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TikTok as a learning tool in higher education: Validation of a scale

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ABSTRACT

In our increasingly digitalized society, social media have emerged prominently within the educational landscape, fostering the creation of online and blended teaching-learning environments. Among these platforms, TikTok, renowned for its short dynamic videos featuring effects and music, stands out. Despite its growing popularity among youth and initial explorations of its pedagogical use by university educators, the educational benefits of TikTok remain largely unexplored. This gap is partly due to the absence of validated research tools to assess its potential educational impact. This study addresses this gap by adapting and validating a new scale, "TikTok-SportEdu", with a sample of 250 Spanish sport sciences university students ($M = 22.56$; $SD = 3.55$). The TikTok-SportEdu scale, comprising 15 items across three dimensions—1) TikTok as a university teaching-learning tool, 2) TikTok as a professional profile development tool, and 3) TikTok as a tool for interaction and staying informed about sport industry developments—demonstrates robust psychometric properties. The TikTok-SportEdu scale will enable educators, educational institutions, policymakers, and industry professionals to better understand the strategic use of TikTok in higher education, providing a reliable instrument for future research.

1. Introduction

The early 2020s witnessed a significant increase in the digitalisation of society, driven by the challenges posed by the COVID-19 pandemic (Kohli & Gourav, 2023; Vargo et al., 2021). This shift has profoundly impacted various sectors, including education (Lehmann et al., 2023), where the use of digital tools has become more institutionalized, thus making learning more flexible (Bygstad et al., 2022; Haleem et al., 2022). For instance, digital platforms facilitate asynchronous learning, allowing students to access educational content at their convenience and ensuring continuity in learning regardless of location. As a result, the higher education community has increasingly moved toward creating online and hybrid teaching-learning environments (Fernández-Batanero et al.,

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2022), supported by social media platforms such as Facebook, YouTube, LinkedIn, Instagram, and WhatsApp (Al-Balushi et al., 2022; Yu et al., 2023).

Research has shown that introducing social media into the classroom can positively impact learners (Al-Qaysi et al., 2023; Gómez-Ortiz et al., 2023; Nasution, 2024; Purvis & Beckingham, 2024). For instance, social media can enhance students' professional development and employability (Bridgstock, 2019), facilitate collaborative classroom work (Liu et al., 2022), and increase student engagement and motivation (Cooke, 2017). Consequently, university faculty members have been exploring the use of social media in educational settings. Although platforms such as Facebook and X (formerly known as Twitter) have been extensively studied (Malik et al., 2019; Manca & Ranieri, 2016), social media continues to evolve, introducing new functionalities that warrant further exploration for classroom applications (Tess, 2013). Additionally, new social media platforms, such as TikTok, which was launched in China in 2016, have rapidly gained popularity, especially during the COVID-19 pandemic (Deng & Yu, 2023; López-Carril et al., 2024). Currently, with over one billion active users, TikTok ranks among the top five social media platforms worldwide (Dixon, 2024).

Given its recent expansion, faculty members have begun to explore TikTok's educational potential (Carpenter et al., 2024; Conde-Caballero et al., 2024; Gao et al., 2023). This exploration is particularly important, as sectors such as the sport industry have already adopted TikTok as a management tool (Abeza, 2023; Drape & Belson, 2022). For instance, sport managers and athletes use TikTok to engage with fans and market their activities (Einsle et al., 2024; Su et al., 2020), while younger fans use the platform to access content and gather specific sport-related information (Art de Roché, 2024). Despite this burgeoning interest, the implications of TikTok's use in the classroom, especially in terms of industry connectivity and development of students' professional profiles, remain underexplored.

In the context of sport sciences education, initial studies have begun to explore TikTok's utility in the classroom (e.g., Cervi, 2021; Escamilla-Fajardo et al., 2021; López-Carril et al., 2024; Sari et al., 2022). However, the generalisation of their conclusions may be limited by the absence of validated research tools that allow for a more systematic investigation of the use and impact of TikTok in higher education. This study aims to deepen the understanding of TikTok's educational potential in higher education by validating a new scale, "TikTok-SportEdu". This scale is designed to assess TikTok's effectiveness across three dimensions: 1) as a university teaching-learning tool, 2) as a professional profile development tool, and 3) as a tool to interact and stay informed about sport industry developments. The validation and future application of the TikTok-SportEdu scale can aid educators, educational institutions, policymakers, and industry professionals in strategically integrating TikTok into higher education within an increasingly digitalized and interconnected society.

