

The Design and Validation of a Self-Report Survey Examining Postsecondary Students' Perceptions of Success: The Perceived Success in Study Survey (PSISS)

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Postsecondary students' well-being is closely linked to success, which has predominantly been viewed from institutional perspectives rather than student experience. Addressing this gap, students and educators at a New Zealand postsecondary institution identified elements of overall success. Two existing measures were integrated with the student/educator feedback to form a 27-item questionnaire that was piloted twice via social media using snowball recruitment (n=225, n=237). There was strong internal consistency, and factor analysis identified five main factors of influence. The survey is found to be a comprehensive measure of perceptions of success and could be useful in identifying learners' levels of success-promoting attitudes and strategies, which may be of particular relevance during the COVID-19 pandemic.

Le bien-être des étudiants de l'enseignement postsecondaire est étroitement lié à la réussite, qui a été principalement considérée du point de vue des établissements plutôt que de l'expérience des étudiants. Pour combler cette lacune, des étudiants et des éducateurs d'un établissement postsecondaire de Nouvelle-Zélande ont identifié les éléments de la réussite globale. Deux mesures existantes ont été intégrées aux commentaires des étudiants et des éducateurs pour former un questionnaire de 27 éléments qui a été testé deux fois via les médias sociaux en utilisant le recrutement en boule de neige (n=225, n=237). La cohérence interne était forte et l'analyse factorielle a permis d'identifier cinq facteurs d'influence principaux. L'enquête s'est avérée être une mesure complète des perceptions de la réussite et pourrait être utile pour identifier les niveaux d'attitudes et de stratégies de promotion de la réussite chez les apprenants, ce qui pourrait être particulièrement pertinent pendant la pandémie de COVID-19.

Student well-being is closely linked to academic success (Adler, 2016; Cater, 2016; Edgar et al., 2019; Litalien et al., 2013; Pekrun et al., 2009; Zajacova et al., 2005; Zandvliet et al., 2019), however, the way in which postsecondary students gauge success is complex (Kahu & Nelson, 2018; Naylor, 2017). With students facing major disruptions to their learning during the COVID-19 pandemic (Tan, 2020), there is an urgent need to understand the nuances of overall success, including individual levels of motivation, self-efficacy, metacognitive strategies, and learning preferences (Chiu et al., 2021). Although degree completion may be the overall goal for the majority of students, increasing concern for student well-being in postsecondary education settings highlights the need for learning institutions to understand and address the psychological,

social, and pedagogical aspects of academic success for their learners (Cater, 2016; Frederickson, 2001; Koenka, 2020; Litalien et al., 2013; Pascarella & Terenzini, 2005). Furthermore, the International Conference on Health Promoting Universities & Colleges (2015) document, known as the *Okanagan Charter*, called for postsecondary institutions to provide learning environments that foster student well-being. This is in line with the findings of Schreiner (2010), who contended that tertiary institutions need to focus on students thriving, rather than surviving, and noted that when students are enabled and encouraged to thrive, they are more likely to experience satisfaction and academic success.

There is a wide diversity in preparedness for study for postsecondary students (Edwards & McMillan, 2015; Finnie et al., 2017; Kuh et al., 2006; Michalski et al., 2017; Quinn, 2013; White & Peters, 2013), with some students better prepared to succeed than others. Regardless of the relative preparedness, however, high levels of self-efficacy are considered to be a predictor of persistence, grades, and success (Chemers et al., 2001).

Biggs' (1989) 3P Model captures the three sets of variables that overlap in the learning process for all students: presage, process, and product. *Presage* refers to student factors and learning environment; *process*, a student's individual approach to learning; and *product* refers to the learning outcomes; all of which play a vital role in overall success. This model proposes that a student will be influenced by many factors, including their prior experience, when adopting specific approaches to learning. These factors, in conjunction with the learning environment, including the evolving post-COVID-19 environments, influence the learning outcomes achieved.

Measuring success in post-secondary education is complex, multifaceted, personal, and nuanced, with traditional institutional measures typically lacking student voice, or individual perceptions of success (Cater, 2016; Picton, et al., 2018; Schreiner, 2010). Student success is vital for educational institutions, students, and society, but conventional measures of success are often limited in context (Kahu & Nelson, 2018). Such measures are more often posited from an institutional perspective, focusing more on extrinsic factors such as grades and achievements (Cater, 2016; Kahu & Nelson, 2018), rather than more nuanced intrinsic factors that form part of the complex tapestry of a student's day-to-day perception of their success (Picton et al., 2018). Therefore, both the process of learning and any measurement of success is personal, nuanced, and complex, with student learning outcomes determined by the presage factors that influence how a student perceives their learning environment, and the relativity of their success within it (Lizzio et al., 2002).

Although the benefits of education for institutions, students and society are clear (Kahu & Nelson, 2018), Wood and Breyer (2017) highlighted the evolving nature of success in higher education and called for institutional practices that support students to flourish and succeed, whatever their background. It is particularly pertinent to consider such support during the COVID-19 pandemic when institutions were urgently forced into on-line delivery, and often lacked the resources to adequately support students (Tan, 2020), although Bonk et al. (2020) argued that the pandemic could ultimately lead to improvements in the sector as it is forced to reconsider teaching, learning, and assessment.

With no definitive or clear conceptualisation of student success in post-secondary education, Naylor (2017) argued that success has been under-theorised in postsecondary education. What is clear, is that the nature of success is individual and complicated, and that perceptions of success vary between individuals (Schreiner, 2010). For example, acceptance into university, passing courses, or having consistently high grades may represent major success for some students (Schreiner, 2010; Wood & Breyer, 2017). For others, the key measure of success may be their

ability to manage study, work, costs, and personal life demands (Baik et al., 2015).

The links between student success and academic achievement and completion are well established (Cater, 2016; Harackiewicz et al., 2002; Naylor, 2017), but less clear are other components that comprise overall perceptions of success. Abdulghani et al. (2014) conducted a study investigating components of success amongst high achieving medical students at a medical college in Saudi Arabia and concluded that understanding the elements of student success was important in order to promote success-promoting skills to cohorts of students, particularly, first-year students who are building the skills necessary for academic achievement and success. Given that students experience different aspects of success constantly throughout their learning journey, and that these change throughout the journey, it is important to understand how various factors contribute to perceptions of overall success.

Academic achievement is predominantly assessed by student grades, due to the relative ease of obtaining such data (York et al., 2015). However, academic achievement is not necessarily the most effective indication of success in learning, as it measures the meeting of course-related performance criteria, and therefore measures only a portion of overall success (Cater, 2016). Of note, Schnepf (2017) investigated the career experience of university dropouts from 13 OECD countries and found that adult dropouts possessed workplace skills similar to those who had completed their higher education studies, and further, they found that 40% of dropouts returned to complete tertiary qualifications. On the other hand, Litalien et al. (2013) noted that university dropout was associated with a loss of self-esteem. Schnepf's (2017) findings align with the view that success is complex, personal, and nuanced.

