Language Teaching (ELT), resilience, language learning strategy use, multiple intelligences and aptitude affected well-being.

Sadeghi and Abolfazli Khonbi (2020) found that postgraduate students used emotional responses, accomplishments, and meaningful engagement as coping strategies to enhance resilience and psychological well-being. In fact, Finstad et al. (2021) found that high levels of resilience and positive coping strategies can enhance personal growth. More specifically, positive emotions promote discovery of novel and creative actions, ideas, and social bonds, which in turn build that individual's physical, intellectual, social, and psychological resources. These resources function as reserves that can be drawn on later to improve the odds of successful coping and survival (Fredrickson, 2004).

4. Time management

Time management refers to the extent of how the individuals perceive the use of their time as beneficial and purposeful. Time management skills improve with age (Bond & Feather, 1988) and require deeper understanding of time, the time needed to complete a task, and the ability to prioritise effectively (Chang & Nguyen, 2011). Coaching such as mindfulness training, and interventions that address the imbalance in clients' time perspectives, identify purpose in their career and then plan their time accordingly, can improve time management skills and enhance well-being (Boniwell et al., 2014; Kearns & Gardiner, 2007; Marais et al., 2020). In particular, appraisal of effective time usage and perceived control over time mediate the relationship between time management and psychological well-being. However, the mediated effects were small (Chang & Nguyen, 2011).

Time management disposition also positively correlates with psychological well-being (Yang et al., 2015). For instance, teachers' effective time management is positively related to students' academic performance (Sahito et al., 2016), where academic achievement is positively related to well-being (Khodabakhsh et al., 2019). However, Okopi (2011) investigated the academic stress of students not adhering to study time management strategies, and also the effect of gender, age, martial and employment statuses on adherence or non-adherence to time management strategies. Interestingly, results showed that students who adhered to their study time management strategies did not differ from those who did not adhere to their study time management strategies in terms of academic stress. However, gender, age, martial and employment statuses affected students' non-adherence to their study time management strategies. The author suggested that students who experienced academic stress might have a negative impact on their well-being if not properly counselled.

Ashrafi et al. (2021) evaluated the impact of time management training on female nursing students' academic achievement and their resilience. Their results showed that time management training predicted 80% of the variance in resilience. They concluded that time management training increased students' resilience. According to Idris et al. (2019) resilience could be seen as explaining psychological well-being. Okopi (2011) did not find a direct relationship between time management and academic stress which is indicative of psychological well-being. Given the inconsistent findings on the relationship between time management and psychological well-being, this study attempted to investigate the role of time management in psychological well-being.

5. Academic performance

Academic achievement refers to the performance outcomes that indicate the extent to which a student has accomplished specific goals that were the focus of activities in the instructional environment, particularly in education institutions. Academic achievement is strongly related to presenting stimulating and meaningful learning information in a clear way, relating it to the students and using conceptually demanding learning tasks. The effect of instruction and communication technology on academic achievement is minimal (Schneider & Preckel, 2017).

Research indicates a positive relationship between well-being and academic achievement (Khodabakhsh et al., 2019). Students with better well-being tend to perform better academically (Preoteasa et al., 2016). Academically high achievers are characterized by high self-efficacy, high prior achievement and intelligence, conscientiousness, and the goal-directed use of learning strategies (Schneider & Preckel, 2017). McBride et al. (2021) illustrated the importance of self-efficacy in student persistence and success in college. More specifically, academic self-efficacy, driven by improved confidence in research writing and class participation, increases over time. Students' confidence in their academic ability supports positive outcomes in academic achievement and psychological well-being. Moreover, psychological well-being and academic engagement can affect regulatory responses to challenge and vice versa (Davis & Hadwin, 2021). Li et al. (2021) recommended mastery of performance avoidance and performance approach goals to promote academic performance and well-being.

Lv et al. (2016) commented that the relationship between academic achievement and well-being has yielded inconsistent results, possibly due to the presence of potential moderating variables such as parent-school communication. To illustrate, Erdem and Kaya (2021) investigated the predictive ability of social economic status (SES) and well-being on academic achievement. The independent variables predicted students' achievement in reading, mathematics and science, with SES having the higher prediction level than well-being. However, the correlation between well-being and academic achievement may be influenced by SES (Bücker et al., 2018). Also, well-being also affects academic performance and school engagement (Gutman & Vorhaus, 2012). Positive emotions, the fulfilment of basic needs, intrinsic motivation, personal strength and engagement influence the positive relationship between psychological well-being and academic achievement (Gräbel, 2017). Nevertheless, Kaya and Erdem (2021) examined the ambiguous results regarding the relationship between well-being and academic achievement. They found a significant and positive but small effect size between the two.