2. Literature review

Social media are characterized by their foundations in digital technologies. Kaplan and Haenlein (2010) define them as "a group of Internet-based applications that build on the ideological and technological foundations of Web 2.0, allowing the creation and exchange of user-generated content" (p. 61). Consequently, the Technology Acceptance Model (TAM), developed by Davis (1989), has become a prevalent theory for understanding the motives behind social media adoption in education (Al-Qaysi et al., 2020a; Pérez et al., 2023). The TAM provides insights into how students perceive the usefulness and ease of social media, potentially influencing their attitudes, behavioural intentions, and ultimately their usage (Al-Qaysi et al., 2020b; Al-Rahmi et al., 2017).

While the TAM has been extensively applied to platforms such as Facebook (Al-Qaysi et al., 2020b), its applicability to newer platforms such as TikTok has been largely unexplored, with notable exceptions, such as the study by Wang et al. (2024). They developed a TAM-based scale to assess TikTok in management education by focusing on active learning intentions. Their findings indicated a positive correlation between perceived ease of use, perceived usefulness, and learner interactivity, supporting TikTok as an innovative educational tool in management studies. However, Wang et al. (2024) did not address two critical areas in sport sciences that may affect university students' perceptions of TikTok's usefulness: the development of students' professional profiles and TikTok's role in keeping them informed about industry development and facilitating interactions with stakeholders in the sport industry. The subsequent sections will explore these dimensions, highlighting the advantages of integrating TikTok into sport sciences education and contextualizing its growth within this field.

2.1. The growth of TikTok as a learning tool in sport sciences education

One of the reasons to consider including TikTok in sport sciences education is the pedagogical benefits that students can derive from its use in the classroom. Although TikTok is still an emerging topic in educational research, the literature has underscored its educational potential. For instance, Escamilla-Fajardo et al. (2021) incorporated TikTok into a body expression course, revealing that students perceived TikTok positively for fostering creativity and imagination. Cervi (2021), through an ethnological observation in the context of dance, demonstrated that TikTok can promote creative innovation in teaching practices and highlighted its relevance as a digital platform reflecting the characteristics of Generation Z (individuals born between 1996 and 2010). The popularity of TikTok among younger users and its ability to make content go viral makes it a highly accessible platform for learning dance through imitation. Heyang and Martin (2024) suggested that TikTok's use in the classroom can enhance student engagement, encourage collaborative learning, and foster a sense of community. Similarly, López-Carril et al. (2024) emphasised the role of TikTok in promoting active teaching-learning methodologies that increase student motivation and engagement with course content.

From another perspective, Sari et al. (2022) explored physical education teachers' perceptions of TikTok, indicating that TikTok can make assignments more enjoyable for students, enhancing their motivation and increasing learning. They also valued the ease of using TikTok's functionalities, which can help capture students' attention. Along the same lines, Warburton (2024) highlighted the ease with which TikTok users can create and view videos, enhancing aspects such as authenticity, which is a charming element for

young people. Finally, Rueda-Arranz et al. (2023) studied the views on TikTok of students training to become physical education teachers. The study participants indicated that TikTok offers a wide variety of content related to physical education that can be used both in the classroom and for exercise at home. In addition, they believed that using TikTok can increase student motivation, which justifies its use for educational purposes.

2.2. TikTok as a tool for the development of the student's professional profile

It is well established that social media can help future professionals in the sport industry develop their professional profiles (Gómez-Ortiz et al., 2023). Studies such as Habets et al. (2021) and Healy et al. (2023) have shown that social media can assist students in developing their personal brands, networking, searching for job opportunities, and enhancing their employability. However, there has not yet been a focus on exploring how TikTok can specifically help develop students' professional profiles in the context of sport sciences education. Therefore, it is valuable to have a specific research instrument to determine students' perceptions of this aspect.

Although there are no specific studies on TikTok in this context, it can be inferred that understanding the main characteristics of this social media platform and how it can be used for professional purposes is beneficial for sport sciences students. This is particularly relevant because sport managers already use TikTok as a key marketing tool to stimulate fan and customer engagement (Einsle et al., 2024; Lee et al., 2024; Su et al., 2020), as well as to generate sponsorship revenue (Salao & Whateley, 2022; Su & Kennedy, 2022), among other applications. Therefore, it is useful for sport sciences students to learn about TikTok's functionalities and possible applications in the industry to leverage TikTok effectively when they enter the job market.