As a result of this complexity, there is a need for researchers to expand definitions of academic success beyond course-related academic achievement (Koenka, 2020; York et al., 2015). Such conventional measures of success do not include more comprehensive elements of student experience, study behaviour, the nature of student engagement, and strategies for lifelong learning (Cater, 2016; Kahu & Nelson, 2018; Moxley et al., 2013). Taking into account the myriad elements that contribute to overall success, York et al. (2015) highlighted the need to develop comprehensive measures of success in education, as there are few empirical instruments measuring the complex factors framing academic success, including elements such as learning and growth of cognitive capabilities. Even when student experience is included in surveys (for example, Graduate Careers Australia, 2015) the notion of experience is constrained to course or institutional-related characteristics.

Motivation

Motivation is what initiates, drives, sustains, and terminates behaviour related to goal-orientation (Anderman, 2020; Graham, 2020) and is a key component in academic success (Eccles & Wigfield, 2002; Hattie, 2008; Steinmayr & Spinath, 2009). Motivation is deep-seated in mammalian play and exploration (Ryan & Di Domenico, 2016) and is fundamental to understanding development and personality (Dweck, 2017). Motivation is complex and multifaceted, and an understanding of the constructs of motivation continues to evolve (Anderman, 2020; Eccles & Wigfield, 2020; Graham, 2020; Urdan & Kaplan, 2020), resulting in increased theoretical underpinnings and associated terminology (Hattie et al., 2020). Over the past several decades, motivation scholars have identified five major frameworks: attribution theory; self-determination theory; expectancy-value theory; social cognitive theory; and achievement goal theory (Anderman, 2020; Koenka, 2020). All five frameworks view motivation

from a social-cognitive stance (Koenka, 2020; Nolen, 2020), however, they differ in the way they assess, examine, and interpret the antecedents and consequences of underlying belief systems (Anderman, 2020; Eccles & Wigfield, 2002). Given the range of theories, and the subtle nuances associated with each framework, it is essential for ongoing motivation research to align with current education policies and practice (Anderman, 2020). The miscellany of motivation frameworks allows researchers to choose frameworks best suited to specific research projects (Anderman, 2020), and attribution theory and self-determination theory will be used to inform this study. Both theories emphasize self-efficacy, reflection, and intrinsic motivation, all of which are particularly relevant during the COVID-19 pandemic where learners have been required to urgently transition from traditional learning environments to online learning (Chiu et al., 2021; Faridah et al., 2020). Table 1 outlines the key questions and constructs implicit within each framework.

Attribution Theory

Weiner's attributional theory of motivation and emotion is a causal taxonomy that refers to the causality attributed to failure or success, which can be viewed as either internal or external (Demetriou, 2011; Schunk & Zimmerman, 2006). Weiner's Attribution Theory had its synthesis in the seminal work of Heider (1958) and Kelley (1967) who referred to individuals as scientists attempting to make sense of causality of behaviour, both internally and externally (Graham, 2020; Martinko & Mackey, 2019; Weiner, 2006). Anderman (2020) contended that Attribution Theory is the only motivation theory in which motivation correlates are integral to the theory itself. The theory holds that if positive outcomes are achieved, the causal network associated with that positive outcome is likely to be replicated in the future. Conversely, if an undesired outcome is achieved, a different approach will likely be taken in the future. Perceptions of causality vary within a person's experience and from person to person, however, three dimensions are essential in attributing causality: locus; stability; and controllability (Weiner, 1985, 2018).

Locus refers to an individual's perception of causation and can be either internal or external. *Stability* refers to the degree to which the factor remains stable over time, and *controllability* refers to the degree to which an individual has control over the factor. According to Weiner's (1985) theory, prior positive outcomes lead to higher levels of aspiration; that is, if a goal is achieved, it is likely to lead to an increase in aspiration, and, on the other hand, failure to achieve goals is likely to lead to decreased levels of aspiration. Weiner also argued that success and failure

Table 1

Motivation Theories, Questions and Constructs

Theory	Questions that could be answered from this theory	Examples of typical constructs
Attribution Theory	Why did I succeed at this task? Why did I not succeed at this task?	Locus, stability, control, causal antecedents, behavioural consequences, emotions
Self Determination Theory	Am I engaging with this task for its own sake? [intrinsic reasons] Am I engaging in this task in order to attain an outcome that is separate from the task? [extrinsic reasons]	External regulation, amotivation, intrinsic motivation

Note. Adapted from *Achievement Motivation Theory: Balancing Precision and Utility*. Anderman (2020, p. 3), © 2020 Elsevier Inc.

at skill tasks are likely to be attributed to ability and effort. Further, when ability is viewed from an entity theory, it is perceived as fixed, and is considered to be stable and therefore unable to be enhanced (Graham, 2020; Weiner, 1985). However, when ability is viewed from an incremental theory, it can be viewed as unstable, and therefore able to be improved (Graham, 2020). Effort is changeable at any given time and is therefore unstable, and when effort results in success, it is likely to be replicated in the future (Weiner, 1985, 2018).

Försterling (1985) conducted a comprehensive review of literature on Attribution Theory and attributional training and concluded that persistence was increased when failure was attributed to lack of effort, and conversely, persistence was decreased when failure was attributed to factors other than lack of effort. That is, when failure is perceived to be a result of controllable factors, persistence is increased, but when the perception is that there is a lack of control influencing an outcome, persistence is decreased. For students who struggle, attributional reframing can be powerful (Anderman, 2020; Blackwell et al., 2007; Dweck, 2017; Dweck & Yeager, 2019; Lazowski & Hulleman, 2016; Wigfield & Eccles, 2020). However, Graham (2020) cautioned against using reframing alone, as it may not necessarily lead to long-term change, without tackling underlying perceptions of identity, emotion, and causal beliefs.

Self-Determination Theory

Deci and Ryan's (1985) Self-Determination Theory (SDT) holds that motivation serves to regulate individuals' behavior and differentiates between autonomous and controlled motivation. Autonomous motivation is derived from a sense of self and an interest in exploration, and controlled motivation is extrinsic and derived from external motivations of reward and punishment (Deci & Ryan, 2008; Ryan & Deci, 2017). Such external motivators have been shown to be detrimental for deep and lasting learning, and, in fact, can inhibit intrinsic motivation (Nagel, 2016). Perceived competence and autonomy are key components of intrinsic motivation (Deci & Ryan, 2004) which is derived from a desire to explore, achieve, and reach self-actualisation. Furthermore, intrinsic motivation is considered one of the most significant indicators of academic achievement (Di Domenico & Ryan, 2017; Froiland & Worrell, 2016; Taylor et al., 2014).