In fact, Kleinkorres et al. (2021) argued for a reciprocal causality between academic achievement and well-being. For instance, psychological well-being predicts academic performance (Cobo-rendón et al., 2020). Well-being also fosters motivation for academic tasks, leading to better achievement (Deci & Ryan, 2012). On the other hand, students with better academic performance also report higher well-being (Preoteasa et al., 2016; Quinn & Duckworth, 2007). Nevertheless, most studies investigate the role of psychological well-being in academic performance but not vice versa. Therefore, this study attempted to examine the role of academic performance on psychological well-being.

The aim of this study was to examine the impact of sense of belonging, resilience, time management skills and academic performance on psychological well-being (and its subscales: Autonomy, environmental mastery, personal growth, positive relations with others, purpose in life, and self-acceptance) among university students. A positive relationship between sense of belonging, resilience, time management skills, academic performance and psychological well-being (and its subscales) was anticipated.

6. Method

6.1. Study sample

One-hundred-and-forty-one participants were recruited via Facebook advertising. The Facebook sites included: Survey circle, Survey Exchange, Research Participation, Thesis/Questionnaire Filing group, and Dissertation Survey exchange. Additional recruitment was done via direct advertising on the unofficial university students' Facebook pages, which included: Monash University, University of NSW, RMIT, Victoria University, Latrobe University, University of Melbourne, and Australian Catholic University. Students needed to be currently enrolled in a Bachelor's degree course, and had completed at least one semester of the course. There were 109 females, 31 males, and one gender undetermined who responded to the online survey. Their age ranged from 18 to 61, with an average age of 24.8 (s.d. = 7.65). Their disciplines studied and demographic information is presented in Table 1. The data revealed that there were more female than male participants across disciplines in the study (χ^2 (10, $N = 141$) = 53.99, $p < .001$), particularly in the area of Humanities and Social Sciences and Health Sciences. This finding is not unusual as other studies have also found a tendency for females more so than males to participate in research (Einolf, 2011; Nuzzo, 2021). The study was granted Ethical Approval by the ISN Psychology Human Research Ethics Committee (approval number 200,603).

7. Outcome measures

7.1. Psychological wellbeing

The Well-being Scale (WB) (Ryff, 1989) is a 42-item questionnaire using a 7-point Likert scale (from 1 = Strongly Agree to 7 = Strongly Disagree). After 21 items are reverse-coded, higher scores

Table 1. Participants by discipline

Major Discipline	Male	Female	Undetermined	N	%
Science and Engineering	11	17	0	28	19.9
Humanities and Social Sciences	9	32	0	41	29.1
Health Sciences	4	30	0	34	24.1
Business	4	13	0	17	12.1
Creative Arts	0	2	1	3	2.1
Other Disciplines	3	15	0	18	12.8
Total	31	109	1	141	100.0

denote greater psychological well-being. A sample item from the Environmental mastery sub-scale is: "In general, I feel I am in charge of the situation in which I live." The scale contains six subscales: Self-acceptance ($\alpha = .91$), Positive relations ($\alpha = .88$), Autonomy ($\alpha = .83$), Purpose in life ($\alpha = .88$), Environmental mastery ($\alpha = .86$) and Personal growth ($\alpha = .85$). The overall internal reliability varied between $\alpha = .7$ and $\alpha = .88$ (Ryff & Keyes, 1995). The scores for each item were added together to create a total score and its sub-scores, with a higher score indicating better well-being.

7.2. Sense of belonging

The Sense of Belonging Scale (SB) (Anderson-Butcher & Conroy, 2002) measured the domain of sense of belonging that has aspects of commitment, engagement, and connectedness to the institute the person is studying at. This is a five-item, 4-point Likert-style scale (from 4 = Strongly Agree to 1 = Strongly Disagree). For example, Item 4 is "I am supported at the program." This scale has been reported to have internal reliability of $\alpha = .93$, a seven-day test–retest reliability of $\alpha = .59$ and a six-month test–retest reliability of $\alpha = .37$ (Anderson-Butcher & Conroy, 2002). The scores for each item were added together to represent the total score. Higher scores represented a higher sense of belonging.