2.3. TikTok as a tool to interact and stay informed about the sport industry developments

Since its emergence, TikTok has grown significantly as a communication channel through which people, especially the younger generation, seek information. In fact, Generation Z is more likely to obtain their information from TikTok than from online giants such as Google (Chini, 2024; Koetsier, 2024). In the context of the sport industry, the new forms of communication generated by TikTok—more spontaneous, informal, original, and closer to the audience than traditional media—are being adopted by key members of the sport ecosystem (Abeza, 2024; Einsle et al., 2024; Su et al., 2020). Prominent sport stars such as Simone Biles, Fernando Alonso, Caitlin Clark, and Neymar Jr. use TikTok to share not only their achievements and sporting activities but also more personal, everyday aspects of their lives, which attract fans to follow and interact with them. Other sport stakeholders such as sport clubs (e.g., FC Barcelona, Los Angeles Lakers, New England Patriots), sport competitions (NBA, Wimbledon, La Liga, Olympic Games), sport federations (e.g., World Athletics, World Karate Federation, International Basketball Federation), and sport brands (e.g., Nike, Adidas, Puma) also use TikTok as a tool to share and communicate their main activities.

In short, with virtually all entities and individuals linked to the sport ecosystem generating and co-creating content on TikTok daily, the platform has become a place where sport fans and industry professionals can seek information and interact with industry stakeholders to achieve their goals, or simply to be entertained (Su et al., 2020). Therefore, it is not surprising that sport industry professionals include TikTok in their communication strategies and enhancement of sport products and services (Abeza, 2024). Consequently, it is valuable for sport sciences students to learn how to use TikTok to stay up-to-date with industry developments.

3. Methodology

This study adopted a quantitative, non-experimental, cross-sectional research approach, utilizing a non-probabilistic convenience sampling method and employing a questionnaire for data collection. This methodology is consistent with other scale validation studies in the context of sport sciences (e.g., Gómez-Chacón et al., 2021; Gregori-Faus et al., 2024; Morales-Baños et al., 2023).

3.1. Research instrument

A questionnaire was administered to address the main objective of this research. The first part includes socio-demographic questions (e.g., gender and age) as well as other questions that seek to find out descriptive patterns of social media use among the participants (e.g., "What social media do you use most in the academic context?" or "How many hours per week do you spend using social media?").

In the second part, an adaptation of the Social Media as an Educational and Professional Tool Student Perceptions Scale (SMEPT-SPS), developed by López-Carril et al. (2021), was used. The SMEPT-SPS comprises 12 items divided into three dimensions (D) of four items each: D1-Social media as a university teaching-learning tool, D2-Social media as a professional profile development tool, and D3-Social media as a tool to interact and stay informed about developments in the sport industry. These dimensions align with key factors influencing technology adoption, as conceptualised in the TAM, providing a theoretical foundation to interpret students' engagement with TikTok in educational settings. However, the present study does not empirically test TAM constructs.

We adapted the SMEPT-SPS developed by López-Carril et al. (2021) for two reasons. First, the three dimensions of the scale were aligned with the main objective of this study. Second, given the rapid evolution of social media platforms, it is crucial to develop research instruments that can assess their educational potential with specificity. The SMEPT-SPS was designed with adaptability in mind, allowing for modifications to focus on particular platforms. In this study, we replaced the term "social media" with "TikTok" to capture platform-specific perceptions, ensuring the validity of the construct within this emerging educational context.

Despite its utility, the work of López-Carril et al. (2021) had a limitation in terms of sample size, as it was a preliminary validation of

Table 1
The original SMEPT-SPS López Carril et al. (2021) and the adaptation of the items to the TikTok context.

Item No.	Original item of the López-Carril et al. (2021) SMEPT-SPS	Adaptation of the items to the TikTok context
*1	I believe that university teachers have mastered the use and are aware of the possibilities offered by social media	I believe that university teachers have mastered the use and are aware of the possibilities offered by TikTok
*2	I believe that university students have mastered the use and understanding of the possibilities offered by social media	I believe that university students have mastered the use and understanding of the possibilities offered by TikTok
3	I believe that social media is a positive educational tool for students that should be included more in university classes	I believe that TikTok is a positive educational tool for students that should be included more in university classes
4	I believe that including social media in university classes makes it easier for the university to be more connected to society	I believe that including TikTok in university classes makes it easier for the university to be more connected to society
5	I would like to see more training on social media at university	I would like to see more training on TikTok at university
6	I see the positive side of the university's commitment to greater inclusion of social media	I see the positive side of the university's commitment to greater inclusion of TikTok
*7	I believe that companies today demand knowledge in the use and management of social media	I believe that companies today demand knowledge in the use and management of TikTok
8	Social media can help me in my professional development	TikTok can help me in my professional development
9	Mastering social media can increase my chances of finding a job	Mastering TikTok can increase my chances of finding a job
10	Mastering social media can make it easier for me to set up a business	Mastering TikTok can make it easier for me to set up a business
11	Mastering the management and use of social media can help me create and/or enhance my personal brand	Mastering the management and use of TikTok can help me create and/or enhance my personal brand
*12	Social media encourages entrepreneurship	TikTok encourages entrepreneurship
*13	As social media can help develop a professional profile, university teachers should integrate it more into their classes	As TikTok can help develop a professional profile, university teachers should integrate it more into their classes
14	Social media can make it easier for you to connect with sport organisations or sport companies	TikTok can make it easier for you to connect with sport organisations or sport companies
15	Social media can make it easier for you to connect with athletes, coaches and journalists	TikTok can make it easier for you to connect with athletes, coaches and journalists
16	Through social media I can keep informed of news and innovations in my professional field	Through TikTok I can keep informed of news and innovations in my professional field
17	Social media can encourage contact with the stakeholders in my professional sector	TikTok can encourage contact with the stakeholders in my professional sector