Self-determination exists on a continuum with amotivation, or lack of intention to act due to perceptions of lack of competence or ability to achieve, at the non-self-determined end of the scale. Intrinsic motivation, on the other hand, is at the self-determination end of the continuum (Deci & Ryan, 2004; Ryan & Deci, 2017). Further, controls such as threats of punishment, deadlines, imposed goals, surveillance, competition, and evaluation can reduce intrinsic motivation whereas choice, non-controllingness, and empathy can promote intrinsic motivation (Deci & Ryan, 2004; Nagel, 2016; Ryan & Deci, 2017).

Self-Efficacy

The concept of self-efficacy was first introduced by Albert Bandura and refers to a person's belief in their ability to execute and accomplish tasks in future situations (Bandura & McClelland, 1977). It is domain and context-specific (Bandura, 2006; Schunk & DiBenedetto, 2020) and is influenced by cognitive, motivational, affective, and selection factors. Cognitive factors include forethought and self-appraisal of skills that lead to goal-setting which, in turn, leads to an increased sense of achievement (Bandura, 1993). Furthermore, Litalien et al. (2013), found that goal setting is

fundamental to the attainment of subjective well-being (SWB) (life satisfaction, positive and negative affect, and self-esteem).

Self-efficacy is an essential component in Self-Regulated Learning (SRL) (Bernacki et al., 2015) and efficacious learners are more likely to employ metacognitive monitoring (Moos, 2014) and to maintain motivation (Edgar et al., 2019). Highly efficacious learners are more likely to seek challenges that extend their knowledge and skills and tend to view failure as the result of a lack of effort (Pajares, 2008; Schunk & Mullen, 2012). In contrast, a less efficacious view may attribute a lack of success to a lack of ability. Additionally, highly efficacious learners are more likely to view ability as something that can be acquired (incremental theory), or mastered through skills, knowledge, and persistence, rather than the less efficacious notion that ability is set and unchanging (entity theory) (Dweck, 2017; Graham, 2020). Further, less efficacious individuals are less likely to challenge themselves and are more likely to stick to tasks with which they are familiar; in so doing, mitigating possible failure but also missing out on exposure to new learning opportunities afforded by more challenging tasks or situations (Bandura, 1993, 1997).

Affective factors include thought processes and emotional engagement that enhance or diminish learning and wellbeing, such as the belief that one possesses: control over stressors; coping strategies; the ability to tackle new and challenging tasks; and thought control efficacy (not dwelling on failures or weaknesses) (Pajares, 2008). Self-efficacy influences the way in which an individual views tasks, for example, an efficacious learner is more likely to view new tasks as a challenge, rather than a threat (Bandura, 1993; Chemers et al., 2001; Zajacova et al. 2005). Additionally, Chemers et al., (2001) found that self-efficacy mediated academic stress when new tasks were viewed as challenges, rather than threats. Similarly, a study conducted by Barrios (1997) found an improvement in grades for community college students when the students were instructed in self-efficacy and stress management, in contrast to training in learning and study skills.

Lastly, selection plays an important role in developing self-efficacy. Less-efficacious learners are more likely to avoid activities and situations where they believe they do not possess the skills necessary to succeed, though they may be willing to undertake tasks at which they are competent (Eccles & Wigfield, 2020). Highly efficacious individuals, on the other hand, are likely to seek challenges, and in so doing, reap rewards through continuing to grow their skills and knowledge (Schunk & Mullen, 2012).

Academic self-efficacy is seen as a predictor of both persistence and grades (Zajacova et al., 2005) and is directly related to both academic expectations and success (Chemers et al., 2001) and time spent studying (Torres & Solberg, 2001). Chemers et al. (2001) argued that students entering tertiary study with confidence in their own ability to achieve were more successful than less confident students. Bandura and Jourden (1991) found that students who demonstrate higher levels of decision-making and self-efficacy were better able to identify helpful metacognitive strategies. Following on from that, Chemers et al. (2001) also found that self-efficacy leads to an ability to employ helpful metacognitive strategies. Such strategies help with planning and negotiating tertiary study; and this includes decision making, problem-solving, and goal setting (Ainscough et al., 2018), all of which are essential for overall success.

There remains a lack of clarity around what success means for students in postsecondary education, and there is a dearth of literature measuring student perceptions of success. Furthermore, the understanding of overall success is evolving and is influenced by a burgeoning array of complex variables and factors, including COVID-19. Consequently, the research aims for this project were to develop and validate a self-report tool to determine students' perceptions of

their own success. It is anticipated that the Perceived Success in Study Survey (PSISS) will contribute to the body of knowledge about postsecondary students' overall view of personal success. Through taking part in the survey, students may be able to identify where their current learning priorities and perceived strengths lie, and they may also be able to identify aspects of their study and life where improvements could contribute to higher levels of overall success. Teachers and institutions could harness data from cohort surveys to identify areas where extra student support may be needed—both individually and within specific cohorts. In addition, it is hoped that an increased understanding of the complex nature of perceptions of success may be of benefit to those students who may struggle, including students with perceptual, processing, or cognitive differences, and for non-traditional postsecondary students including first in family, indigenous, and older learners and learners studying in the COVID-19 climate. Further, it is hoped that the PSISS will be useful in contributing knowledge that could lead to increased institutional awareness of the overall needs of students, and, in so doing, better evaluate and develop support for students who may require additional assistance to achieve personal success, whatever that may mean for the individual learner.

Methods

Ethics approval was granted from the University of the Sunshine Coast, Australia (ethics approval number: S191358). The study comprised three distinct phases: phase one, gathering insight; phase two, building and validating the questionnaire; and phase three, pilot testing.

Phase One. Gathering Insight

Literature was searched and qualitative feedback was sought from postsecondary students from a broad range of disciplines and levels of study, and educators, including subject tutors and Learning Advisors. Participants were asked to identify factors they believed to be important for overall success for students. Feedback was sought via email from long-serving academic teaching staff and Learning Advisors, in addition to social media, which was used to gather feedback from current and past postsecondary students. Additionally, informal conversations were held with students and initial feedback was provided by 39 respondents (28 current or past postsecondary students, seven tutors, and four Learning Advisors). Responses were collated and a pilot questionnaire was designed based on these responses.

Phase One Results

There were 26 items that consistently rated highly. These were included in the first iteration of the survey, which was shared with colleagues and students who were asked to rate the extent to which the items captured elements of success for students using a five-point Likert scale. Comments were invited regarding suggestions or changes, and respondents were asked to rank the top 10 items that best-described elements of success. Responses were received from eight students and eight colleagues, and 22 items were found to consistently rate highly. Four low-performing items were subsequently removed.

