Original Research Article

Test of the Social Cognitive Model of Well-Being Among Vocational Education and Training Students in Spain

Marta Hernandez-Arriaza[1] , **Isabel Muñoz-San Roque[1]**,
Gonzalo Aza-Blanc[2], and Juan Arribas-Marin[3]

Abstract

This study aimed to test the model of academic well-being based on the Social Cognitive Career Theory in 368 Spanish higher Vocational Education and Training students, incorporating the variable academic interests. A cross-sectional design assessed self-efficacy, outcome expectations, interests, social and academic support, and academic and life satisfaction. All instruments showed consistent reliability with the original English and Spanish versions. The hypothesised model produced a good fit to the data and accounted well for variance in academic satisfaction (82%) and life satisfaction (43%). All hypothesised direct effects were significant except for three, for which indirect and total effects were significant. These results reinforce the cross-cultural validity of the model and the instruments, demonstrating the relevance of self-efficacy, outcome expectations, and social and academic support in VET students' academic satisfaction. Furthermore, they highlight the importance of academic interests as mediators between self-efficacy and outcome expectations in predicting academic satisfaction. It is suggested that procedures be implemented to enable the students to enrol in studies of their interest and improve their well-being.

Keywords

academic satisfaction, well-being, vocational education and training, social cognitive career theory, self-efficacy

[1]Department of Education, Comillas Pontifical University, Madrid, Spain
[2]Department of Psychology, Comillas Pontifical University, Madrid, Spain
[3]San Juan de Dios' University School of Nursing and Physical Therapy.Comillas Pontifical University, Madrid, Spain

Corresponding Author:
Marta Hernandez-Arriaza, Department of Education, Universidad Pontificia Comillas, Calle Alberto Aguilera, 23, Madrid 28015, Spain.
Email: mharriaza@comillas.edu

Introduction

In a dynamic and changing environment such as today's post-COVID-19 world, Vocational Education and Training (VET) has become a vital tool to address the transformations affecting the whole society (Marrero-Rodríguez & Stendardi, 2023). According to official data, more than 1.3 million European students choose short-cycle tertiary studies (Eurostat, 2023). In Spain, where these trainings are referred to as Higher VET, more than 500,00 students are pursuing these studies, increasing by 37% in the last five years (Caixabank Dualiza, 2024). However, despite increasing social demand, current research on the Spanish VET system is scarce, and the existing research has few resources to carry it out compared to other higher education studies, such as university education (Samanes & Clares, 2021).

In the context of an increase in the number of students in this training, Higher VET students' academic satisfaction plays a crucial role in their academic performance and overall life satisfaction. Social Cognitive Career Theory (SCCT) provides a framework for understanding how students develop interests, make educational decisions, and persist in their studies (Lent & Brown, 2008; Lent et al., 1994). Within this framework, student academic satisfaction has been explained primarily through academic self-efficacy and outcome expectations as key predictor variables (Brown & Lent, 2019; Lent, 2004). Unlike in other higher education contexts, academic interests are often not the primary reason why VET students choose their studies (Rego-Agraso & Rial-Sánchez, 2017), making it particularly important to understand how this dissonance affects their academic satisfaction and overall well-being. Therefore, exploring these determinants of academic satisfaction in Higher VET is essential to addressing a gap in the literature and providing insights that can inform educational practices and policies, ultimately contributing to students' academic success and satisfaction.

Higher Vocational Education and Training in Spain

The Spanish education system, like other European systems, is structured into levels of education, with the lowest levels corresponding to primary and secondary education and the upper levels to higher education. With its eight levels, the European Qualifications Framework (EQF) aims to equalise the qualifications acquired in different European countries. Level EQF 6 is recognised for university degrees and is considered a higher level of education. However, in Spain, in addition to bachelor's, master's and doctoral degrees, Higher Education also includes one of the educational programmes belonging to initial VET: Higher VET programmes (EQF level 5). University and Higher VET studies are parallel systems that are nevertheless connected by the direct access of higher VET students to undergraduate degrees without the need for an exam (Ministerio de Educación y Formación Profesional, 2022).

Despite being considered as higher education, the two pathways have some differences. Firstly, Higher VET programmes in Spain are shorter than traditional bachelor's degrees, usually lasting two academic years instead of four or five. Secondly, Higher VET is generally studied in upper secondary schools and specific VET institutions (Delgado, 2020). Thirdly, VET education often carries lower social recognition (Martínez-Morales & Marhuenda-Fluixá, 2020), as it has traditionally been oriented towards students with low academic qualifications (Jiménez & García, 2015). Fourth, VET groups generally consist of around 25 students, compared to the 60–100 typically found in university classrooms. Consequently, academic support becomes particularly important for this sample, especially the support provided by tutors. Finally, the training in these programmes is more practical than university studies. It is based on specific skills and knowledge for a particular industry, with at least three months of mandatory internship in a company or workplace at the end of the second year of studies. Thus, Higher VET students can

complete their education in a shorter period and enter the labour market more quickly than university students (Eurydice, 2024).