Note. Items marked with an asterisk (*) were dropped during the validation process of the SMEPT-SPS of López-Carril et al. (2021) but were reconsidered for inclusion in the present study.

the SMEPT-SPS, requiring further psychometric testing with a larger sample. To address this limitation and enhance the robustness of the scale, we reintegrated five items that were excluded during the original validation process. This approach allowed us to evaluate whether these items could be retained in the new scale, considering the larger sample size and the specific focus on TikTok.

Table 1 presents the original SMEPT-SPS by López-Carril et al. (2021), which consists of 12 items, along with the five reintegrated items (nos. 1, 2, 7, 12, and 13), forming the initial proposal for the adaptation of the scale in the TikTok context for this study.

Finally, to ensure that the new instrument accurately captures the application of TikTok in educational settings, students engaged in structured activities where they created TikTok videos to explain key concepts from their coursework and evaluated the platform's potential for professional networking and industry insights. These experiences provided a contextual foundation for their responses to the TikTok-SportEdu scale.

3.2. Description of the sample and data collection procedure

The study sample consisted of 250 university students enrolled in a bachelor's degree program in Physical Activity and Sport Sciences in Spain. Among them, 183 (73.2 %) were male and 67 (26.8 %) were female, with ages ranging from 17 to 46 years ($M = 19.94$, $SD = 3.106$). Participants reported spending an average of 4 h daily on social media ($SD = 1.80$). Regarding the importance of social media use in their lives, respondents gave a mean rating of 7.18 out of 10 ($SD = 1.69$). Table 2 provides additional data on social media usage patterns of the participants in this study.

This study adhered to the principles of the Declaration of Helsinki (World Medical Association, 2013). Accordingly, all participants were informed about the voluntary nature of their participation, the aims of the study, the anonymity of their responses, and the use of data for academic purposes. All participants provided informed consent before taking part in the study.

The questionnaire was administered in person via the online platform LimeSurvey, using each participant's laptop computer, during November 2023. To ensure standardisation and minimise response bias, participants were given detailed instructions before completing the survey. The questionnaire was designed to be completed in approximately 10 min, and the authors were present throughout the process to provide clarifications while avoiding any form of influence over participant responses. Additionally, anonymity was maintained to encourage honest and unbiased feedback.

Since the SMEPT-SPS by López-Carril et al. (2021) had already undergone a dual-language validation process, the questionnaire was administered in Spanish. As the only modification involved adapting the terminology to refer specifically to TikTok, no additional translation process was required.

Table 2
Main characteristics of the sample in relation to social media use.

Question posed to the participants		N	%
Which device do you use most often to access social media?	Mobile phone	244	97.6
	Laptop computer	2	0.8
	Tablet	3	1.2
	Desktop computer	1	0.4
	Total	250	100
For what purpose do you use social media most frequently?	To have fun	91	36.4
	To keep in touch with friends	87	34.8
	To keep in touch with relatives	43	17.2
	To search for information	7	2.8
	To keep up to date with the news	11	4.4
	For employment purposes	2	0.8
	For university-related issues	8	3.2
	To gossip	1	0.4
	Total	250	100
Which social media platform do you use most frequently in your private life?	WhatsApp	113	45.2
	Instagram	78	31.2
	Snapchat	2	0.8
	TikTok	28	11.2
	YouTube	16	6.4
	Twitch	2	0.8
	X	11	4.4
	Other	0	0
	Total	250	100
	Which social media platform do you primarily use for university-related activities?	WhatsApp	83
Instagram		11	4.4
TikTok		2	0.8
YouTube		64	25.6
X		4	1.6
Wikis		8	3.2
Moodle		68	27.2
Vimeo		1	0.4
Blogs		7	2.8
Other		2	0.8
Total	250	100	
Do you think people spend too many hours a day on social media?	Yes	247	98.8
	No	3	1.2
	Total	250	100
Do you think you spend too many hours a day on social media?	Yes	192	76.8
	No	58	23.2
	Total	250	100
Do you believe you might have some form of social media addiction?	Yes	95	38
	No	155	62
	Total	250	100

