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Are all students happy and productive? The contribution of Academic Psychological Capital to the relationship between Student Engagement and Academic Performance in an online university learning context

¿Todo el alumnado está contento y es productivo? La contribución del capital psicológico académico a la relación entre el *engagement* del estudiantado y su rendimiento académico en un contexto de aprendizaje universitario en línea

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Abstract
The complexity of the relationship between students' student engagement and academic performance has been extensively approached. However, following the concept of Sustainable Productivity and Well-being Synergy, this relationship is beginning to raise new issues. The present study aims to contribute to the happy-productive student research by addressing the existence of different types of relationships between student engagement and academic performance (also called as patterns), and studying the influence of Academic Psychological Capital (PsyCap) on the four patterns in an online university context. The sample consisted of 357 Spanish university students (71.4% female) from a Spanish online university. Results showed that: 1) There are 4 patterns of relationship between student engagement and academic performance: happy-productive, unhappy-unproductive, unhappy-productive, and

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happy-unproductive student; 2) PsyCap (i.e., efficacy, optimism, hope) increases the probability of being in the happy-productive student pattern. Based on the results, we suggest some changes in the educational policies and the importance of programs to develop personal resources such as PsyCap for university students, in order to promote happy-productive students.

Keywords: student engagement, academic performance, PsyCap, happy-productive student, online university

Resumen

La complejidad de la relación entre *engagement* del alumnado y el rendimiento académico ha sido ampliamente abordada. Sin embargo, siguiendo el concepto de Sinergia de Productividad Sostenible y Bienestar, esta relación está empezando a plantear nuevas cuestiones. El presente estudio pretende contribuir a la investigación sobre el estudiante feliz-productivo abordando la existencia de distintos tipos de relaciones entre el *engagement* del estudiantado y el rendimiento académico (también llamados patrones), y estudiando la influencia del Capital Psicológico Académico (CapPsy) en los cuatro patrones en un contexto universitario online. La muestra consistió en 357 estudiantes universitarios (71,4% mujeres) de una universidad online española. Los resultados mostraron que: 1) existen 4 patrones de relación entre el compromiso del estudiantado y el rendimiento académico: feliz-productivo, infeliz-improductivo, infeliz-productivo y feliz-improductivo; 2) el CapPsy (es decir, eficacia, optimismo, esperanza) aumenta la probabilidad de estar en el patrón de estudiante feliz-productivo. Basándonos en los resultados, sugerimos algunos cambios en las políticas educativas y la importancia de programas para desarrollar recursos personales como el CapPsy para estudiantes universitarios, con el fin de promover estudiantes felices-productivos.

Palabras clave: *engagement* estudiantil, rendimiento académico, CapPsy, estudiante feliz-productivo, universidad online

INTRODUCTION

Concern for student well-being and performance is not a new topic. In fact, there are numerous studies that attempt to understand what could be understood as academic well-being, how could be measure academic well-being, what could be produce academic well-being, how could be improve academic performance, or even analyse the relationship between academic well-being and academic performance (Hossain *et al.*, 2023; Baik, *et al.*, 2019; Lei *et al.*, 2018; Martínez *et al.*, 2019a).

With regard to the relationship between academic well-being and academic performance, establishing a similarity with the happy-productive worker thesis (Wright & Staw, 1999),

some authors also talk about the happy-productive student. In other words, those students who are happier in their studies will also be those who perform better academically (Cotton *et al.*, 2002). However, happy-productive thesis literature has shown some limitations such as to determine what could be understood as well-being, how could be measure well-being, or even explaining why high levels of well-being do not always lead to high performance (Sender *et al.*, 2020); these issues might be extended to the educational field as well (Hossain *et al.*, 2023; Kaya & Erdem, 2021). Considering these limitations, Peiró *et al.* (2014) developed the concept of Sustainable Productivity and Well-being Synergy (SPWS), as a way to provide a new and integrative view of the relationship between well-being and performance. In other words, Peiró *et al.* (2014) built a theory that allowed to comprehend the happy-productive thesis, suggesting other types of relationships between well-being and productivity (e.g., happy-unproductive pattern, unhappy-productive pattern), and which conditions increase the probability of fitting to these patterns.