In addition to these differences, two factors may influence students' decisions to choose a specific Higher VET course. On the one hand, as in other higher education programmes, the limited availability of public places for students based on their residence (Ferret, 2014). On the other hand, an interest in entering the workforce quickly due the high employability rates associated with these programmes (Rego-Agraso & Rial-Sánchez, 2017). Indeed, Santana Vega et al. (2019) found that 73%–78% of VET students consider working as soon as possible a reasonably high or very high priority. This scenario is not unique to Spain but can also be observed internationally (Abrassart & Wolter, 2020; Guo & Wang, 2020; Veillard, 2022).

Relevance of the Social Cognitive Model of Academic Well-Being in Higher VET Students

Among the theories relating to academic satisfaction, the current study is based on SCCT as a framework for understanding the academic satisfaction of Higher VET students. Five models emerged from this theory, focusing on understanding how students develop their interests (Interests), make academic decisions (Choice), perform and persist in their academic environments (Performance), experience satisfaction with their activities (Normative well-being), manage career challenges over time (Career Self-Management) (Lent & Brown, 2019; Lent et al., 1994).

Specifically, the social cognitive model of academic well-being provides an understanding of the relationship between variables related to academic satisfaction, defined as academic well-being (Lent & Brown, 2008). The model postulates that academic well-being (i.e., the degree to which one likes or is happy with one's educational experiences) is essential to life satisfaction (Lent, 2004). Consequently, students who are satisfied with their studies tend to experience greater general well-being.

Building on the five original models, integrative models have emerged. In the case of the academic satisfaction model, it has evolved to incorporate elements from the interest and persistence models, particularly through the development of the Integrative Model of Academic Adjustment (IM) by Lent et al. (2013). This model helps explain how individuals achieve satisfaction and persist in academic or professional environments. It incorporates academic interests into the broader framework of academic well-being and has been extensively studied to explore the relationship between students' academic self-efficacy and outcome expectations as predictors of academic interest (Lent & Brown, 2019). Including academic interests in this model provides a more comprehensive view of student well-being, especially for VET students, whose educational choices may be influenced by both personal interests and high job placement expectations.

The IM has facilitated a deeper understanding of the relationship between academic self-efficacy, outcome expectations, academic interests, and academic satisfaction. The model assumes that being in an academic environment aligned with the student's interests promotes academic satisfaction, alongside other key variables in the model, including self-efficacy, outcome expectations, and academic support. Thus, individuals are more likely to be satisfied with their studies to the extent that they have access to the social and academic supports and resources needed to pursue their goals and to perform effectively in this domain (social and academic support), consider themselves competent in what they do (self-efficacy), and anticipate positive outcomes (outcomes expectations). In addition, academic satisfaction serves as a motivating factor, encouraging students to continue their studies and progress their vocational goals (Brown & Lent, 2019).

Additionally, SCCT considers personal factors such as positive affect and environmental factors such as social and academic support or barriers (e.g., family, friends, teachers and tutors).

Personal factors, such as self-awareness, positive affectivity/extraversion, and negative affectivity/neuroticism, influence academic satisfaction both directly and indirectly through their connections with self-efficacy beliefs and the support received from the socio–academic environment (Brown & Lent, 2019).

Social and academic support, as well as barriers, are conceived environmental variables that can influence students' academic satisfaction. These variables affect individual's self-efficacy beliefs and outcome expectations (Brown & Lent, 2019) and may be particularly significant in the context of Higher VET, where approximately 25% of enrolled students drop out of their studies (Ministerio de Educación y Formación Profesional, 2022). Providing adequate academic support, particularly from tutors, is essential for enhancing the academic satisfaction of these students. This support is considered a source of self-efficacy since the perception of ample support contributes to reinforcing self-efficacy and satisfaction (Brown & Lent, 2019).

On the other hand, interests are posited as a central variable in understanding how people set their vocational goals and persist on their chosen paths despite difficulties (Lent & Brown, 2019). Students generally prioritise their interests when choosing a learning pathway. Thus, interests are often a reliable indicator of students' choices, but they are not the only ones. In cases where individuals must compromise their interests in making choices (e.g., due to family or economic circumstances), self-efficacy and outcome expectations may augment or override interests in guiding choices (Brown & Lent, 2019). This may be the case for Higher VET students, who choose their studies based on work or academic expectations (such as university access) rather than their academic interests. However, no specific measures have yet been developed to assess the academic interests of Higher VET students or the alignment between these interests and the programmes in which they are enrolled. According to the principles of SCCT, it can be expected that a mismatch in academic interests may negatively impact students' academic satisfactions, potentially increasing their disengagement and ultimately affecting their overall personal satisfaction.