Phase Two. Building and Validating the Questionnaire

A review of literature failed to identify a comprehensive measure of success for postsecondary learners and two existing institutional self-report measures of success were identified that aligned with the feedback and were considered suitable for adaptation for use in the study: the Course Experience Questionnaire (CEQ) (Graduate Careers Australia, 2015) and The Naylor Survey (Naylor, 2017). The CEQ identifies 11 aspects of student experience primarily from the institutional perspective: good teaching; generic skills; overall satisfaction; clear goals and standards; appropriate workload; appropriate assessment; intellectual motivation; student support; graduate qualities; learning resources; and learning community. Each aspect has several items that are ranked on a 5-point Likert scale measuring the extent to which respondents agree or disagree with the importance of each item in contributing to overall satisfaction with their university experience. Four of the 11 aspects were particularly pertinent to individual student experience: generic skills; intellectual motivation; graduate qualities; and learning community. The Naylor Survey (Naylor, 2017) examines nine factors related to a successful university experience: belonging; opportunity; identity; connection; discovery; achievement; completion; flexibility; and personalization. Responses are ranked on a 5-point Likert scale (1=*not at all important*, 5=*extremely important*).

Comparisons were made between the four CEQ aspects, the Naylor Survey, and the draft perceptions of success survey to identify similarities, overlaps, and gaps. These comparisons included all nine factors of the Naylor Survey and 20 items from the four chosen aspects of the CEQ: Generic Skills (5); Intellectual Stimulation (4); Graduate Qualities (6); Learning Community (5). The strongest factor identified in the draft perceptions of success survey was work/life balance (WLB), which was not included in either the CEQ or the Naylor Survey. Consequently, a further seven items reflecting this aspect were added to the final survey.

The resulting 29 item questionnaire posed a universal statement: "I feel successful in my study when" followed by statements such as, "I feel part of a learning community", "My family is proud of me", "I am confident to investigate new ideas", "I value perspectives other than my own". To reach the upper limits of reliability (Leung, 2011), the questions were rated on a seven-point Likert scale (1=*never*, 7=*always*), and responses were forced to avoid incomplete participant data.

This initial 29-item survey was piloted with 23 subject tutors and Learning Advisors at a New Zealand tertiary learning institution. As a result of feedback, modifications in wording were made to clarify some of the questions. At this point, face validity of the items was established (Bryman & Cramer, 2002; Rattray & Jones, 2007) and it was determined that the questionnaire was a relevant measure of the proposed domains, and it was prepared for external piloting (Rattray & Jones, 2007). Bryman and Cramer (2002) argued that sample size should be at least five respondents per item, and with the initial 29-item survey, the aim was to recruit a minimum of 145 participants for the study.

The survey was piloted externally via social media, and participants were sought utilising snowball recruitment (Streeton et al., 2004). Participant inclusion criteria were current or previous postsecondary education experience. As the survey was presented on social media, rather than targeting a dedicated cohort of current students, the decision to include previous study experience was made to maximise participant numbers. Informed consent was inferred through participation in the survey, participants were assured of anonymity and advised that they would be unable to withdraw from the project once their responses had been submitted. The raw data were returned in an Excel™ spreadsheet and uploaded into IBM SPSS Statistics (version 26) predictive analytics software (SPSS™).

Phase Two Results

Table 2 details the demographic breakdown of the participants in this phase.

Establishing Internal Consistency. The internal consistency of a survey must be established to ascertain how closely associated a set of items are as a group (Field, 2018) and the Cronbach's α coefficient was used to measure the internal consistency. Lavrakas (2008) considers that a score of 0.7 is acceptable; 0.8 is good; and 0.9 or above is excellent. The Cronbach's α co-efficient for the survey was 0.907, and it was therefore determined that the questions in the survey displayed a high level of internal consistency reflecting perceptions of student success (Table 3).

Having established internal consistency, the Kaiser-Meyer-Olkin (KMO) and Bartlett's tests were applied to measure sampling adequacy for each survey variable to establish the proportion of variance among the variables to determine the suitability of the data for factor analysis. Values close to 1.0 indicate that a factor analysis may be beneficial in data interpretation. Accordingly, the Kaiser-Meyer-Olkin (KMO) and Bartlett's Test were applied to the data, resulting in a KMO score of 0.877 and a Bartlett's Test score of 0.000 ($p < 0.001$), thus indicating that a factor analysis was appropriate (Appendix A). A Principal Component Analysis (PCA) using a Varimax rotation with Kaiser Normalisation was then conducted with the number of components defined by Eigenvalues > 1.0 on the Scree Plot. Seven factors were identified, two of which contained only two items with weak loadings. Consequently, a subsequent PCA was conducted constrained to five factors, representing the majority of the variance, and the following five factors were identified:

Table 2

Phase Two PSISS: Participants, Totals and Percentages, n=225

Gender	Age	Ethnicity	Currently studying
Male	60	Under 25	52
	(26.7%)		(23.1%)
Female	162	25–34	40
	(72%)		(17.8%)
GD	3	35–44	45
	(1.3%)		(20%)
		45–54	51
			(22.7%)
		55–64	32
			(14.2%)
		65 and older	5
			(2.2%)
		European	169
			(75.1%)
		Māori	16
			(7.1%)
		Pacific Peoples	11
			(4.9%)
		Asian	7
			(3.1%)
		Middle Eastern/ Latin American	6
			(2.7%)
		Other	15
			(6.7%)

Note. GD = gender diverse

Table 3

Phase Two PSISS: Cronbach's Alpha, n=225

Cronbach's α	Cronbach's α based on Standardised items	N of items
.907	.913	29

Work-life Balance; Generic Skills; Intellectual Stimulation; Learning Community; and Commitment to Learning (Table 4). The internal reliability of each factor was examined using

Table 4

PSISS Phase Two: Five Factor Principal Component Analysis Rotated Component Matrix. n=225

	1	2	3	4	5
	Work/life balance	Generic Skills	Intellectual stimulation	Learning Community	Commitment to Learning
Manage time well	.806				
Plan work	.785				
Manage commitments	.756				
Prepared as can be	.660				
Negotiate life	.634				
Ask for help	.579				
Don't get flustered					
Problem solving skills		.759			
Apply principles		.729			
Reasoning skills		.703			
Unfamiliar problems		.607			
New ideas		.568			
Explore new ideas		.503			
Intellectual stimulation			.745		
Stimulated in field			.669		
Enthusiasm for future learning			.635		
Motivated	.416		.615		
Broad overview			.550		
Final grade					
Team member				.713	
Part of group				.636	
Belong to community				.487	
Family proud				.485	
Time to exercise					
Group discussions					.634
Attend class					.613
Value other perspectives					.584
Explore academic ideas					.551
Valuable for future					.543

Note. Extraction Method: Principal Component Analysis.
Rotation Method: Varimax with Kaiser Normalization.
Rotation converged in 8 iterations.

Cronbach's α and all factors were found to have strong internal consistency (Appendix B). Two items were removed at this point as they failed to load on any of the factors identified by the PCA.