The present study aims to contribute to the happy-productive student research in an online university context by shedding light on issues identified (e.g., determine the existence of patterns of relationships between student engagement and academic performance, identify whether the PsyCap is a relevant construct in the online context). Specifically, we attempt to make two contributions to the literature. First, we intent to expand Peiro´s (2014) SPWS theory to the educational domain, in order to address the existence of the 4 types of relationships between student engagement and academic performance that they describe: happy-productive student, unhappy-unproductive student, happy-unproductive student and unhappy-productive student; Second, evaluate the effect of the positive psychological capital (PsyCap) on the different profiles of happy-productive student.

Student engagement in the online university learning context

In the literature, different manners of understanding well-being during academic studies have been used (Hossain *et al.*, 2023); one of these is the academic engagement or student engagement. Student engagement is defined as an affective-motivational state characterized by vigor, dedication and absorption during studies (Schaufeli *et al.*, 2002). In others words, vigor (affective component) indicates high levels of energy and investment of effort in studying; dedication (behavioural component) is associated to being involved and experiencing meaningfulness with studies; and absorption (cognitive component) denotes high concentration in learning as well as where time passes quickly (Schaufeli *et al.*, 2019). Since the first publication on the construct in 2002, research has analysed the relation of student engagement with both its antecedents and its consequences. For example, among the most notable antecedents are personal resources such as positive emotions, PsyCap, or self-efficacy beliefs (Maricuțoiu & Sulea, 2019), but also academic characteristics (e.g., resources, demands) such as enthusiastic professors and poor peer relationship (Salmela-Aro

et al., 2022). Specifically, based on the Study Demands-Resources Model (Bakker & Mostert, 2024) applied to the university educational context (Salanova *et al.*, 2010), while personal and academic resources increase the probability of experiencing student engagement, academic demands reduce this chance. Of course, developing student engagement has one objective, that is, achieve its wide variety positive consequences such as higher levels of academic satisfaction (Martínez *et al.*, 2019a), academic performance (Lei *et al.*, 2018), health (Gusy, *et al.*, 2019), and so on.

In parallel to this increased attention to student engagement, the development of the information and communication technologies (ICT) applied to the educational context in the form of online education has helped to overcome barriers apparently insurmountable, such as residence in rural areas, work - private life - study balance, or compatibility with work (Czerniewicz & Carvalho, 2022). Also, ICT has made available to the educational community a large number of resources, strategies and teaching methods that facilitate the learning process (Bustos & Coll, 2010). In this context, online universities have expanded their educational offerings, applying a learning management system in order to teach online courses, search interaction among students, and track student activities, while guaranteeing the student maximum flexibility, considering his or her personal needs and limitations (Nkomo *et al.*, 2021). Taking into account that student engagement development is fundamentally related to specific study demands-resources, (Bakker & Mostert, 2024; Salanova *et al.*, 2010; Salmela-Aro *et al.*, 2022); it has been proved that online students show substantial differences on engagement experiences than face-to-face students (McPartlan *et al.*, 2021). But, the study of student engagement in an online context, "it is not merely a case of technology plus students equals engagement" (Bond *et al.*, 2020, p.4), since the interest among professionals and researchers has promoted a complete holistic multilevel framework for its approach, addressing even both short- and long-term benefits (Bond & Bergdahl, 2022). In fact, through a systematic review, Bond and colleagues (Bond *et al.*, 2020) determined that participation/interaction/involvement, achievement and positive interactions with peers and teachers were the most frequently indicators associated with online student engagement. In sum, engaging students in online learning context could lead to beneficial outcomes.