Research applying the well-being model in academic and workplace settings has a long history. Researchers have tested the model's ability to predict academic satisfaction among diverse samples of US university students (Garriott et al., 2015; Lent et al., 2005; Ojeda et al., 2011; Sheu et al., 2016; Singley et al., 2010) and students from other countries (Ezeofor & Lent, 2014; Işık et al., 2018; Lee & Shin, 2022; Lent et al., 2012; Sheu et al., 2017). According to the meta-analysis conducted by Sheu et al. (2020), research based on the academic well-being model fit the data well in university samples, and most of the predictors showed paths consistent with the hypotheses, explaining robust variance (of around 50%) in academic satisfaction. Moreover, the IM, has also demonstrated a good fit to the data in several samples of university students (Flores et al., 2014; Lent et al., 2013, 2015; Navarro et al., 2014, 2019). To date, an integrative model that incorporates academic interests while focusing on general well-being has not been tested.

In Spain, a version of the academic well-being model that included academic stress as a variable differentiated from academic satisfaction and excluded the outcome expectations variable from the model was tested in a sample of 373 student teachers from a public university (Lent et al., 2017). The original model was also tested in a sample of 586 students from four nursing universities (Arribas-Marín et al., 2021), where the well-being model was applied to the internship context. However, neither the original model Lent (2004) proposed, which includes outcome expectations as a relevant variable for VET students, nor the integrative model, including academic interests, has been tested in this specific sample.

The Current Study

This study is part of the Project Polaris, a research at the Comillas Pontifical University whose main objective is to better understand higher education students' experience at this stage and how

they project themselves into the future. This article presents the results of one part of the project focused on higher VET students. Holland's (1997) theory of vocational adjustment posits that individuals tend to seek academic and work environments that align with their personal interests, values and abilities. A good fit between their interests and vocational choices leads to greater satisfaction, improved performance, and reduced stress, all of which contribute to life satisfaction (Brown & Lent, 2019). In this context, the academic environment becomes a fundamental pillar of students' well-being. This is particularly relevant for VET students as their academic satisfaction serves as a predictor of future employability in professions related to their fields of study.

For all these reasons, the main objective of this study is to test a new integrative model based on Lent's (2004) well-being model and Lent et al.'s (2013) IM within a new context: Spanish Higher VET students. Accordingly, we consider the predictive variables from the integrative model, including positive affect, social and academic support, academic self-efficacy, outcome expectations, academic interests, and academic satisfaction, as well as the dependent variable, life satisfaction, from the original well-being model. This research focuses on students' well-being beyond their intention to remain enrolled in their programme.

In this study, academic interests are defined as the extent to which students enjoy activities available within their academic context, while academic satisfaction is understood as the overall enjoyment of the academic environment. In other words, interests typically relate to specific activities, whereas satisfaction reflects a broader affinity with the contexts in which these activities occur (Lent et al., 2013).

The main hypothesis of this work is constituted by the set of relationships between the variables shown in Figure 1. With this goal in mind and based on previous studies, we maintain that enrolling in courses that interest the students will likely serve as a precursor to academic satisfaction. Thus, as shown in Figure 1, positive affect (the independent variable) was hypothesised to predict social and academic support, self-efficacy expectations, academic satisfaction, and life satisfaction (paths 1–4). Social and academic support was postulated to directly predict academic self-efficacy (p5), interests (p6), outcome expectations (p7), and academic satisfaction (p8) and indirectly predict academic satisfaction through academic self-efficacy, academic outcome expectations and interests (p9, p11, and p12, respectively). Another hypothesis was that academic self-efficacy and outcome expectations would predict interests (p10 and p13). In addition, it was postulated that academic interests would predict academic satisfaction (p14) and that life satisfaction was directly predicted by academic satisfaction (p15). Finally, the total effect of the dependent variable, life satisfaction, would be predicted by the sum of the direct and indirect effects of the other variables that make up the well-being model.

Method

A cross-sectional design was adopted using a quantitative approach and an ex post facto design.

Participants

The sample for this study was incidental, selected due to accessibility by contacting seven institutions with Higher VET programmes. Regarding sample size, some researchers have suggested that structural equation analysis (SEM) should not be conducted with samples of less than 200 participants or have followed criteria such as five cases per observable variable (Halabí & Mora Esquivel, 2017). In this study, we followed the five items per observable variables criteria, which increased the minimum requirements to 290.

The participants were 368 Higher VET students with a mean age of 20.98 years (SD = 3.95). As for the academic year, second-year students were selected as the target sample to ensure they had

sufficient experience in their studies while not yet having entered their traineeship period. The distribution of students by professional fields included different areas of study. IT and computer sciences (65%) had the highest number of students. Consequently, the sample was slightly male-dominated, with 67% men ($n = 247$) and 33% women ($n = 121$). This ratio is consistent with data provided by official population statistics in Spain, where only 13% of enrolments in higher VET in STEM and ICT are female (Caixabank Dualiza, 2024).

The student sample predominantly consists of individuals from lower-middle and upper-middle socioeconomic levels (44% each), with a minority from very low (1%), low (3%), high (7%), and very high (1%) socioeconomic levels. Academic performance was assessed to ensure the sample's representativeness by asking students to compare themselves to their classmates. A small proportion (2%) considered themselves 'among the bottom,' while 12% described themselves as 'in the middle, but closer to the bottom,' indicating a lower perception of their performance. The majority (38%) positioned themselves squarely 'in the middle of the class,' while 29% identified as 'in the middle, but closer to the top.' Lastly, 19% considered themselves 'among the top', reflecting a group with high performance and confidence.