3.3. Statistical analysis

First, descriptive analyses were conducted to inspect the data, which included calculating means and standard deviations, and testing for normality using skewness and kurtosis. Subsequently, the factor structure of the questionnaire was evaluated. For this purpose, exploratory factor analysis (EFA) was performed to identify a theoretically significant factor structure by employing principal component analysis with oblimin oblique rotation. The criteria considered included communalities and factor loadings, both exceeding 0.50 (Hair et al., 2014; Kahn, 2006), and eigenvalues greater than 1 (Worthington & Whittaker, 2006).

Second, a Confirmatory Factor Analysis (CFA) was conducted to confirm the factor structure obtained in the EFA. The psychometric properties assessed included measurement model fit, factor loadings, reliability through composite reliability (CR), and validity through tests of convergent and discriminant validity. The sample size of 250 is adequate for a CFA, according to Muthén and Muthén (2002), and surpasses the 15:1 criterion established by Hair et al. (2014). All analyses were performed using SPSS version 23 for Windows and AMOS version 23.

4. Results

4.1. Descriptive statistics and exploratory factor analysis

A summary of the descriptive analyses is presented in Table 3, including the means, standard deviations, skewness, and kurtosis of the items. There were no unanswered items and the values for normality were within acceptable limits (less than 3; Finney & DiStefano, 2006). Regarding the EFA, the appropriateness of the analysis was assessed through factorization conditions; the Bartlett test and the Kaiser-Meyer-Olkin measure were conducted. Kaiser’s measure of sampling adequacy was 0.951, and Bartlett’s test of sphericity was significant ($\chi^2(136) = 3675.891$; $p < 0.001$), indicating that the items were interdependent and highly correlated, which is essential for conducting an EFA. The EFA revealed a factor solution that accounted for 73.04 % of the variance and was distributed across three factors with eigenvalues greater than 1.0. These results indicate that the scale had a satisfactory factor structure (Field, 2009), demonstrating the adequacy of the sample and appropriateness of completing a factor structure. Considering the different inclusion criteria for the items, the communalities were above 0.50, except for item D1.2 (0.34), and the factor loadings were above 0.50 (only item D1.2 with $\lambda = 0.52$, which obtained a value close to the cut-off point). Despite these, it was decided to retain the items and analyse their behaviour in the CFA.

4.2. Confirmatory factor analysis

A combination of indices was used to measure the model fit. The minimum discrepancy per degrees of freedom ratio ($CMIN/DF \leq 5$; Bentler, 2002), values above 0.90 for the Comparative Fit Index (CFI), Tucker-Lewis Index (TLI), Incremental Fit Index (IFI) (Hu & Bentler, 1999), a Parsimony Comparative Fit Index ($PCFI \geq 0.80$; Marôco, 2010), and Root Mean Square Error of Approximation ($RMSEA \leq 0.08$; Byrne, 2001) were considered.

The initial CFA revealed a satisfactory fit, with the indices falling within the acceptable ranges. However, upon analysing the factor loadings, items D1.1 and D1.2 displayed values below 0.35. According to Field (2009), the magnitude of factor loadings is critical for assessing the reliability of indicators when measuring the constructs they intend to represent. Consequently, these results, along with those from the EFA, necessitated the refinement of the model by removing these two items. A subsequent CFA was conducted, yielding a slightly improved fit compared with the initial model, as detailed in Table 4.

4.3. Convergent and discriminant validity

In this phase, different analyses were conducted, specifically composite reliability (CR), average variance extracted (AVE), and discriminant validity. In the case of CR, the factor loadings of the items range between 0.74 and 0.92, providing a CR of 0.93 for the three dimensions, thus exceeding the recommended value 0.70 (Blunch, 2008). As for the AVE, the results of the dimensions exceeded the threshold value of 0.50 (Hair et al., 2014), showing a high degree of convergent validity. Finally, discriminant validity was demonstrated by verifying that the square root of AVE values was greater than the correlations construct (Fornell & Larcker, 1981) (Table 5). The final validated version of the TikTok-SportEdu scale is available in Appendix A (English) and Appendix B (Spanish).

5. Discussion

The post-pandemic landscape shaped by the SARS-CoV-2 virus has catalyzed a digital transformation across numerous sectors, with social media emerging as a key technology for fostering connections between people and institutions. Higher education has undergone

Table 3
Descriptive statistics, communalities and factor loadings (EFA).