From Happy-productive worker to Happy-productive student

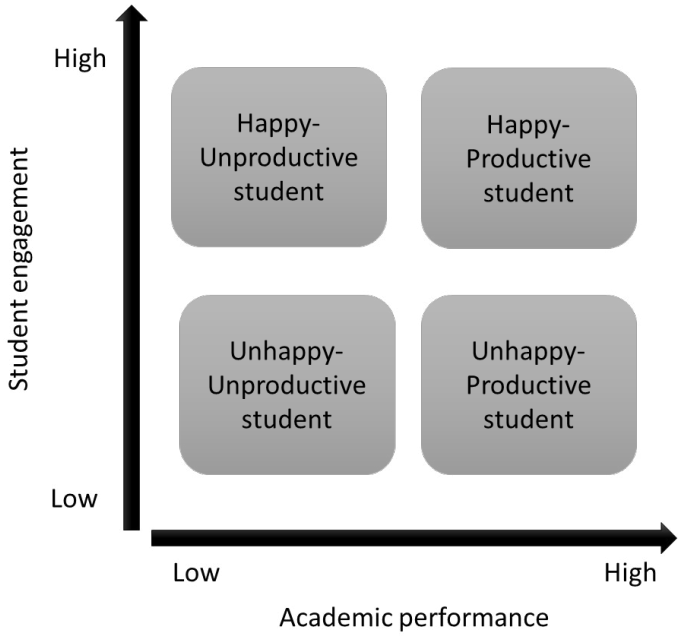
So far, several constructs have been developed in the job context and have been generalized to the educational context, due to the premise that studying is also a type of working (e.g., engagement, burnout; Schaufeli *et al.*, 2002). Based on the happy-productive worker thesis (Wright & Staw, 1999), Cotton *et al.* (2002) proposed the first reference to happy-productive student, as a way of understanding the psychosocial process that connects student' satisfaction (indexed as an academic well-being measure) with their academic performance.

However, the same issues that have been detected in the happy-productive worker research (Sender *et al.*, 2020), also seem to be found in the happy-productive student, such as a lack of consensus on academic happiness conceptualization (Hossain *et al.*, 2023), or ambiguous results on whether happiness with studies impacts academic achievement (Kaya & Erdem, 2021). Based on prior research, it seems plausible that there is a relationship between student engagement and academic performance, specifically, revealing three conclusions: 1) Its correlation is positive, but small (Lei *et al.*, 2018); 2) There are variables that moderate its relationship, such as method of reporting student engagement (i.e., self, others), culture (i.e., Eastern, Western), gender (Lei *et al.*, 2018), and age (Kaya & Erdem, 2021); 3) Some authors state that its relationship is not direct, but is mediated by third variables (e.g. PsyCap, Martínez *et al.*, 2019c).

Taking into account these arguments, the present study is based on the concept of Sustainable Productivity and Well-being Synergy (SPWS; Peiró *et al.*, 2014), in order to overcome the aforementioned issues (e.g., small correlation, moderate-mediation relation) among variables. Briefly, the concept of SPWS (Peiró *et al.*, 2014) proposed that there is synergy between well-being (e.g., engagement) and productivity (e.g., performance), in a mutually reinforcing way, but also, the authors recognised four different types of relationships between well-being and productivity: 1) high-high (i.e., happy-productive); 2) low-low (i.e., unhappy-unproductive), 3) high-low (i.e., happy-unproductive); and 4) low-high (i.e., unhappy-productive). To date, some studies (e.g., Ayala *et al.*, 2016) have already tested this theory, highlighting interesting results with the purpose of improved the understanding of the different patterns or relationships. Subsequently, in the same way as in the organizational context, in the present work it is proposed to extend this comprehensive approach to the online educational context. We formulate:

Hypothesis 1 (H1): There will be four types of relationships between student engagement and academic performance in the online educational context: 1) happy-productive students; 2) unhappy-unproductive students, 3) happy-unproductive students, and 4) unhappy-productive students (see Figure 1).

Figure 1. Happy-productive student quadrant: Four types of relationships between student engagement and academic performance.



PsyCap as promotor of happy-productive student

Luthans and Youssef-Morgan (2017) described PsyCap as an individual's positive psychological state characterized by efficacy, optimism, hope and resilience. Precisely, efficacy indicates trust on their own aptitudes; optimism is related to make positive attributions about their experiences and future; hope denotes the competence to reorientate previous strategies; and resilience refers to overcome challenging situations and growing from adversity.