T-tests and ANOVA Testing. Due to the heterogeneous nature of the participants and self-selection sampling, independent-samples t-tests were conducted to compare individual item responses for gender (male and female); ethnicity (European and all others); and currently studying (yes and no). Gender was represented as male and female as there were only three gender-diverse participants, and the number was deemed too few to have any statistical significance. The dual ethnicity grouping of "European" and "all others" was the result of the large majority of European participants compared to the relatively low number of respondents from other ethnic groups. Additionally, a one-way between-subjects ANOVA was conducted to compare the possible effect of age groupings on responses to individual items for the age groups: under 25; 25–34; 35–44; 45–54; 55–64; and 65 and older. No statistical difference was found between any of these demographic groups.

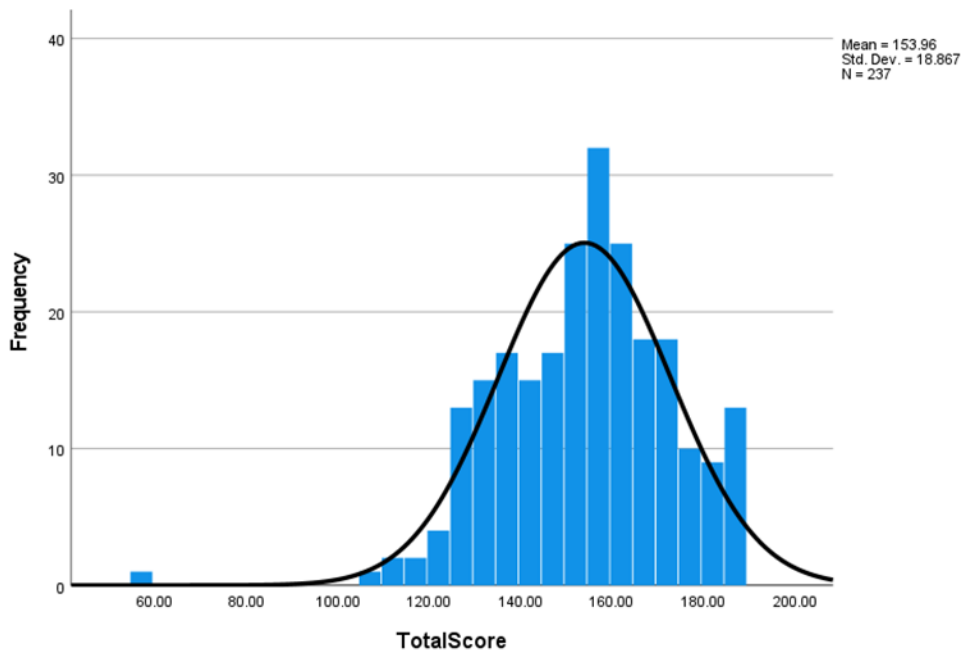
Finally, to check for normal distribution, total item scores were calculated, and these were plotted on a histogram (Figure 1) with a maximum possible score of 203 ($M=153.95$; $SD=18.97$).

Phase Three. Pilot Testing

The final survey form, the Perceived Success in Study Survey (PSISS) (Appendix C) was distributed via social media to determine reliability. Again, snowball recruitment was utilised, and, although it is possible that some respondents may have completed the initial survey, it is impossible to know if this was the case, due to participant anonymity. The raw data were returned in an Excel™ spreadsheet and uploaded into SPSS™.

Figure 1

PSISS Phase Two: Total Score Normal Curve of Distribution, n=225



Phase Three Results

Table 5 details the demographics of the participants in this phase.

Establishing Internal Consistency. Cronbach's α was again applied to the data resulting in a score of 0.925 (Table 6), and the Kaiser-Meyer-Olkin (KMO) and Bartlett's test resulted in a KMO score of 0.904 and a Bartlett's Test score of 0.000 ($p < 0.001$; Appendix D). The internal reliability of each factor was examined using Cronbach's α and all factors were found to have strong internal consistency (Appendix E).

Principal Component Analysis (PCA) using Varimax rotation with Kaiser Normalisation was then conducted constrained to five factors as in the previous study, again identifying the factors of: Work-life Balance; Generic Skills; Intellectual Stimulation; Learning Community; and Commitment to Learning (Table 7).

Independent-samples t-tests were conducted to compare individual items against gender (male and female), ethnicity (European and all others), and currently studying (yes and no); and a one-way between-subjects ANOVA was conducted to compare the possible effect of age groupings on responses to individual items, for the age groups: under 25; 25–34; 35–44; 45–54; 55–64; and 65 and older. No statistical difference was found between any of these demographic groups. Total item scores were calculated, and these were plotted on a histogram (Figure 2) with a top possible score of 189 ($M=154.8$; $SD=19.9$).

Table 5

Phase Three PSISS: Participants, Totals and Percentages, n=237

Gender	Age	Ethnicity	Currently studying
Male	53 (22.4%)	Under 25 49 (20.7%)	European 167 (70.5%) Yes 103 (43.5%)
Female	181 (76.4%)	25–34 48 (20.3%)	Māori 19 (8%) No 134 (56.5%)
GD	3 (1.2%)	35–44 38 (16%)	Pacific Peoples 11 (4.6%)
		45–54 51 (21.5%)	Asian 18 (7.6%)
		55–64 42 (17.7%)	Middle Eastern/ Latin American 4 (1.6%)
		65 and older 9 (3.8%)	Other 18 (7.6%)

Note. GD = gender diverse

Table 6

Phase Three PSISS: Cronbach's Alpha, n=237

Cronbach's α	Cronbach's α based on Standardised items	N of items
.925	.929	27

Table 7

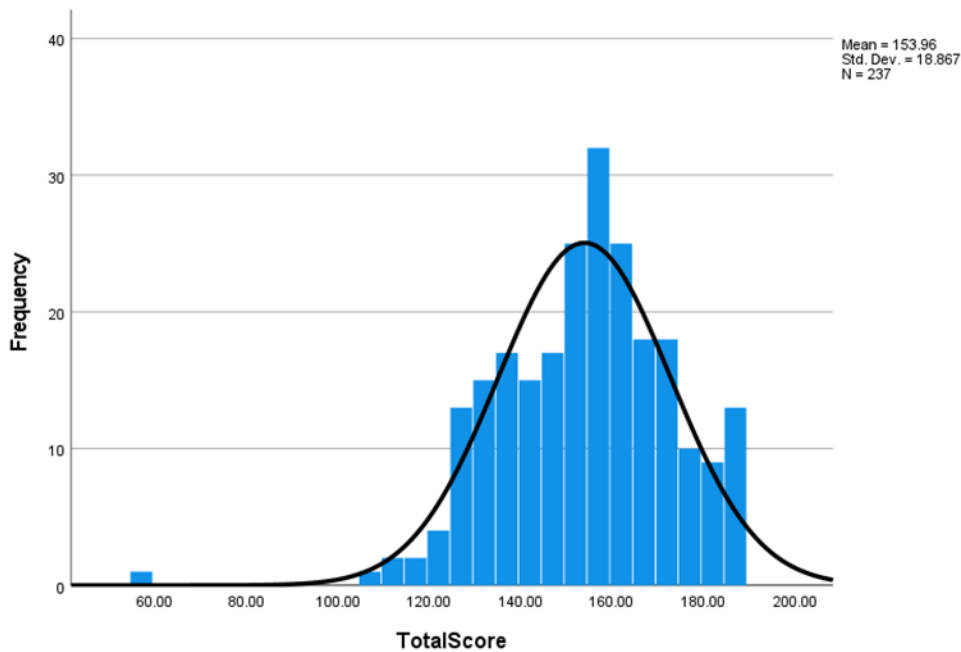
PSISS Phase Three: Five Factor Principal Component Analysis Rotated Component Matrix.
n=237