Dimensions	Items	Mean (SD)	As	Ku	Comm	λ EFA
D1	D1.1	2.38 (1.07)	0.65	-0.58	0.78	0.87
	D1.2	3.80 (1.10)	-0.88	0.15	0.34	0.52
	D1.3	3.13 (1.16)	-0.15	-0.68	0.82	0.90
	D1.4	3.40 (1.17)	-0.49	-0.56	0.77	0.86
	D1.5	2.97 (1.24)	-0.04	-0.95	0.84	0.91
	D1.6	3.16 (1.22)	-0.30	-0.81	0.86	0.93
D2	D2.7	3.12 (1.17)	-0.22	-0.73	0.64	0.72
	D2.8	3.08 (1.15)	-0.03	-0.63	0.71	0.80
	D2.9	3.08 (1.17)	-0.03	-0.80	0.70	0.81
	D2.10	3.26 (1.18)	-0.16	-0.70	0.67	0.81
	D2.11	3.66 (1.16)	-0.66	-0.26	0.73	0.85
	D2.12	3.39 (1.16)	-0.35	-0.56	0.69	0.81
	D2.13	3.09 (1.08)	-0.25	-0.57	0.77	0.84
D3	D3.14	3.52 (1.11)	-0.64	-0.10	0.79	0.88
	D3.15	3.65 (1.13)	-0.81	0.63	0.77	0.87
	D3.16	3.64 (1.13)	-0.58	-0.31	0.73	0.83
	D3.17	3.48 (1.07)	-0.48	-0.09	0.73	0.85

Note. SD = Standard deviation; As = Asymmetry; Ku = Kurtosis; Comm = Communalities; λ = Factor loadings.

Table 4
Goodness of fit indices for models 1 and 2.

Model	CMIN/DF	CFI	IFI	TLI	PCFI	RMSEA
1. Original model (17 items)	3.10	0.93	0.93	0.92	0.79	0.09
2. Refined model (15 items)	3.00	0.95	0.95	0.94	0.77	0.08

Table 5
Assessment of reliability, convergent and discriminant validity.

Dimensions (D) and items	λ CFA	CR	AVE	$\sqrt{\text{AVE}}$	Covariances (correlations)
D1		0.93	0.78	0.88	D1 ↔ D2 = 0.81 (0.65)
D1.3	0.87				D2 ↔ D3 = 0.77 (0.59)
D1.4	0.85				D1 ↔ D3 = 0.71 (0.50)
D1.5	0.87				
D1.6	0.92				
D2		0.93	0.66	0.81	
D2.7	0.74				
D2.8	0.81				
D2.9	0.79				
D2.10	0.82				
D2.11	0.84				
D2.12	0.83				
D2.13	0.82				
D3		0.93	0.77	0.87	
D3.14	0.91				
D3.15	0.90				
D3.16	0.83				
D3.17	0.85				

significant changes, with social media enabling the creation of online and hybrid learning environments (Bridgstock, 2019; Nasution, 2024; Purvis & Beckingham, 2024). Among the various platforms, TikTok, known for its short video format with effects and music, has surged in popularity and is now being integrated into higher education settings (Escamilla-Fajardo et al., 2021; Heyang & Martin, 2024; Sari et al., 2022). In fact, authors such as Carpenter et al. (2024) and López-Carril et al. (2024) advocate exploring TikTok's potential in academic contexts. However, apart from the work by Wang et al. (2024), there are no validated research tools to measure the educational impact of TikTok or gauge student perceptions regarding its integration into the curriculum. This study aims to fill this gap by validating a new research instrument, the TikTok-SportEdu scale, designed to assess TikTok's utility across three dimensions: 1) TikTok as a university teaching-learning tool, 2) TikTok as a professional profile development tool, and 3) TikTok as a tool to interact and stay informed about sport industry development.

Drawing on the work of López-Carril et al. (2021), we adapted their scale to the specific context of TikTok, resulting in the newly named TikTok-SportEdu scale, for which we explored and confirmed its psychometric properties. This validation process demonstrated that the TikTok-SportEdu scale is a reliable and valid tool for assessing the educational impact of TikTok in higher education.

The TikTok-SportEdu scale offers several improvements over the López-Carril et al. (2021) scale, which was originally designed to broadly assess the impact of social media on higher education. Each social media platform has unique characteristics that the original scale may not fully capture (Manca & Ranieri, 2016; Tess, 2013). By specifically tailoring the scale to TikTok, this tool allows for a more specific understanding of TikTok's educational impacts, positioning the TikTok-SportEdu scale as a pioneering instrument that opens new avenues for research and practical application in university settings, as highlighted by Carpenter et al. (2024) and López-Carril et al. (2024).