PsyCap research has showed positive benefits for students, such as meaning coping (Ortega-Maldonado & Salanova, 2018), academic satisfaction (Sánchez-Cardona *et al.*, 2021), and academic adjustment (Liran & Miller, 2019); but also, systematically confirming that PsyCap imply an individual motivational tendency, which helps to pursue performance (Luthans & Youssef-Morgan, 2017). In other words, those students who develop their PsyCap, will achieve higher levels of student engagement (Carmona-Halty *et al.*, 2021; Luthans *et al.*, 2016; Martínez *et al.*, 2019c¸ Slåtten *et al.*, 2021), and academic performance (Carmona-Halty *et al.*, 2020; Liu & Huang, 2022; Martínez *et al.*, 2019c¸

Ortega-Maldonado & Salanova, 2018¸ Saman, & Wirawan, 2021; Sánchez-Cardona *et al.*, 2021¸ Slåtten *et al.*, 2021). Specifically, in the online university context, students have showed struggles to persist and succeed in their on-line studies such as learner motivation, time and support (Muilenburg, & Berge, 2005). However, PsyCap significantly mediated between perceived social support and subjective well-being (Huang, & Zhang, 2022). Thus, Black *et al*. (2023) argue for the potential and need of studying PsyCap in the online university context, considering that it constitutes a "natural fit of the model" for this application.

Also, recently, some authors have begun to judge whether developing high levels of PsyCap is more relevant than determining the configuration of PsyCap dimensions, suggesting a type of PsyCap profile (Djourova *et al.*, 2019; Geremias *et al.*, 2022). Geremias *et al.*, (2022) found in a sample of 480 undergraduate students, four PsyCap profile, named as fully, empty, optimism and hopeful-efficacy. Even so, every PsyCap dimensions may not produce the same positive effects (Liu & Huang, 2022). For example, as Liu and Huang (2022) found, only hope showed a significant association with academic performance. Therefore, there are reasons to consider the PsyCap as a predictor of the happy-productive student in the online learning context, as well as to analyze separately the effect of the following dimensions, proposing that:

Hypothesis 2 (H2): PsyCap dimensions (i.e., Efficacy, Hope, Resilience, Optimism) will increase the probability of students showing the happy-productive pattern.

METHOD

Participants

The sample consisted of 357 Spanish university students (71.4% female) from a Spanish online private university, aged between 19 and 69 years (M = 34.8; SD = 9.6). The students came from different fields of study: humanities sciences (47.9%), health sciences (28.3%), social sciences (13.4%), and natural sciences (10.4%). Of the 357 participants, 58.5% were master students.

Procedure

University students were invited to participate in the research through advertisements on the virtual campus. Data was collected using a Google web-based platform for online completion. Participants with incorrect responses to random attention check items (N = 7) were eliminated from further analyses. The final sample size was 357.

To boost participation among students, researchers promoted a lottery offering three small financial reward (20€) for taking part in the research. The lottery took place at the end of all data collection.

In accordance with the Declaration of Helsinki, written informed consent was obtained from all participants. The anonymity and confidentiality were assured throughout the research.

Instruments

Student engagement was measured with the Utrecht Work Engagement Scale- Student developed by Schaufeli *et al*. (2002). This scale has three subscales: Vigor (1 item, e.g. "I feel energetic and capable when I'm studying or going to class"), Dedication (1 item. e.g., "I am proud of my studies") and Absorption (1 item, e.g. "I am immersed in my studies"). According to Schaufeli *et al*. (2019), for the ultra-short version (UWES-3), one item of each dimension was selected. All the items had a 7-point Likert response format ranging from 0 ("never") to 6 ("every day").

Academic performance was measured as the grade point average (GPA) in the university studies. GPA was provided by the University after completing the questionnaires collection. The GPA ranged from 5 (poor) to 10 (excellent).