7.3. Resilience

The Resilience Scale (RS) (G. M. Wagnild & Young, 1993) is a 25-item questionnaire using a 7-point Likert scale (from 1 = Strongly Disagree to 7 = Strongly Agree) to measure resilience. For example, Item 1 is "When I make plans, I follow through with them." Scores from each item were added together with higher scores indicating higher resilience. Internal consistency was reported to be very good (α=.91) with test–retest reliability measured 1, 4, 8, and 12 months apart ranging from $\alpha = .67$ to $\alpha = .84$ (G. M. Wagnild & Young, 1993).

7.4. Time management skills

Time management skills were measured by the Time Structure Questionnaire (TSQ) (Bond & Feather, 1988). It is a 26-item questionnaire with a 7-point Likert style scale with answers ranging from always/yes = 1 to never/no = 7. For example, Item 3 is "Do you have a daily routine which you follow?". Scores were added up to create a total score, with a higher score indicating better time management. TSQ has internal reliability scores ranging between $\alpha = .88$ and $\alpha = .91$ with test-retest reliability $r = .76$ and validity against Time Management Behaviour Scale (TMBS) of $r = .76$ (Macan et al., 1990).

7.5. Academic performance

Weighted Mean Average (WMA) is indicative of academic performance. Participants were asked to enter their average mark they had received across all subjects in the most recent semester. Scores

ranged from 0 to 100. A higher score on this scale indicates better academic performance. The decision to use WMA instead of Grade Point Average (GPA) was due to the latter having varying scales across different institutions. Additionally, to account for tertiary students not having numerical grades, participants were instructed to convert their categorical grade to the lowest numerical grade representative of that category. For example, if a student's mark was not provided in numerical value for calculation (e.g. Credit, Distinction), they needed to use the lowest numerical value that these categories represent to calculate their WMA.

7.6. Procedure

The Facebook advertising material included a link to the survey, which was compiled within the "survey monkey" platform (https://www.surveymonkey.com/r/PRJDXG6). When potential participants opened the link, they were provided with the Participant Information sheet that explained the study in more detail. Participants were required to provide electronic consent by ticking the consent box. The completion time was around 10 minutes. Participants had an option to withdraw from the study at any stage by closing the browser before completing the survey.

7.7. Statistical analysis

A convenience sampling strategy was used for this correlational study. The minimum sample size was calculated by using GPower version 3.1.9.4 (Faul et al., 2007). In order to have an 80% chance of detecting a medium effect size f^2=.15 with a probability of error 0.05 and four predictors, the required sample size was 85 participants. Descriptive statistics, reliability analyses and correlations amongst the variables were computed using IBM SPSS Statistics 27. In order to examine the impact of sense of belonging, resilience, time management skills and academic performance on psychological well-being a number of hierarchical regressions were undertaken after the test assumptions were considered.

8. Results

Table 2 summarises the means and standard deviations (SD) of psychological wellbeing, sense of belonging, resilience, time management skills and academic performance of the university students.

Table 3 presents the Pearson correlations among Psychological Wellbeing, Sense of Belonging, Resilience, Time Management Skills, Academic Performance and Age. Psychological well-being was significantly and positively related to resilience ($r = .572$, $p < .01$) and time management skills ($r = .240$, $p < .01$), but significantly and negatively related to sense of belonging ($r = -.329$, $p < .01$). Environmental mastery was positively associated with resilience ($r = .166$, $p < .05$). Personal growth was significantly and positively associated with resilience ($r = .526$, $p < .01$) and time management skills ($r = .397$, $p < .01$), but significantly and negatively related to sense of belonging ($r = -.243$, $p < .01$). Positive relations with others correlated positively with resilience ($r = .235$, $p < .01$). Resilience was related to both purpose in life ($r = .322$, $p < .01$) and self-acceptance ($r = .543$, $p < .01$). Time management skills was significantly and positively related to purpose in life ($r = .182$, $p < .05$) and self-acceptance ($r = .320$, $p < .01$). Both purpose in life ($r = -.200$, $p < .05$) and self-acceptance ($r = -.356$, $p < .01$) were significantly and negatively related to sense of belonging. Moreover, resilience was negatively associated with sense of belonging ($r = -.405$, $p < .01$). Time management was positively related to resilience ($r = .541$, $p < .01$) but negatively related to sense of belonging ($r = -.282$, $p < .01$). Age correlated positively with resilience ($r = .239$, $p < .01$) and time management ($r = .237$, $p < .01$).