Instrument

As stated in the introduction, the objective of this study is to test an integrative model that incorporates academic interests as a mediating variable and life satisfaction as the criterial variable. Therefore, a battery of scales was applied to measure the independent variables included in the IM developed by Lent et al. (2013): positive affect, social and academic support, academic self-efficacy, outcome expectations, academic interests and academic satisfaction. As the study sought to analyse the students' well-being, the persistence assessment from the IM was replaced by the variable life satisfaction. In addition, to facilitate the parsimony of the model and in line with the analyses carried out by other authors that previously analysed the relationship between the studied variables (Flores et al., 2014), the variable progress towards academic goals was not included.
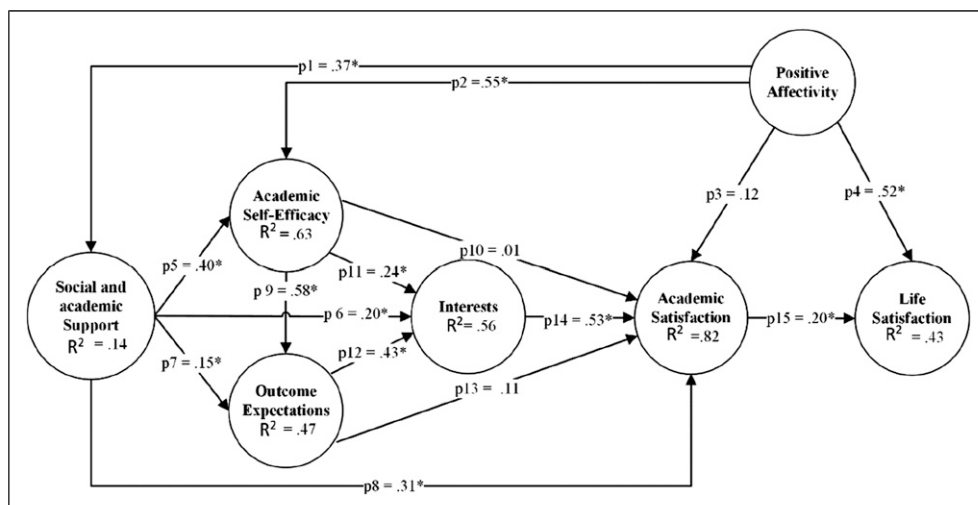

Figure 1. Structural Model. *Note:* The social cognitive model of academic well-being tested in the present study shows significant paths with an asterisk (*). R^2 estimates are displayed inside the variables. Values in the paths are standardised coefficients (β).

Table 1 shows the means, standard deviations, correlations and internal consistency estimates of the scales used to assess each target variable.

Positive Affectivity. The tendency to experience positive emotions was assessed using the ten items used by Dorio (2017). As theoretically predicted, Lent et al. (2005) found that the scale was related to life satisfaction, academic self-efficacy and social and academic support. Students indicated how they usually felt about certain feelings (e.g., strong, determined, curious) on a scale from 1 (never) to 5 (very often) in their daily lives. The Spanish version of the scale yielded an internal consistency of .82 and comprised three factors that explained 63.4% of the variance (Dorio, 2017). The Cronbach's alpha (α) coefficient of the scale scores in the current study was .84 indicating good internal consistency. The results of the CFA demonstrated an adequate model fit (CFI = .94, SRMR = .05, RMSEA = .08 [.06–.10]).

Social and Academic Support. The Spanish version of the original 9-item scale of Lent et al. (2005), translated by Dorio (2017), was used to measure how supported students felt by their *socio-family* ('I feel that my family gives me support to continue my studies'), *teachers* ('I receive useful help from teachers from a mentor') or *mentors* ('I can count on the support of my tutor if needed') environment. Students indicated their level of agreement with each statement, from 1 (strongly disagree) to 5 (strongly agree). Lent et al. (2005) reported internal consistency estimates of .81 and .84 and found that the scale correlated with self-efficacy, outcome expectations, and academic satisfaction. The Spanish version of the scale has produced internal consistency estimates of .74 and comprised three factors that explained 64.1% of the variance. (Dorio, 2017). After analysing the scale's internal consistency and the instrument's validity, the item 'I feel that there are people like me in these studies' was eliminated due to its ambiguity in the Spanish context. The Cronbach's α coefficient of the scale scores in the current study was .84, indicating good internal consistency. The results of the CFA showed an adequate model fit (CFI = .95, SRMR = .03, RMSEA = .10 [.08–.12]).

Academic Self-Efficacy. Academic self-efficacy was measured using the ten-item scale translated into Spanish by Dorio (2017) based on the original 12 items proposed by Lent et al. (2005). Students indicated their confidence on a Likert scale, with one being none and ten being very confident. The items were related to persistence and resilience ('remaining enrolled in the degree'), academic performance ('obtaining good grades in all subjects') and coping strategies and participation ('actively participating in all classes'). Previous research showed that the scale yielded good internal consistency (α = .85) and consisted of two factors that explained 54.7% of

Table 1. Mean, Standard Deviation, Correlations and Internal Consistency Estimates.