Academic Psychological Capital was measured with the Psychological Capital Questionnaire (PCQ–12; Martínez, Meneghel, Carmona-Halty & Youssef-Morgan, 2019b). This scale has four subscales: Efficacy (3 items, e.g. "I feel confident contributing to discussions about strategies on my studies"), Hope (4 items. e.g., "I can think of many ways to reach my current goals regarding my studies"), Resilience (3 items, e.g. "I usually take stressful things in stride with regard to my studies"), and Optimism (2 items, e.g. "I'm optimistic about what will happen to me in the future as it pertains to my studies"). All the items had a 7-point Likert response format ranging from 0 ("strongly disagree") to 6 ("strongly agree").

Control variables. To avoid the misunderstandings in the relationships of interest, we measured some control variables such as gender and degree (bachelor degree, master degree; Gómez-Borges *et al*., 2023).

Data Analyses

Different data analyses were calculated using the SPSS 23.0 (IBM Corp, 2015). We computed the means, standard deviations, Cronbach's alpha coefficients, and bivariate correlations for all scales. To address hypothesis 1, determinate four types of relationships between student engagement and academic performance in the context education, we performed cluster analysis using a two-step procedure, which standardize to Z-scores (M = 0, SD = 1), so as to balance the contribution of each variable within this analysis (Hair & Black, 2000) and easily lead to interpret the results (Nunnally & Bernstein 1994). To classify the four patterns of relationships, the 357 students were clustered according to their levels of student engagement

and academic performance. The distance between student engagement and academic performance was tested through the use of log-likelihood (Rubio-Hurtado & Baños, 2017). Additionally, we performed an analysis of variance (ANOVA) to verify significant differences among the clusters in the levels of academic well-being and academic performance.

To address hypothesis 2, a multinomial logistic regression was performed to model the relationship between the predictors (i.e, PsyCap dimensions) and clusters (i.e., happy-productive, happy-unproductive, unhappy-productive, unhappy-unproductive). Multinomial logistic regression was run in two stages: Stage 1 using control variables (gender, degree) and Stage 2 using control (gender, degree) and predictor (PsyCap dimensions) variables. Multinomial logistic regression provides Odds Ratio (OR), which represents the relative change in the probabilities of belonging to the compared (rather than the reference) category for each unit increase in the independent variable. Following Tordera *et al*. (2020), to facilitate the interpretation, negative values mean that the variables reduce the odds of reporting either the happy-unproductive, the unhappy-productive or the unhappy-unproductive pattern, whereas positive values rise these probabilities. McFadden pseudo-R^2, Nagelkerke pseudo-R^2 and Cox-Snell pseudo-R^2 coefficient are used as measures of model fit. All these aforementioned indexes have a theoretical range from 0 to 1, but values between 0.2 and 0.4 are usually considered a good quality of fit (Ayuso *et al*., 2022)

RESULTS

Table 1 presents means, standard deviations, internal consistencies (Cronbach's alpha), and bivariate correlations for all variables in the study.

Table 1. Descriptive and bivariate correlations between variables

Variables	**M**	**SD**	**α**	**Range**	**1**	**2**	**3**	**4**	**5**	**6**
1. Student engagement	4.33	1.26	.82	0-6	-	.49**	.55**	.42**	.51**	.06
2. Efficacy	5.14	1.08	.88	0-6	-	-	.26**	.61**	.57**	.11*
3. Hope	4.81	1.21	.88	0-6	-	-	-	.66**	.63**	.16**
4. Resilience	4.42	1.22	.74	0-6	-	-	-	-	.66**	.07
5. Optimism	4.57	1.46	.87	0-6	-	-	-	-	-	.00
6. Academic performance	8.16	.74	-	5-10	-	-	-	-	-	-