Additionally, the applicability of the López-Carril et al. (2021) scale is constrained by the sample size used to assess its psychometric properties. In contrast, this study utilizes a larger sample, which is sufficient to validate the TikTok-SportEdu scale. Although the López-Carril et al. (2021) scale demonstrated good psychometric properties, the fit indices obtained in this study were superior, thus enhancing the robustness of the TikTok-SportEdu scale. For instance, during the EFA, the results revealed a three-factor structure accounting for 73.04 % of the variance, surpassing the 67.86 % reported by López-Carril et al. (2021). Moreover, CFA indicated an adequate fit for the original 17-item model. However, two items displayed factor loadings below the recommended threshold, prompting a reanalysis with a 15-item model, which achieved satisfactory fit and adequate complementary measures, with composite reliability values above 0.90 and high average variance extracted indices (above 0.60 for D2 and 0.70 for D1 and D3). These enhancements surpass those found in López-Carril et al. (2021), which included three items that were subsequently excluded from their model—D2.7: “I believe that companies today demand knowledge in the use and management of TikTok”, D2.12: “TikTok encourages entrepreneurship”, and D2.13: “As TikTok can help develop a professional profile, university teachers should integrate it more into their classes”, Retrieving these items for the TikTok-SportEdu scale is positive, impacting the dimension associated with students' professional profile development, a relevant factor for enhancing employability as highlighted by several authors (e.g., Habets et al., 2021; Healy et al., 2023). Thus, the TikTok-SportEdu scale can help bridge the gap between professional practices and university education.

This study complements the research by Wang et al. (2024), who developed a new instrument based on the TAM to assess the potential of TikTok as an educational tool, focusing on active learning intentions within management education. While their findings significantly enhance our understanding of the motivations for adopting TikTok as a technological tool in classrooms, their scale does not address two critical aspects that may influence its use in sport sciences education that we have identified through the adaptation of the TikTok-SportEdu scale within a TAM-informed perspective: TikTok as a tool for professional profile development, and as a medium to stay informed about and interact with the sport industry. By incorporating these dimensions, this study aligns with TAM's theoretical foundation, even though it does not directly test its constructs. This integration provides a structured framework to interpret students' engagement with TikTok in educational settings, paving the way for future research that empirically tests TAM using the TikTok-SportEdu scale. The TikTok-SportEdu scale addresses these dimensions, offering sport sciences educators a specific tool for evaluating the merits of integrating TikTok into their teaching. This is particularly valuable, given TikTok's growing prominence in the sport industry, as highlighted by Abeza (2024), Einsle et al. (2024), and Su et al. (2020).

5.1. (De)limitations and future research directions

This work is not without certain (de)limitations that must be acknowledged to fully understand the scope of the results. Recognizing these (de)limitations can inspire new research exploring the educational potential of TikTok in university settings. First, this research was conducted with a sample of Spanish students from a bachelor's degree program in Physical Activity and Sport Sciences. Applying the TikTok-SportEdu scale to different fields of study and geographic areas with diverse cultural backgrounds can provide broader insights. Indeed, previous studies, such as the one conducted by Ye et al. (2023), have shown that users from different cultural backgrounds exhibit significant differences in social media usage behaviour. Furthermore, in the case of TikTok, this notion is supported by Wang et al. (2024), who worked with a sample from China and recognized that from a TAM perspective, the functionalities and uses of TikTok in various global regions may impact users' perceptions and motivations. Therefore, conducting comparative studies to identify possible regional similarities or differences would be valuable.

Second, while this study draws upon the TAM to structure the theoretical framework and interpret the possible reasons for using TikTok in higher education, as reflected in the three dimensions of the TikTok-SportEdu scale, it does not empirically test TAM constructs. Future studies could explore this model more directly by using the TikTok-SportEdu scale to assess variables such as perceived usefulness, perceived ease of use, and behavioural intentions. This would provide a deeper understanding of the factors influencing students' acceptance of TikTok as an educational tool and further validate TAM in this specific context.

Third, while this study validates the TikTok-SportEdu scale to assess TikTok's educational impact across three dimensions, future research should explore its practical application in classroom settings. Specifically, further studies could examine how educational initiatives incorporating TikTok can effectively enhance students' professional profile development and assess this impact using the second dimension of the scale. Investigating different instructional strategies and their alignment with students' career readiness would provide valuable insights into TikTok's role in professional training within higher education.