Variable	M	SD	1	2	3	4	5	6	7
1. Social and academic support	4.00	0.61	(.85)						
2. Self-efficacy	7.41	1.30	.57	(.91)					
3. Outcome expectations	7.35	1.28	.48	.57	(.89)				
4. Interests	5.31	1.05	.50	.56	.58	(.88)			
5. Academic satisfaction	3.72	0.69	.63	.61	.59	.75	(.90)		
6. Life satisfaction	4.84	1.13	.31	.36	.41	.41	.44	(.84)	
7. Positive affectivity	3.70	0.59	.35	.55	.47	.46	.49	.53	(.84)

Note. All correlations are significant at the .001 level. Cronbach's α reliability estimates appear on the diagonal. The global scores of the scales were calculated based on the sum of the items of each scale divided by the number of items.

the variance (Lent et al., 2017). The Cronbach's α coefficient of the scale scores in the current study was .91, indicating excellent internal consistency. The results of the CFA indicated an adequate model fit (CFI = .91, SRMR = .05, RMSEA = .12 [.11–.14].

Outcome Expectations. A back-translation validation process was executed for this work. The items of the outcome expectations scale (ten items) were translated into Spanish by a bilingual teacher from the originals proposed by Lent et al. (2005). After being translated into English by a native speaker, the items were sent to the original author for approval. As a result of the back-translation process, no items were modified or deleted from the original scales, except for slight changes in wording. Outcome expectations can be *personal* ('having a job that satisfies me'), *material* ('earning an attractive salary') or *social* ('to have a career that my family values'). Previous research showed that the scale had good internal consistency (α = .81–.89) (Işık et al., 2018; Lent & Brown, 2019; Lent et al., 2005). The Cronbach's αof the scale scores in the current study was .87, indicating high internal consistency. The results of the CFA showed an adequate model fit (CFI = .90, SRMR = .06, RMSEA = .12 [.10–.13]).

Interests. To date, no specific measures have been developed to assess academic interests in Spanish Higher VET. Academic interests were conceptualised as the extent to which students like the activities available within their academic context. Given the challenge of measuring this construct among students from diverse academic fields, a three-item scale was designed ad hoc for this study, in consultation with two SCCT experts, to evaluate the aligment between students' academic pursuits and their personal interests. The students agreed with the items (1 = I do not agree at all; 7 = I completely agree). The three items used were: 'In my current studies, I have the opportunity to learn about subjects that interest me,' 'The activities proposed in my studies are related to my professional interests,' and 'The issues raised in my degree subjects are of interest to me.' An Exploratory Factor Analysis was performed using the Minimum Residuals Method (Oblimin), which revealed the existence of a single significant factor. This factor explained 71.33% of the total variance, indicating a high explanatory power. The parallel analysis confirmed that only one factor had an eigenvalue greater than the randomly generated values, while the scree plot also showed a clear drop after the first factor, supporting the unidimensionality of the construct. The factor loadings for each item were high (I1 = 0.89, I2 = 0.84, and I3 = 0.80), indicating that all items strongly contributed to the single factor. The Cronbach's αof the scale scores in the current study was .88.

Academic Satisfaction. Academic satisfaction was measured with a 7-item scale translated into Spanish by Dorio (2017). Students indicated their satisfaction towards different aspects of their academic life (e.g., 'Overall, I am enjoying my studies') on a scale from 1 (strongly disagree) to 5 (strongly agree). The scale showed good internal consistency indices in previous research (α = .82) (Lent et al., 2017) and the current study (α = .90). The results of the CFA indicated a good fit with the current data (CFI = .97, SRMR = .03, RMSEA = .09 [.07–.12]).

Life Satisfaction. This study used the Satisfaction With Life Scale (SWLS; Diener, Emmons, Larsen, & Griffin, 1985), which consists of five items that are rated on a Likert-type scale format from 1 (do not agree at all) to 7 (strongly agree). The scale has been used in previous model validations, presenting adequate psychometric properties in the Spanish version (Lent et al., 2017; Sheu et al., 2017). The Cronbach's α coefficient for the scale scores in the current study was .84, indicating good internal consistency. The results of the CFA demonstrated a good fit with the current data (CFI = .99, SRMR = .02, RMSEA = .08 [.04–.12]).

Data Collection and Ethical Considerations

Data was collected in autumn 2021 through an online questionnaire using iQ3 software (Le Sphinx). The questionnaire was applied voluntary and anonymous in the presence of a teacher. Students were informed of the confidentiality of their answers and signed an informed consent form at the time of application. No financial incentives or academic credits were offered for participation. The questionnaire generated an anonymised personal report that informed the students of their global results on each scale to give them personalised feedback on the information provided (e.g., *Academic Satisfaction Score: 5 out of 5.*). This report was self-generated at that moment and was not saved on any server. The University Ethics Committee previously authorised the study with reference 21–10-2020.