Notes: α = Cronbach's a index.
p<.05,p<.01;***p<.001.*

Happy-productive student: cluster analysis

The two-step cluster analysis identified a 4-cluster solution according to student engagement and academic performance values (Figure 2): Cluster 1, happy-productive student, comprised 36.4% of the sample (130 students); Cluster 2, happy-unproductive student, comprised 31.4% of the sample (112 students); Cluster 3, unhappy-productive student, comprised 20.2% of the sample (72 students); Cluster 4, unhappy-unproductive student, comprised 12% of the sample (43 students). Finally, ANOVA was tested to confirm the differences among aforementioned clusters. Results confirmed the differences in student engagement ($F= 364.948$) $p <.00^{***}$) and academic performance ($F= 179.801$; $p <.00^{***}$). Partial eta squared (ηp^2) were.756 for student engagement and.605 for academic performance. These partial etas squared values indicate the effect size of each factor (i.e., cluster) on the dependent variable (i.e., student engagement, academic performance), with values considered large when $\eta p^2 \approx 0.14$. (Richardson, 2011). As a post-hoc test, Games-Howell test was considered as it is recommended when the assumption of homogeneity of variances is not met or when group sizes are very different (Shingala & Rajyaguru, 2015; see table 2).

Figure 2. Four-cluster solution using standardized means of student engagement and academic performance.

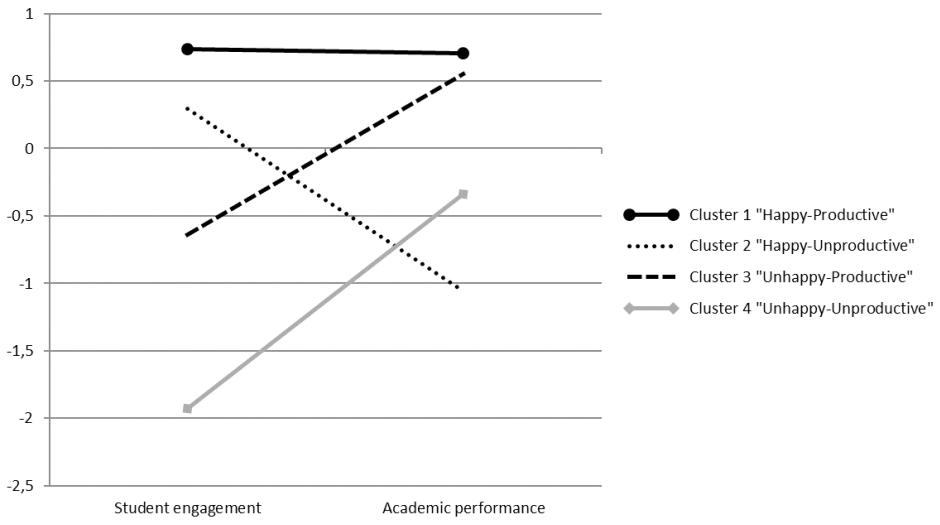


Table 2. ANOVA results and Games-Howell post-hoc test.

Variable/ Cluster	M (SD)	Source	Sum of Squares	df	Mean Square	F	Sig.	Cluster Comparison	Mean Difference	Standard Error	Sig.	Lower CI	Upper CI
Student engagement													
Cluster 1: Happy-Productive	5.26 (.54)	Between Groups	428.417	3	142.806	364.948	.00***	H-P vs. H-UP	.56	.09	.00***	.33	.79
Cluster 2: Happy-Unproductive	4.70 (.78)	Within Groups	138.130	353	.391			H-P vs. UH-P	1.74	.07	.00***	1.55	1.93
Cluster 3: Unhappy-Productive	3.52 (.47)							H-P vs. UH-UP	3.36	0.11	.00***	3.07	3.65
Cluster 4: Unhappy-Unproductive	1.9 (.64)							H-UP vs. UH-P	1.18	.09	.00***	.94	1.41
								H-UP vs. UH-UP	2.80	.12	.00***	2.48	3.12
								UH-P vs. UH-UP	1.62	0.11	.00***	1.33	1.92
Academic performance													
Cluster 1: Happy-Productive	8.68 (.46)	Between Groups	116.848	3	38.949	179.801	.00***	H-P vs. H-UP	1.29	.06	.00***	1.14	1.45
Cluster 2: Happy-Unproductive	7.39 (.47)	Within Groups	76.469	353	.217			H-P vs. UH-P	.11	.06	.23	-.04	.27
Cluster 3: Unhappy-Productive	8.57 (.37)							H-P vs. UH-UP	.77	.10	.00***	.50	1.03
Cluster 4: Unhappy-Unproductive	7.91 (.60)							H-UP vs. UH-P	-1.18	.06	.00***	-1.34	-1.02
								H-UP vs. UH-UP	-.52	.10	.00***	-.79	-.26
								UH-P vs. UH-UP	.66	.10	.00***	.39	.92