Parametric tests were used for the analyses as none of the assumptions of normality, equal variance, independence, and outliers were violated. A hierarchical multiple regression analysis was run to investigate the predictive ability of sense of belonging, resilience, time management skills and academic performance on psychological well-being. Table 4 presents the details of the hierarchical multiple regression analyses. Time management and resilience were entered into

Table 2. Means and SDs of psychological wellbeing, sense of belonging, resilience, time management skills, and academic performance

	Range: min-max	Mean	SD
Psychological Wellbeing	42–294	197.10	13.02
Autonomy	7–49	32.99	3.60
Environmental Mastery	7–49	32.02	3.25
Personal Growth	7–49	34.96	4.87
Positive Relations with Others	7–49	34.69	4.21
Purpose in Life	7–49	31.67	2.90
Self-Acceptance	7–49	30.77	4.01
Sense of Belonging	5–20	8.91	2.31
Resilience	25–175	129.81	17.73
Time Management	26–182	101.55	16.65
Academic Performance	0–100	77.39	8.62

the equation at step 1, followed by sense of belonging and academic performance at step 2. Please refer to Table 4 for the details as the results are presented below.

At step 1, time management and resilience significantly accounted for 32.5% of the variance in psychological well-being. However, only resilience significantly predicted psychological well-being. At step 2, adding sense of belonging and academic performance non-significantly accounted for an extra 0.3% variance in psychological well-being, but only resilience significantly predicted psychological well-being.

Regarding autonomy, at step 1, time management and resilience significantly accounted for 4.6% of the variance in autonomy. Resilience and time management were significant predictors for autonomy. At step 2, adding sense of belonging and academic performance non-significantly accounted for an extra 0.4% variance in autonomy, with only time management significantly predicting autonomy.

Table 3. Pearson correlations among psychological wellbeing, sense of belonging, resilience, time management skills, academic performance and Age

	WB	A	EN	G	Pos	Pur	SA	SB	RS	TSQ	WMA	Age
WB	1.000											
A	.386**	1.000										
EN	.516**	.174*	1.000									
G	.669**	−.027	.127	1.000								
Pos	.561**	.034	.182*	.324**	1.000							
Pur	.535**	.129	.145	.199*	.092	1.000						
SA	.693**	.116	.258**	.394**	.131	.441**	1.000					
SB	−.329**	−.129	−.145	−.243**	−.037	−.200*	−.356**	1.000				
RS	.572**	.069	.166*	.526**	.235**	.322**	.543**	−.405**	1.000			
TSQ	.240**	−.159	−.112	.397**	.075	.182*	.320**	−.282**	.541**	1.000		
WMA	.035	.055	−.01	−.01	−.102	.055	.153	−.164	.056	.022	1.000	
Age	.095	.065	−.018	.049	.022	−.017	.195*	−.093	.239**	.237**	.114	1.000

* p < .05, **p<.01 NB: WB= psychological wellbeing; A-autonomy; EN= environmental mastery; G=personal growth; Pos=positive relations with others; Pur=purpose in life; SA=self-acceptance; SB=sense of belonging; RS=resilience; TSQ=time management skills; WMA=academic performance

Regarding environmental mastery, both time management and resilience significantly accounted for 7.2% of the variance at step 1. Adding sense of belonging and academic performance at step 2 did not significantly add any variance to environmental mastery. Resilience and time management significantly predicted environmental mastery.

For personal growth, time management and resilience significantly accounted for 28.4% of the variance at step 1. Adding sense of belonging and academic performance did not significantly add any variance to personal growth. Resilience significantly predicted personal growth at step 1 and at step 2.

Time management and resilience significantly accounted for 4.6% of the variance in positive relations with others at step 1. Similarly, adding sense of belonging and academic performance non-significantly added 0.1% variance to positive relations with others. Resilience significantly predicted positive relations with others at step 1 and at step 2.