Analysis and Interpretation of Results

Once the questionnaire had been administered and the data collected, the iQ3 database was automatically generated in SPSS format (.sav). The IBM SPSS statistical package, version 28, processed the database. Correlational, factorial and Structural Equation Modelling were performed with Jamovi 2.3 (based on R).

First, the statistical–descriptive values of mean and standard deviation were calculated for each variable. Reliability was estimated using Cronbach's alpha (α) and the correlations between the scales. McDonald's omega (ω) was also estimated, and similar values were found.

For SEM analysis, A Standardised Root Mean Squared Residual (SRMR) below .08, a Comparative Fit Index (CFI) close to .95, or a Root Mean Square Error of Approximation (RMSEA) around .06 was considered appropriate for assessing model fit (Hu & Bentler, 1999). All three fit indices are presented, although the model has been considered adequate if it meets the criteria set for SRMR in combination with CFI or RMSEA. Other authors have previously applied this criterion to validate this model (Cygrymus & Lent, 2023; Sheu et al., 2020).

Finally, the Robust method was used to examine the indirect and total effects of variables for which the direct effect was insignificant (Kline, 2023). In this paper, we include the direct effects of all variables and only include the indirect and total effects of the paths whose direct effect is not significant. Calculations of other indirect effects are available on request.

Results

Data Cleaning and Pre-analysis

No missing values were identified in the dataset due to the obligation to answer all the questions to finish the questionnaire. However, subjects who did not belong to the group selected for this study (second year of Higher VET students) were removed ($n = 24$). The Mahalanobis distance method was applied by multivariate outlier analysis to identify possible random responses. The graphs were also visually analysed to detect additional outliers (Ward & Meade, 2023). In total, 36 subjects (8.96% of the total respondents) were removed from the dataset.

Normality assumptions were checked by calculating the S–W normality test, for which the *p* was less than .05 for all variables. Although skewness and kurtosis values were smaller than the thresholds estimated following the ±2 standard error rules for each measure (Pituch & Stevens, 2015), Mardia's coefficient was also significant, rejecting the assumption of multivariate normality (Mardia, 1970).

We used the Harman test recommended by Podsakoff et al. (2003) to check whether the matrix is affected by common-method bias; in this case, all variables would be grouped into a single

factor. The results of a Confirmatory Factor Analysis with all observed variables loading onto a single latent factor indicated a poor fit ($\chi 2$ = 7040.70, df = 1595, p < .001, CFI = .55, RMSEA = .10, SRMR = .09). In addition, an Exploratory Factor Analysis was conducted by forcing the items to be grouped into a single factor. The variance explained by the set of items was less than 50% (31.44%). These analyses suggest that common variance bias is not a problem with the current data set and does not interfere with interpreting the results. As shown in Table 1, the global scores of the scales were calculated based on the sum of the items of each scale divided by the number of items. The correlations were significant in the expected direction, indicating criterion validity for the scales. Furthermore, the scales' reliability was above .80 in all cases.

Before analysing the structure of the proposed model, the multicollinearity of the variables studied was examined to assess the possible redundancy of the items included in the scales. For this purpose, item-to-item and variable-to-variable correlations were calculated. All correlations were lower than .90, and the items were sufficiently discriminant among themselves (Kline, 2023).

Model Testing

We used SEM to test the theoretical model. Previously, parcels were created to reduce model complexity and estimation errors. For this purpose, exploratory factor analyses were carried out to check the dimensionality of the scales. The item-balancing method was used for unidimensional scales, and the item-to-construct method was used for those with more than one factor (Little et al., 2013). Item parcels were created for all constructs except interests, specified by three simple indicators.

The fitness of the measurement model was examined to confirm that all latent variables were correctly represented by their parcels (R^2 values of the parcels between .22 and .84). The results showed that the measurement model had a good fit to the data (CFI = .95, RMSEA = .07 [90% CI = .06–.08], SRMR = .06), and as seen in Table 2, all factor loadings were significant (p < .001, range 0.47–0.93).

The structural model was tested to predict VET students' academic satisfaction, producing a good fit to the data (CFI = .94, RMSEA = .07 [90% CI = .06–.08], SRMR = .07). As shown in Figure 1, almost all predictors produced significant direct paths consistent with theory except for three: Self-Efficacy → Academic Satisfaction, Outcome expectations → Academic Satisfaction and Positive Affectivity → Academic Satisfaction). However, the indirect and total associated effects proved statistically significant in all cases (see Table 3). Overall, the set of predictors included in the structural model tested explained 63% of the variance in self-efficacy, 47% in outcome expectations, 56% in interests, 82% in academic satisfaction, and 43% in life satisfaction.

Finally, considering the model's non-significant paths, a modified model was tested by removing these predictions. This modified model yielded similar fit indices to the original one (CFI = .94, RMSEA = .07 [90% CI = .06–.08], SRMR = .07). However, the modified model exhibited a significantly higher $\chi 2$ value ($\Delta\chi 2$ = 15.86, p = .001). The variance explained for the variables was similar. Hence, the original model was retained as our final model.