*Note: Cluster 1: Happy-Productive = H-P; Cluster 2: Happy-Unproductive = H-UP; Cluster 3: Unhappy Productive = UH-P; Cluster 4: Unhappy-Unproductive = UH-UP; *p<.05;**p<.01;***p<.001.*

PsyCap as promotor of happy-productive student: multinomial regression

From the presented clusters, results of the multinomial analysis are presented, following the steps in which each predictor was included (see Table 3). The control variables suggested that bachelor´s degree students are more likely to be in the happy-unproductive pattern than happy-productive pattern, when compared with master´s degree students. With regard to PsyCap dimensions, only three of the four variables presented statistically significant odd ratios. In other words, negative values mean that the low levels of the hope, optimism or/and efficacy increase the likely to be in the unhappy-unproductive, unhappy-productive, or the happy-unproductive student pattern. In addition, those who were bachelor students, rather than master students, significantly increased the likelihood of belonging to the happy-unproductive pattern. The final model presented has a.33 for the Cox and Snell index,.36 for the Nageikerke index and.15 for the McFadden R^2. Similar values seen in other studies (Pérez-Nebra *et al.*, 2022).

Table 3. Multinominal logistic regression coefficients between sociodemographic variables, PsyCap dimensions and clusters.

	Happy-productive student					
Variables/Cluster	Happy-unproductive student		Unhappy-productive student		Unhappy-unproductive student	
	Step 1 OR	Step 2 OR	Step 1 OR	Step 2 OR	Step 1 OR	Step 2 OR
Control variables						
Gender	-.69	-.66	1.71	.35	1.81	1.45
Degree level	3.36***	3.52***	-.63	-.75	1.46	2.16
Predictor variables						
Efficacy		-.73		-.67		-.49**
Hope		-.50**		-.68		-.41***
Resilience		-.98		1.08		1.34
Optimism		1.27		-.72*		-.68*

Note: Reference cluster is the cluster 1, happy-productive student; Gender: 0=Women, 1=Men; Degree level: 0=Bachelor, 1=Master; OR = Odds ratio
p<.05,p<.01;***p<.001.*

DISCUSSION

The present research had twofold aim: 1) Following the Sustainable Productivity and Well-being Synergy (SPWS; Peiró *et al*., 2014), examine the relation between student engagement and academic performance by proposing four types of relationships or pattern: happy-productive student; unhappy-unproductive student, happy-unproductive student, unhappy-productive student; 2) Evaluate the role of PsyCap dimensions in order to predict the happy-productive student quadrant.

The results supported our hypotheses, a 4-cluster solution according to student engagement and academic performance values has been identified (hypothesis 1). In other words, happy-productive, unhappy-unproductive, unhappy-productive, and happy-unproductive student. Although these 4 patterns have been confirmed in the work context (Peiró *et al*., 2014; Pérez-Nebra *et al*., 2022), it is the first time that this hypothesis has been tested in an online educational context.

With regard to hypothesis 2, this finding showed that PsyCap dimensions as a personal resource increases the probability of being in the happy–productive student pattern. Specifically, hope, efficacy and optimism dimensions. Contrary to our expectations, resilience was not significative in order to understand the different online student pattern. However, based on the idea that students may not present the same PsyCap profile (Geremias *et al*. 2022), it could be that resilience is understood as an antecedent of the other PsyCap dimensions.