	1	2	3	4	5
	Intellectual Stimulation	Work/life balance	Learning Community	Generic Skills	Commitment to Learning
Intellectually stimulated	.799				
Broad overview of knowledge	.635				
Investigate new ideas	.629				
Stimulated in field	.601				
Reasoning skills	.589				
Enthusiasm for future study	.554				
Motivated	.514	.491			
Manage time		.803			
Plan work thoroughly		.732			
Manage commitments		.653			
Final grade reflects effort		.517		.480	
Attend class		.508			
Valuable for future		.458			
Part of a group of students			.797		
Team member			.776		
Belong to learning community			.666		
Group discussions			.629		
Family is proud			.580		
Apply principles				.718	
Tackle unfamiliar problems				.717	
Explore ideas with others			.499	.529	
Explore academic ideas			.491	.495	
Problem solving	.493			.494	
Value others' perspectives					.746
Ask for help					.735
As prepared as can be					.527
Negotiate all aspects of life		.401			.479
Cronbach's α	.767	.869	.728	.791	.738

Note. Extraction Method: Principal Component Analysis.
 Rotation Method: Varimax with Kaiser Normalization.
 Rotation converged in 7 iterations.

Figure 2

PSISS Phase Three: Total Score Normal Curve of Distribution, $n=237$



Discussion

This research project addresses a perceived gap in the measurement of postsecondary students' overall success. The internal reliability of the survey is high, and the questions are considered to consistently measure elements of overall student success. The Kaiser-Meyer-Olkin (KMO) and Bartlett's tests established sampling adequacy for each variable, indicating suitability for factor analysis. The second survey had higher Cronbach's α and KMO scores than the initial survey (Cronbach's α . 907 and .925 retrospectively, and KMO .877 and .904 retrospectively), indicating that the survey was strengthened through the removal of two items from the original 29-item survey. The PCA identified five factors in both phases: Work-life Balance; Generic Skills; Intellectual Motivation; Learning Community; and Commitment to Learning. Generic Skills, Intellectual Stimulation, and Learning Community are aspects included in the CEQ (Graduate Careers Australia, 2015). Work-life balance was a strong factor identified by the student/educator feedback but was not included in either the CEQ or the Naylor Survey (Naylor, 2017), and was subsequently added to this survey. Commitment to Learning is a small fifth factor identified reflecting metacognitive monitoring. The total score histograms show normal distribution indicating that responses are representative of the general population.

Although females are generally more likely to respond to surveys than males (Curtin et al., 2000; Smith, 2008), independent t-tests confirmed that there are no statistical differences between the responses of male and female participants. Further, although European heritage participants are more likely to respond to surveys than non-Europeans, (Smith, 2008; Voigt et al. 2003) independent t-tests confirmed no statistical differences between the responses of the "European" and "All other ethnicities" groupings. Therefore, neither gender nor ethnicity had any statistically significant impact on the findings.

The individual item curves of normality identified several items that are positively skewed, indicating a strong degree of agreement with the universal statement "I feel successful in my study when"; that is, participants considered these elements to be of high importance when measuring success: a broad overview of knowledge; intellectually stimulated; investigate new ideas; family is proud; enthusiasm for future learning; stimulated in field of study; valuable for future; final grade reflects effort; attend class; reasoning skills sharpened; problem-solving skills are developed; explore new ideas; manage time; tackle unfamiliar problems; apply principles to new situations; manage commitments well; plan work thoroughly. The number and variety of items rated as important for overall success confirm that students' perceptions of success are varied and complex. It further confirms that overall success is more individually nuanced than academic success, or course or institutionally related student experience such as the CEQ (Graduate Careers Australia, 2015).

Validity is shown through the internal consistency and reliability measures which are high, both for the survey as a whole, and on the individual items. This indicates that the intended content representations have been achieved. Additionally, there are no statistical differences in responses between the varying demographic groups. It appears, therefore, that the PSISS is a comprehensive bi-factor measure of postsecondary students' perceptions of success for the complete survey and the five identified factors.

Underpinning all five factors of the PSISS are elements of motivation and self-efficacy, and although these are essential for success generally (Edgar et al., 2019; Hattie, 2008), they are of particular relevance during the COVID-19 pandemic when students are often learning in challenging environments (Chiu et al., 2021). Additionally, self-directed learning is a necessity for learners in COVID-19 times, and self-efficacy is a key component of self-directed learning (Bernacki et al., 2015). Self-directed learning (SDL) relies on metacognitive monitoring, which helps to maintain motivation (Ainscough et al., 2018), and autonomous motivation, as described by SDT, is vital for success in remote learning environments (Chiu et al., 2021). Further, Attribution Theory holds that correctly attributing success or failure to specific locus, stability, and controllability of factors is useful for building success-promoting attitudes and strategies (SPAS) (Anderman, 2020; Dweck & Yeager, 2019).

The initial feedback provided by tertiary students and tutors highlighted work-life balance (WLB) as a key component of overall success, although this factor was not included in either the CEQ or the Naylor Survey. In the context of this study, work refers to both study and paid employment. Of note, the PCA in both survey development phases rated WLB highly, and this is consistent with the views of Brus (2006) and Stimpson and Filer (2011) who found that successful work-life balance leads to higher levels of degree completion. WLB is the degree to which an individual is engaged with, and satisfied by, all aspects of their life (Greenhaus et al., 2003). This is achieved through ensuring an even distribution of energy, commitment, and time (Kirchmeyer, 2000), and ensuring that work does not take up more time than is optimal; through identifying priorities and managing time (Sedgwick, 2007). Greenhaus et al. (2003) argued that the ability to balance work and life has a significant impact on mental well-being for individuals who choose to make substantial investments of time and commitment toward achieving balance. Conversely, WLB is not related to quality of life for individuals who invest limited energy in, and derive little satisfaction from, seeking and achieving balance.