Discussion

In recent years, VET has emerged as an educational opportunity that offers students the chance to acquire practical and specialised skills quickly to meet the challenges of the labour market. In this context, it is crucial to understand the factors that influence the well-being of these students, particularly the social and cognitive variables that affect students' academic satisfaction. For this reason, this study extends previous applications of the social cognitive model of academic well-being in VET by highlighting the role of academic interests in this particular context.

Table 2. Means, Standard Deviations, Factor Loadings, and R^2 of Indicators of the Measurement Model (standardised solution).

Factor/Indicator	Parcelling criteria	M	SD	Number of items	Factor loading	R^2
Positive affect	Balancing loads					
Parcel 1		3.61	0.74	4	.76	.57
Parcel 2		3.75	0.75	3	.68	.46
Parcel 3		3.77	0.72	3	.64	.41
Social-academic support	Item to construct					
Parcel 1 – Socio–Family		4.37	0.66	3	.47	.22
Parcel 2 – Teachers		3.76	0.86	2	.82	.68
Parcel 3 – Mentors		4.02	0.87	2	.83	.69
Academic self-efficacy	Item to construct					
Parcel 1		7.93	1.47	3	.75	.56
Parcel 2		7.28	1.46	3	.84	.70
Parcel 3		6.90	1.53	3	.84	.70
Outcome expectations	Item to construct					
Parcel 1 – Personals		7.26	1.59	4	.92	.84
Parcel 2 – Materials		7.48	1.33	3	.61	.37
Parcel 3 – Social		7.25	1.66	2	.69	.40
Interests						
Indicator 1		5.51	1.16	1	.81	.65
Indicator 2		5.25	1.16	1	.83	.70
Indicator 3		5.17	1.19	1	.89	.79
Academic satisfaction	Balancing loads					
Parcel 1		3.80	0.77	3	.88	.78
Parcel 2		3.66	0.70	4	.93	.86
Life satisfaction	Balancing loads					
Parcel 1		5.08	1.11	3	.91	.84
Parcel 2		4.48	1.39	2	.79	.62

Note. All factor loadings are significant at .001 level.

Table 3. Decomposition of Indirect and Total Effects.

Predictor variable	Criterion variable	Indirect effect				Total effect			
		β	Lower	Upper	*p*	β	Lower	Upper	*p*
Academic self-efficacy	Academic satisfaction	.32	.13	.27	<.001	.33	.11	.30	<.001
Outcome expectations	Academic satisfaction	.23	.06	.15	<.001	.34	.09	.22	<.001
Positive affectivity	Academic satisfaction	.41	.34	.64	<.001	.53	.50	.79	<.001

The data analysis revealed that the tested model fits well with the Spanish Higher VET students' sample, corroborating its applicability in this educational context. Moreover, 12 of the 15 direct effects were significant, confirming the predictive value of the variables included in the model. Overall, the results presented in this study are similar to those reported by other researchers who tested the original model of academic satisfaction (Arribas-Marín et al., 2021; Işık et al., 2018; Lee & Shin, 2022; Lent et al., 2012, 2017). The differences observed in terms of explained variance and direct effects may be attributed to the unique learning context of Higher VET and the inclusion of the variable academic interests.

As in other research, the direct effect between self-efficacy and academic satisfaction was insignificant (Arribas-Marín et al., 2021; Garriott et al., 2015). However, this relationship is significant when calculating the indirect effects through interest. The results of the model indicate that for students in our sample, seeing themselves as self-efficient has a direct positive impact on their interest in the studies they are undertaking, and interest also directly affects their academic satisfaction. Students see themselves as capable, enjoy their studies, and are academically satisfied. This highlights the importance of pursuing studies that align with the interests of Higher VET students to better understand their academic satisfaction and its impact on their overall life satisfaction.

On the other hand, outcome expectations did not directly predict academic satisfaction either. Outcome expectations are a contentious variable, with its relevance varying depending on the samples analysed. In some cases, Lent et al. (2012, 2017) and Arribas-Marín et al. (2021) excluded it from the model due to its limited significance in prior studies (Lent et al., 2005; Ojeda et al., 2011). However, in other instances, it demonstrated a significant direct effect as a predictor of academic satisfaction (Cygrymus & Lent, 2023; Işık et al., 2018; Garriott et al., 2015; Lent, 2015). In our study, after calculating the indirect effects, we observed that the effect through academic interests was also significant. Thus, students with high outcome expectations are enrolled in studies that interest them and have high academic satisfaction. In forecasting the academic satisfaction of higher VET students, outcome expectations represent a significant variable, particularly when considering the influence of interests.

Third, although the direct effect between positive affect and academic satisfaction was also insignificant, the total effect (i.e., adding all indirect effects) was significant. This result differs from previous national (Arribas-Marín et al., 2021; Lent et al., 2017) and international (Sheu et al., 2020) research, with some exceptions (Garriott et al., 2015). For Spanish higher VET students, personality traits such as positive affectivity are linked to academic well-being through their relationships with self-efficacy, outcome expectations and social and academic support. Thus, for VET studnets it is not enough to be academically satisfied to be a person with a positive affect, but it is enough to feel a general well-being.