At step 1, time management and resilience significantly accounted for 9.1% of the variance in purpose in life. However, adding sense of belonging and academic performance did not add any variance to purpose in life at step 2. Resilience significantly predicted purpose in life at step 1 and at step 2.

Lastly, time management and resilience significantly accounted for 28.5% of the variance in self-acceptance at step 1. Interestingly, adding sense of belonging and academic performance significantly added 2.3% variance to self-acceptance. However, only resilience significantly predicted self-acceptance at step 1 and at step 2.

9. Discussion

In sum, resilience significantly predicted psychological well-being and its subscales. Both resilience and time management skills predicted environmental mastery. Time management seemed to be more important than resilience in predicting autonomy, though both played a part in predicting autonomy. Sense of belonging and academic performance added a significant but minimal amount of variance to self-acceptance but none of them significantly predicted self-acceptance. Likewise, resilience correlated negatively with sense of belonging. Time management was positively associated with resilience but negatively associated with sense of belonging. Age was positively related to resilience and time management.

These results extend current literature in that a higher level of resilience is related to more positive psychological well-being (Andreou et al., 2020). Moreover, resilience largely contributed to psychological well-being. The results were comparable to Idris et al. (2019) who found that resilience explained 48.2% variance in psychological well-being. An interesting finding is both psychological well-being (Preoteasa et al., 2016) and resilience (Andreou et al., 2020; O'Brien et al., 2020) decline with age. This may further explain why resilience largely loaded on psychological well-being.

Moreover, resilience seemed to contribute more to personal growth and self-acceptance when compared with other subscales. This may be attributed to the fact that both personal growth and self-acceptance are emotionally related. Expressing emotions also affects psychological well-being by means of psychological resilience (Eldeleklioglu & Yildiz, 2020). Research indicates that certain interventions can enhance resilience and psychological well-being (Brewer et al., 2019). Since resilience loaded heavily on psychological well-being, training resilience may be an effective way to enhance psychological well-being if direct training of psychological well-being is not feasible. Finstad et al. (2021) suggested that multi-level interventions should be used to build resilience of an individual. For instance, counselling sessions, cognitive-behavioral techniques and relaxation strategies are useful interventions to translate one's resources into resilience.

Table 4. Hierarchical multiple regression of sense of belonging, resilience, time management skills, and academic performance in predicting psychological wellbeing

D.V.	Step	Adj R^2	F	df	p	Sig Predictors	Beta	t	p	sr^2
WB	1	.325	34.69	2,138	.000					
						RS	.626	7.58	.001	.277
	2	.328	18.12	4,136	.000					
						RS	.581	6.71	.001	.215
A	1	.046	4.34	2,138	.015					
						RS	.219	2.23	.027	.034
						TM	−.277	−2.82	.005	.054
	2	.050	2.83	4,136	.027					
						TM	−.289	−2.94	.004	.059
EN	1	.072	6.41	2,138	.002					
						RS	.32	3.30	.001	.072
						TM	−.285	−2.95	.004	.058
	2	.071	3.68	4,136	.007					
						RS	.279	2.73	.007	.050
						TM	−.297	−3.05	.003	.062
G	1	.284	28.83	2,138	.000					
						RS	.44	5.17	<.001	.137
	2	.276	14.36	4,136	.000					
						RS	.431	4.79	<.001	.119
Pos	1	.046	4.35	2,138	.015					
						RS	.275	2.81	.006	.054
	2	.047	2.74	4,136	.031					
						RS	.299	2.90	.004	.057

(*Continued*)

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Table4. (*Continued*)

D.V.	Step	Adj R^2	F	df	p	Sig Predictors	Beta	t	p	sr^2
Pur	1	.091	7.99	2,138	.001					
						RS	.316	3.30	.001	.071
	2	.084	4.21	4,136	.003					
						RS	.286	2.83	.005	.052
SA	1	.285	28.94	2,138	.000					
						RS	.522	6.15	<.001	.194
	2	.308	16.56	4,136	.000					
						RS	.465	5.28	<.001	.138

Note: NB: WB= psychological wellbeing; A-autonomy; EN= environmental mastery; G=personal growth; Pos=positive relations with others; Pur=purpose in life; SA=self-acceptance; RS=resilience

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O'Brien et al. (2020) found that higher education students generally have lower resilience and well-being than their younger counterparts. However, the current study seemed to suggest that the sample had a high level of resilience (a mean score of 129.81 when compared with the minimum score of 25 and maximum score of 175). Note that the sample had a mean age of 24.8. This indicated the participants were close to the final year of course completion. So, it would not be surprising if they needed to be more resilient in order to complete their study.