Postsecondary students face myriad challenges when embarking on study and are constantly juggling competing demands as they manage work, family, activities, social life, and the day-to-day demands of living (Carney et al., 2005; Lumley et al., 2015), and COVID-19 has added further

complexity to this constant juggle (Chiu et al., 2021). It is vital that students learn to balance all these factors to optimise academic achievement and quality of life (Cater, 2016; Jeffreys, 2012; Lumley et al., 2015, Shelton, 2012).

For many students, the need to maintain a consistent income is essential and this has implications for their academic success (Christensen et al., 2016). Carney et al. (2005) noted that increased working hours were likely to have a negative impact on academic performance but argued that good mental health was more likely to lead to successful academic outcomes, regardless of the number of hours worked. Further, they found that working part-time had a negative impact on academic outcomes, although they also reported that students often found part-time work to be useful for reasons other than financial, including the development of transferable employment-related skills (Curtis & Shani, 2002; Lumley et al., 2015).

Investigating the experience of students working part-time, Dundes and Marx (2006) found that students who worked 10–19 hours a week were more likely to have higher grades than those who did not work, or worked fewer than 10 hours weekly. They theorised that these students may have better organisational skills as they are pressured to manage time and routine. In addition, Dundes and Marx (2006) further noted that this particular cohort of students was more likely to set aside dedicated time for study and that they achieved higher GPAs than those not working or working up to 10 hours a week. In other words, students working 10–19 hours a week appear to have found an optimal work-life balance.

Various studies have investigated elements of WLB as they pertain to specific cohorts of students, including: doctoral students (Litalien, 2015; Martinez et al., 2013); medical students (Hill et al. 2018); nursing students (Mitchell, 2020); non-traditional students (Priode, 2019); and mature students (Christensen & Craft, 2020). However, the experience of postsecondary students in general has been under-theorised and there is a scarcity of literature examining the relationship between WLB and overall success for postsecondary students.

Results of this study support continued investigation into SPAS of postsecondary learners and could have implications for students for whom there are gaps in their personal success-promoting capabilities and capacities. For example, ratings of 5–7 on individual items can be considered high, and conversely, ratings of 1–3 on individual items could indicate an area of concern. Total scores of between 135–189 could indicate an overall high level of SPAS, with scores lower than 108 indicating there are areas for improvement. However individual item ratings, or factor ratings may be more useful due to the specificity of the information garnered (Appendix F).

Contributions, Limitations, and Future Research

There is a dearth of literature exploring postsecondary education students' perceptions of overall success, and this study adds to the knowledge in the field. The findings of this study could help to shed light on success-promoting attitudes and strategies for postsecondary students, however, there are some notable limitations within the study. First, the surveys were presented on social media through the personal account of the lead researcher, and this resulted in a high degree of heterogeneity in participants. Although it could be argued that a more homogeneous group may elicit a more accurate picture of perceptions of overall success, independent t-tests and age-group ANOVA tests confirm that there is no statistical difference among responses from the different demographic groups across the survey. Second, this current study does not differentiate between year-levels of study for those currently studying, and future research could seek to explore possible differences in attitudes toward success for different year-level cohorts. Third, this study

does not focus on under-represented groups specifically, and future research could seek to elucidate the experiences of cohorts traditionally under-represented in postsecondary education, including: first in family; indigenous learners; older and second chance learners; and those with differing personal capacities of attentional patterns, cognitive styles, and perceptual sensitivities. Fourth, more than half of the participants in this study were not currently studying at the time of participation. Future research could seek to investigate a more homogeneous group of current postsecondary students to establish if this alters the findings in any way. However, as noted, ANOVA calculations identified no statistical difference between the responses of current or past students.

Conclusion

Postsecondary education institutions are charged with providing environments in which students can thrive, and this requires that student well-being remains a priority for them. Success is essential for student well-being, yet it remains under-theorised and predominantly viewed from an institutional or course perspective, focusing on external motivators, such as grades, progression, and program or degree completion. However, students experience success continuously throughout their learning journey in myriad personal, complex, and nuanced ways. Successful work-life balance is essential for negotiating postsecondary study, yet it remains relatively unexplored in the wider postsecondary context. To better understand personal perceptions of overall success, there needs to be a reliable tool with which to measure elements of overall success, and to date, such a comprehensive measure has been missing. The PSISS offers potential as a robust and comprehensive measure of postsecondary students' success-promoting attitudes, and provides an overview of students' overall levels of success-promoting behaviors. Additionally, ratings on the five factors can be used to comprehensively examine specific domains related to overall success, and this may help identify gaps in success-promoting attitudes and strategies. Identification of such gaps could inform possible interventions, including education, workshops, and individual success and study plans, to improve personal capacity in areas such as self-efficacy, motivation, and metacognitive monitoring strategies. Such interventions could be advantageous for all learners for whom success-promoting attitudes and strategies could be enhanced, and may be particularly helpful for learners currently under-represented in higher education, including: first in family; indigenous learners; older and second chance learners; for students who may have learning differences or challenges related to their personal capacities of attentional patterns, cognitive styles and perceptual sensitivities; and for learners negotiating the intricacies of the COVID-19 learning environment.

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Appendix A: KMO and Bartlett's Test, n=225

KMO and Bartlett's Test

<hr/>		
Kaiser-Meyer-Olkin Measure of Sampling Adequacy.		.877
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Bartlett's Test of Sphericity	Approx. Chi-Square	2694.594
	df	406
	Sig.	.000
<hr/>		

Note. $p < 0.001$

Appendix B: Five Factors Reliability: Work/life Balance; Generic Skills; Intellectual Stimulation; Learning Community, Commitment to Learning, n=225

Work/life Balance Reliability Statistics

Cronbach's Alpha	N of Items
.869	6

Item-Total Statistics

	Scale Mean if Item Deleted	Scale Variance if Item Deleted	Corrected Item-Total Correlation	Cronbach's Alpha if Item Deleted
Manage time	25.12	28.785	.677	.845
Plan work thoroughly	25.23	29.134	.720	.838
Manage commitments	25.29	28.546	.732	.835
Prepared as can be	24.93	30.982	.605	.857
Negotiate life	25.39	28.828	.655	.849
Ask for help	25.48	29.001	.623	.855

Generic Skills Reliability Statistics

Cronbach's Alpha	N of Items
.791	6

Item-Total Statistics

	Scale Mean if Item Deleted	Scale Variance if Item Deleted	Corrected Item-Total Correlation	Cronbach's Alpha if Item Deleted
Problem-solving skills	29.16	12.034	.649	.734
Apply principles	29.21	12.211	.598	.745
Reasoning skills	29.45	11.990	.553	.756
Unfamiliar problems	29.33	12.911	.514	.765
Investigate new ideas	29.15	12.861	.507	.767
Explore ideas with others	29.37	12.377	.453	.783