Theoretical and practical contributions

This study makes two contributions to the positive psychology and student engagement literature in the educational online context. First, this study enriches happy-productive student research by providing additional evidence about the relationship between student engagement and academic performance, showing an isomorphic psychosocial process (Peiró *et al*., 2014), where could be found happy-productive students, unhappy-unproductive students, happy-unproductive students and unhappy-productive students. In fact, the concept of Sustainable Productivity and Well-being Synergy (SPWS; Peiró *et al*., 2014), it could be reformulated as the Sustainable Academic Well-being and Achievement Synergy (SAWAS), in order to establish a theoretical framework adapted to the educational context. Second, the results increase the understanding of the role of PsyCap (Luthans & Youssef-Morgan, 2017) by examining the effect of PsyCap dimensions on happy-productive quadrant in an educational online context. Although the role of personal resources is well illustrated through the Study Demands–Resources Theory (Bakker & Mostert, 2024), this study could allow to see the whole process from a more complex perspective, in which more resources do not always imply greater student well-being or higher student performance.

The results of this study suggest a promising direction for the implementation of educational policies that address educational guidance towards good performance, but also the development of student engagement as a synergic approach in an online context. In other words, developing engaged students or productive student in isolation is not a recommended approach, as such anomalous patterns (i.e., unhappy-productive, happy-unproductive) could lead to negative consequences. Second, following the logic of the proposed model, the results reveal the need of PsyCap intervention programmes as a driver of happy-productive students. How to design them in the online learning context may point out to well-known frameworks related to this context (e.g., Community of Inquiry, with cognitive, teaching and social presences) (Black *et al.*, 2020).

Limitations and future studies

Some limitations of the present study should be noted. A first limitation is that a non-probabilistic (i.e., convenience) and specific sample (i.e., online students from one Spanish university) was used, which might restrict the generalizability of these findings. In spite of this, the study sample is a heterogeneous sample because it includes students from different fields of knowledge, which allows us to obtain a view of the reality of the

university. In addition, although this study has focused on the online university context, it is quite plausible to consider that in each educational stage (e.g., high school, university) and learning modality (e.g., online, face-to-face, hybrid) there may be differences in the importance played by different resources and demands.

Second, data were obtained from self-report measures (e.g., student engagement, academic burnout), which might have caused common method bias. However, given the nature of this study, which includes psychological experiences, it is difficult to use other type of data. In order to minimise common method bias, it was used an objective data (i.e., academic performance as GPA) and different answers scale (e.g., "never" to "every day"; Podsakoff *et al.*, 2012). Also, following Ye *et al.*'s (2007) guidelines, the items were ordered in a different sequence from the hypotheses, to avoid self-generated validity in the survey design. Future studies could propose additional measures to mitigate this bias, such as the use of digital behaviour indicators (e.g., access time or participation in the learning platform).

Third, data are cross-sectional. Future research should examine these relationships longitudinally to establish their magnitude. Additionally, PsyCap may interact meaningfully with other predictors, such as student crafting (Körner *et al.*, 2022), self-care behaviours (Gómez-Borges *et al.*, 2023), student-learning environment fit (Opdenakker & Minnaert, 2011) or student-technology fit (Wang *et al.*, 2020), which may contribute to understand better those circumstances that influence and differentiate among the four patterns (i.e.,

happy-productive, unhappy-unproductive, happy-unproductive, unhappy-productive). Also, a longitudinal design could allow to observe possible fluctuations in academic well-being in relation to happy-productive student profiles.

Fourth, generally, literature has described student engagement by means of 3 components: affective, behaviour and cognitive (Hossain *et al.*, 2023). However, some authors advocate for a critical fourth component of student engagement, the social one, since individual learning involves both individual and social knowledge-building (Bond & Bergdahl, 2022). Of course, it is important to emphasize that social interactions in online learning are limited (Muilenburg, & Berge, 2005).

Fifth, the idea that PsyCap could be developed as specific configuration of PsyCap dimension patterns is supported by different authors (Djourova *et al.*, 2019; Geremias *et al.*, 2022). Although in the current paper we did not focus on this topic, future studies should further analyze the relationship between happy-productive student patterns and PsyCap patterns.

Finally, the concept of happiness in this study may be considered restricted, as it only considers eudaimonic component (i.e., search for a satisfying and complete life that is achieved through a goal), and not hedonic component (i.e., manifestation of positive affect and the lack of negative affect; Deci & Ryan, 2006).

DATA AVAILABILITY

Data available on request due to privacy/ethical restrictions

CONFLICTS OF INTEREST

The authors declare no conflicts of interest.

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