The positive impact of time management on psychological well-being is evident in this study. The findings were consistent with Yang et al. (2015) in that time management disposition is positively related to psychological well-being. Interestingly, time management significantly predicted autonomy and environmental mastery but not other subscales. According to Ryff (1989) and Ryff and Keyes (1995), autonomy involves self-determination and independence, the ability to resist social pressures to think and act in particular ways, regulate behaviour from within, and evaluate oneself based on personal standards. On the other hand, environmental mastery involves a sense of mastery and competence in one's environment, the ability to control a complex array of external activities and leverage opportunities, and the capacity to choose or create contexts that suit needs and values. In both cases, autonomy and environmental mastery are related to diagnosis, design, planning, prioritising, self-regulation and execution of an activity. More specifically, the execution of an activity requires: 1) initial diagnosis of the problem and development of a purpose, 2) distinguishing problems associated with excessive reliance on particular time frames and resources, and the perceived effectiveness at work, 3) planning and prioritising of the tasks with respect to the time and resources allocated, and 4) providing practical tools to help individuals to overcome the negative consequences associated with the tasks (Boniwell et al., 2014; Kearns & Gardiner, 2007). Consequently, time management is crucial to task completion that requires mastery of skills and self-governance. It also reflects elements of autonomy: self-determination and independence, and regulation of behaviour.

An overview of the literature seems to favour the view that good time management skills enhance psychological well-being (Boniwell et al., 2014; Kearns & Gardiner, 2007; Marais et al., 2020) through the moderation of improved academic achievement (Khodabakhsh et al., 2019). However, time management did not correlate with academic performance in this study. Given our sample consisted of senior tertiary students, their time management skills would have been well-developed and so there may not be enough variability in their time management skills. More importantly, these students were generally high academic achievers and so variability in their academic achievement was also limited. Therefore, the lack of variability may explain why time management did not correlate with academic performance.

In this study, time management correlated positively with resilience ($r = .541$, $p < .01$) but the implication was smaller than the results obtained in Ashrafi et al. (2021). One explanation is that Ashrafi et al. (2021) study was a training study whereas the current study was a correlational study. Therefore, experimental studies should be more sensitive in tapping into the effect of time management on resilience.

In the current study, sense of belonging and academic performance significantly added 2.3% variance to self-acceptance. Surprisingly, this study showed that sense of belonging correlated negatively with psychological well-being and resilience. The finding was puzzling given an established positive relationship between sense of belonging and psychological well-being and resilience in the current literature (e.g., Allen et al., 2021; Aydiner & Kalender, 2015; Hasan & Channa, 2021; Karaman & Tarim, 2018). Likewise, sense of belonging was not strong enough to predict self-acceptance significantly. The results contradicted Karaman and Tarim (2018) who found that sense of belonging explained 15% of the variance in psychological well-being. However, the sample in Karaman and Tarim (2018) was predominantly first-year and second-year students (with a mean age of 20.7), whereas our sample consisted of older students. Hasan and Channa (2021) found that sense of belonging was not very strong among college students, a result that

was consistent with our findings (our mean score was 8.91 on a scale between 5 and 20). Sulkowski et al. (2012) found that students' sense of belonging to the school community decreases as they progress to senior grades. This is because they have to endure the pressures to achieve good grades academically. Therefore, the age of our sample and their eagerness to perform well academically might have masked the effect of sense of belonging on psychological well-being.

Aydiner and Kalender (2015) found a relationship between academic resiliency and sense of belonging among 4848 15-year-old students. The current study showed that a sense of belonging correlated negatively with resilience. Generally, a sense of belonging was not very strong among college students (Hasan & Channa, 2021). This study's sample consisted of senior tertiary students who did not seem to score high in sense of belonging. They might be overwhelmed by the pressure to achieve good grades in class and therefore, focus more resiliently on academic achievement. School connectedness might have been overlooked due to the pressure to perform well academically (Sulkowski et al., 2012). So, the more resilient a student is to persevere in class for good grades, the more isolated they feel and the less sense of belonging they have.