In terms of similarities, the model's ability to explain robust variance in academic satisfaction is consistent with the results obtained in previous research. As mentioned in the theoretical framework, international research (Sheu et al., 2020) has shown that the original academic well-being model can explain around 50% of the variance in academic satisfaction and 38% of general well-being. Likewise, the modified model tested in this study explains a significant portion of the variance of academic satisfaction (82%) and life satisfaction (43%) by incorporating interests. This difference may be because, in the case of VET, academic interests are a core variable in understanding students' academic satisfaction, and we consider this result to be one of the main contributions of our work.

Lastly, Lent and Brown (2019) identified correlations between interests, academic satisfaction, and outcome expectations, which were high (between .47 and .78), similar to this research. Collectively, self-efficacy and outcome expectations accounted for between 37% (Realistic theme) and 67% (Social theme) of the variance in interests. In this study, incorporating the effect of socio-academic support, self-efficacy and outcome expectations explains 56% of the variance in interest, a value within the expected range.

Limitations and Future Research

This study has several limitations. Its cross-sectional design makes it challenging to establish causal relationships between variables (Pérez et al., 2013). Additionally, the incidental nature of the sample necessitates caution when generalising the results to all Higher VET students in Spain

due to potential regional differences. Moreover, the use of self-reported measures may introduce response biases, such as social desirability or the acquiescence effect, potentially distorting students' reported attitudes and perceptions.

Finally, given the diversity of fields of study in Higher VET and the context in which this study took place as part of a research project with higher education students, the questionnaire was developed using the scales validated in a general university sample rather than a specific adaptation of the scales to VET. Thus, although the reliability of the scales was adequate, it was impossible to collect specific aspects of VET, such as the outcomes expectations related to quick access to the labour market or university or whether the current studies were the student's first vocational choice. In future research, it is recommended to adapt the scales to this specific sample and replicate the results in particular areas of study following the recommendations of Brown and Lent (2019) and Lent and Brown (2019) call for assessing social cognitive constructs with task- and domain-specific measures.

Practical Implications

The conclusions drawn from this study have direct implications for educational practice and academic guidance within VET, reaffirming the relevance of socio–familial and academic support sources in shaping self-efficacy expectations. Firstly, the relevance of outcome expectations suggests that VET programmes could benefit from integrating guidance services focused on strengthening students' visions of the future and understanding how current academic achievements link to expected career outcomes. This approach could include career planning workshops, personalised counselling sessions and increased interaction with professionals in the professions they wish to pursue.

Secondly, the results show that the variable academic interests mediate self-efficacy to academic satisfaction, so improving students' opportunities for access to VET programmes that align with their interests is essential. To this end, it is crucial to detect the reason why these students might enrol in studies that are of little interest to them and, among other solutions, increase the supply of places in the programmes of their interest, bearing in mind that, at present, higher vocational training is not only an academic training pathway but also a bridge to university.

Conclusion

Despite its limitations, this study makes a significant contribution to the existing literature and provides a foundation for future research at understanding and improving academic well-being in VET settings. It underscores the importance for VET students pursuing studies aligned with their professional interests, recognising this as a key factor influencing both their academic satisfaction and, consequently, their life satisfaction.

In this reagrd, three main contributions are made. First, and most importantly, the study validates a modified version of the socio-cognitive model of academic well-being proposed by Lent (2004), integrating insights from the IM developed by Lent et al. (2013). This integration highlights the relationships between academic interests and other predictor variables within the context of Higher VET in Spain. Second, it confirms the relevance of self-efficacy, outcome expectations, interests, and social and academic support on higher VET students' academic and life satisfaction. Although three of the direct effects were insignificant, the calculation of indirect effects showed that the total effects among the three proposed relationships were significant, indicating that interests play an important role in this educational setting.

Third, substantive contributions in Spanish-speaking countries include the validation of the Lent Vocational Outcome Expectations Scale through back-translation in collaboration with the

original author, which has been shown to be valid and reliable in this work (α = .89) and a new scale of academic interests in VET students (α = .88). In addition, all instruments showed consistent reliability with the original English and Spanish versions. These results provide further evidence of the cross-cultural validity of the model and the instruments.

Finally, the study's practical implications highlight the importance of fostering self-efficacy, ensuring that students find training courses that interest them, setting clear and realistic outcome expectations to promote academic satisfaction, and providing students with good socio–academic support.

Authors' Contributions

MHA: Conceptualisation, writing drafts, data analysis, prepare the article for submission. IMS: Conceptualization and gave comments on drafts. GAB: Conceptualization and gave comments on drafts. JAM: data analysis and gave comments on drafts.

Declaration of Conflicting Interests

Funding

ORCID iDs

Marta Hernandez-Arriaza ⓘ https://orcid.org/0000-0002-3506-6128
Juan Arribas-Marin ⓘ https://orcid.org/0000-0003-4482-9470

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