Intellectual Stimulation Reliability Statistics

Cronbach's Alpha	N of Items
.767	5

Item-Total Statistics

	Scale Mean if Item Deleted	Scale Variance if Item Deleted	Corrected Item-Total Correlation	Cronbach's Alpha if Item Deleted
Intellectually stimulated	23.54	9.526	.603	.700
Stimulated in field	23.32	10.092	.620	.697
Enthusiasm for future learning	23.37	10.110	.514	.733
Motivated	23.50	10.135	.511	.734
Broad overview	23.38	11.343	.445	.754

Learning Community Reliability Statistics

Cronbach's Alpha	N of Items
.728	5

Item-Total Statistics

	Scale Mean if Item Deleted	Scale Variance if Item Deleted	Corrected Item-Total Correlation	Cronbach's Alpha if Item Deleted
Team member	17.96	20.864	.612	.633
Final grade reflects effort	18.48	22.126	.438	.703
Part of group	17.40	22.679	.499	.678
Belong to community	17.59	22.547	.488	.681
Family is proud	16.97	22.736	.417	.710

Commitment to Learning Reliability Statistics

Cronbach's Alpha	N of Items
.738	5

Item-Total Statistics

	Scale Mean if Item Deleted	Scale Variance if Item Deleted	Corrected Item-Total Correlation	Cronbach's Alpha if Item Deleted
Group discussions	22.07	14.313	.539	.679
Attend class	22.46	12.276	.468	.730
Value others' perspectives	21.78	13.903	.631	.646
Explore academic ideas	21.86	15.381	.482	.701
Valuable for future	21.38	16.290	.462	.710

Appendix C: 27 Item The Perceived Success in Study Survey and Associated Factors

I feel successful in my study when:

- | | |
|--|-----|
| 1. I develop my ability to work as a team member | LC |
| 2. I am intellectually stimulated | IS |
| 3. I have a broad overview of my field of knowledge | IS |
| 4. I feel part of a group of students committed to learning | LC |
| 5. my reasoning skills are sharpened | IS |
| 6. I am motivated | IS |
| 7. I am confident to investigate new ideas | IS |
| 8. my problem-solving skills are developed | GS |
| 9. my family is proud of me | LC |
| 10. my enthusiasm for further learning is stimulated | IS |
| 11. I am able to explore ideas confidently with other people | GS |
| 12. I manage my time well | WLB |
| 13. I am able to tackle unfamiliar problems | GS |
| 14. I am stimulated in my field of study | IS |
| 15. I can apply principles to new situations | GS |
| 16. I feel I belong to the tertiary community | LC |
| 17. I manage my commitments well | WLB |
| 18. I plan my work thoroughly | WLB |
| 19. I consider that what I have learnt is valuable for my future | WLB |
| 20. my final grade reflects the effort I have put in | WLB |
| 21. I am able to explore academic ideas with staff and students | GS |
| 22. I know that I am as prepared as I can be, given other life commitments | CTL |
| 23. I ask for help when I need it | CTL |
| 24. I value perspectives other than my own | CTL |
| 25. I contribute to group discussions | LC |
| 26. I can successfully negotiate all aspects of my life | CTL |
| 27. I attend class | WLB |

Note. IS=intellectual stimulation, WLB=work/life balance, LC=learning community, GS= generic skills, CTL=commitment to learning

Appendix D: KMO and Bartlett's Test, n=237

KMO and Bartlett's Test

<hr/>		
Kaiser-Meyer-Olkin Measure of Sampling Adequacy.		.904
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Bartlett's Test of Sphericity	Approx. Chi-Square	2998.821
	df	351
	Sig.	.000
<hr/>		

Note. $p < 0.001$

Appendix E: Five Factors Reliability: Intellectual Stimulation; Work/life Balance; Generic Skills; Learning Community; Commitment to Learning, n=237

Intellectual Stimulation Reliability Statistics

Cronbach's Alpha	N of Items
.836	7

Item-Total Statistics

	Scale Mean if Item Deleted	Scale Variance if Item Deleted	Corrected Item-Total Correlation	Cronbach's Alpha if Item Deleted
Intellectually stimulated.	36.66	16.777	.582	.814
Broad overview	36.77	16.823	.550	.820
Investigate new ideas	36.80	15.866	.682	.798
Stimulated in field	36.57	17.119	.642	.807
Reasoning skills	36.86	16.244	.570	.817
Enthusiasm for future learning	36.66	16.589	.611	.810
Motivated	36.44	17.824	.481	.829

Work/life Balance Reliability Statistics

Cronbach's Alpha	N of Items
.836	6

Item-Total Statistics

	Scale Mean if Item Deleted	Scale Variance if Item Deleted	Corrected Item-Total Correlation	Cronbach's Alpha if Item Deleted
Manage time	34.60	26.190	.678	.802
Plan work thoroughly	34.97	25.617	.639	.806
Manage commitments	34.83	26.050	.705	.798
Final grade reflects effort	34.57	27.974	.453	.834
Attend class	35.10	25.063	.577	.817
Valuable for future	34.69	27.521	.530	.823

Learning Community Reliability Statistics

Cronbach's Alpha	N of Items
.811	5

Item-Total Statistics

	Scale Mean if Item Deleted	Scale Variance if Item Deleted	Corrected Item-Total Correlation	Cronbach's Alpha if Item Deleted
Group of students	20.16	20.067	.716	.735
Team member	20.24	21.605	.635	.762
Belong to community	20.30	21.856	.625	.766
Group discussions	19.73	23.603	.563	.784
Family is proud	19.65	24.305	.457	.814

Generic Skills Reliability Statistics

Cronbach's Alpha	N of Items
.796	5

Item-Total Statistics

	Scale Mean if Item Deleted	Scale Variance if Item Deleted	Corrected Item-Total Correlation	Cronbach's Alpha if Item Deleted
Apply principles	23.10	13.125	.637	.746
Tackle unfamiliar	23.41	12.513	.576	.757
Explore ideas with others	23.43	12.017	.596	.751
Explore academic ideas	23.82	10.782	.554	.779
Problem solving	23.17	13.305	.594	.756

Commitment to Learning Reliability Statistics

Cronbach's Alpha	N of Items
.767	4

Item-Total Statistics

	Scale Mean if Item Deleted	Scale Variance if Item Deleted	Corrected Item-Total Correlation	Cronbach's Alpha if Item Deleted
Value others' perspectives	16.18	8.994	.606	.695
Ask for help	16.65	7.939	.598	.697
As prepared as can be	15.98	9.542	.544	.726
Negotiate all aspects of life	16.25	8.442	.541	.729

Appendix F: PSISS Ratings

	High Range	Low Range
Total Score	135–189	Below 65
Individual item score	5–7	Below 3
IS	42–49	Below 18
GS	30–35	Below 12
Factor Scores WLB	35–42	Below 14
LC	30–35	Below 12
CTL	24–28	Below 10

Note. IS=Intellectual Stimulation, GS=Generic Skills, WLB=Work/life Balance, LC=Learning Community, CTL Commitment to Learning