In the current study, sense of belonging was negatively related to time management. As stated before, our students were older than those in Won et al. (2018) who were predominantly first- and second-year students (mean age 20.9). Given our participants were close to the end of their degree, their goal should be performance-oriented. Accordingly, this explains why sense of belonging was negatively related to time management in this study.

The effect of academic performance on psychological well-being was minimal in this study. Both academic performance and sense of belonging only significantly added 2.3% of the variance explained in self-acceptance, but academic performance individually was not a significant predictor for self-acceptance. Neither was there any significant correlations between academic performance and psychological well-being. Nevertheless, results of the multiple regressions tend to support Khodabakhsh et al. (2019) where academic performance was related to psychological well-being. A majority of research examines the impact of psychological well-being on academic performance. For example, students with better well-being also perform better academically (Deci & Ryan, 2012; Gutman & Vorhaus, 2012; Preoteasa et al., 2016). Well-being also predicts academic performance (Cobo-rendón et al., 2020). The current study's results did not confirm Preoteasa et al. (2016) and Quinn and Duckworth's (2007) findings that students with better academic performance also report higher well-being. Nevertheless, the current sample consisted of senior tertiary students who were relatively high academic achievers (mean score of 77.39 out of 100). Less variability among students' academic performance was expected as they move to senior levels. The lack of variability may explain the lack of influence of academic performance in psychological well-being.

Kleinkorres et al. (2020) argued for a reciprocal causality between academic achievement and well-being. To verify such a relationship, the authors would like to suggest two types of experiments: 1) tutoring students to become high academic achievers and then measure their well-being levels; and 2) training students' character strengths (Koch et al., 2020) to promote well-being, and then measure their academic achievement.

In this study, age was positively associated with resilience. This contradicted O'Brien et al. (2020) in that older students would have lower resilience. Our results showed that the participants performed well academically (mean score = 77.39 out of 100). It is possible that as students become older and progress to senior levels, they also work harder and become more resilient in order to obtain high marks.

In addition, age correlated positively with time management in this study. This supports Bond and Feather's (1988) finding that time management skills improve with age. Since the average age of the participants was 24.8, this age largely suggested that the participants were close to completing their

course of study. So, their time management skills may have been well-developed. Therefore, time management skills may be more relevant to early stages of tertiary education where students are in the process of learning new skills and adapting to a new time schedule.

10. Study limitations

As the current study is correlational, causality cannot be implied. The time of the study coincided with the COVID-19 pandemic, and this could have affected the ultimate sample size. Also given the sample primarily consisted of older female university students, it can be speculated that these students more so than those commencing study may have been more familiar with accessing online surveys. The use of an online survey for the study, has led to a volunteer bias with more females than males responding to the survey. However, this is probably to be expected given that the gender balance percentages reported by the university rankings website (Gender Balance Male-Female Ratios, https://www.universityrankings.com.au/gender-balance/) show that there are more females undertaking undergraduate and postgraduate studies across all Australian universities (Totals Average (mean) (%) being 55.5). Furthermore, according to Einolf (2011), study samples in Australia have shown that females are more likely to volunteer than males. Nuzzo (2021) has also noted a volunteer bias towards female participation in research.

A larger sample size could have allowed for structural equation modelling on the data. More importantly, the inconsistency between some of our findings and the current literature may be attributed to the use of more senior tertiary students who experienced high pressure to perform well academically and displayed less variability in their academic achievement. Investigation on younger participants is warranted.

11. Research implications and future directions

The current study underscores the importance of considering each of the subscales of the psychological well-being construct rather than solely an overall score. Focusing on the variables that impact psychological well-being and its subscales has implications for fostering students' institutional connectedness and ultimately successful academic performance. Counselling services tasked with ensuring that students retain a positive psychological well-being throughout their studies and successfully complete their studies should find the relationships considered in this study to be advantageous in planning intervention programs.

As a way to counter the causality issue, it would be beneficial if experimental studies could be carried out to see how training on resilience, time management, sense of belonging and academic performance affect one's psychological well-being. While the current study involved a cross-sectional design, there would be merit in considering these variables using a longitudinal study design. Such a design would allow determination of whether the same variables predict psychological well-being as students move through their university studies.

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Data available on request from the authors. The data that support the findings of this study are available from the corresponding author, [NJC], upon reasonable request.

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