Fourth, while the sample size is adequate to achieve the main objective of this study, it does not allow for generalization to all students within the program. Future research could benefit from a collaborative approach involving multiple Spanish universities to more comprehensively assess the use of the TikTok-SportEdu scale, thereby enhancing the generalizability of the results. Moreover, the unequal gender distribution within the sample, predominantly male—a common occurrence in sport sciences educational studies conducted in the Spanish context (e.g., Escamilla-Fajardo et al., 2021)—could introduce biases, as gender may influence the perceived utility of TikTok. This is not a new phenomenon in the context of social media use in higher education, where gender differences in social media engagement have been well-documented (e.g., Akman & Turhan, 2018; Theophilou et al., 2024). Therefore, future research should specifically address the impact of gender on TikTok use, allowing educators to design educational interventions tailored to diverse student profiles.

Fifth, as this study is quantitative, incorporating qualitative methodologies could provide a more holistic view of TikTok's educational utility at universities. This emerging topic merits a dual approach to equip educators with the knowledge and tools needed to integrate meaningful TikTok-based activities into their teaching.

Despite these (de)limitations, in a world that is increasingly competitive, globalized, and digitalized, where university students must be well-prepared for their professional futures, the TikTok-SportEdu scale offers valuable insights into areas such as professional profile development and industry engagement. As TikTok continues to play a significant role in the sport industry, educators should explore the pedagogical opportunities it offers. Additionally, the TikTok-SportEdu scale is not only useful in sport sciences education, but also applicable across various educational disciplines, offering a novel research tool that can pave the way for future studies focused on the integration of TikTok in higher education.

6. Conclusions

This study was dedicated to the creation and validation of a new research instrument, the TikTok-SportEdu scale, designed to assess the educational impact of TikTok in sport sciences education across three dimensions: 1) TikTok as a university teaching-learning tool, 2) TikTok as a professional profile development tool, and 3) TikTok as a tool to interact with and stay informed about sport industry development. The validation process confirmed that the TikTok-SportEdu scale possesses robust psychometric properties, making it a valuable and reliable research tool with 15 items distributed across three dimensions (see Appendix A).

The TikTok-SportEdu scale is among the first research instruments that enable educators, educational institutions, educational policymakers, and industry professionals to better understand the strategic incorporation of TikTok into university education. Moreover, this scale serves as a useful tool for collecting data in future studies aimed at exploring TikTok’s educational potential in the university context.

CRedit authorship contribution statement

Pablo Gálvez-Ruiz: Writing – review & editing, Writing – original draft, Visualization, Validation, Methodology, Formal analysis, Data curation. **Samuel López-Carril:** Writing – review & editing, Writing – original draft, Methodology, Investigation, Conceptualization. **Nicholas M. Watanabe:** Writing – review & editing, Supervision. **Alejandro Lara-Bocanegra:** Writing – review & editing, Writing – original draft, Methodology, Investigation, Formal analysis, Data curation.

Data availability statement

The datasets used and analysed during the current study are available from the corresponding author on reasonable request.

Declaration of generative AI and AI-assisted technologies in the writing process

During the preparation of this work, the authors used ChatGPT (by OpenAI) and Paperpal for proofreading and enhancing the readability of the text. After utilizing these tools, the authors reviewed and edited the content as necessary and take full responsibility for the final version of the publication.

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Declaration of competing interests

The authors declare no conflict of interest.

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Appendix A. Final validated version of the TikTok-SportEdu scale (in English)

Dimensions (D)	Items
D1. TikTok as a university teaching-learning tool	D1.3. I believe that TikTok is a positive educational tool for students that should be included more in university classes D1.4. I believe that including TikTok in university classes makes it easier for the university to be more connected to society D1.5. I would like to see more training on TikTok at university D1.6 I see the positive side of a university’s commitment to greater inclusion of TikTok
D2. TikTok as a professional profile development tool	D2.7. I believe that companies today demand knowledge in the use and management of TikTok D2.8. TikTok can help me in my professional development D2.9. Mastering TikTok can increase my chances of finding a job D2.10. Mastering TikTok can make it easier for me to set up a business D2.11. Mastering the management and use of TikTok can help me create and/or enhance my personal brand D2.12. TikTok encourages entrepreneurship D2.13. As TikTok can help develop a professional profile, university teachers should integrate it more into their classes
D3. TikTok as a tool to interact and stay informed about developments in the sport industry	D3.14. TikTok can make it easier for you to connect with sport organisations or sport companies D3.15. TikTok can make it easier for you to connect with athletes, coaches and journalists D3.16. Through TikTok I can keep informed of news and innovations in my professional field D3.17. TikTok can encourage contact with the stakeholders in my professional sector

Appendix B. Final validated version of the TikTok-SportEdu scale (in Spanish)

Dimensiones (D)	Ítems
D1. TikTok como herramienta de enseñanza-aprendizaje universitaria	D1.3. Creo que TikTok es una herramienta formativa positiva para el alumnado que debería incluirse más en las clases de universidad D1.4. Creo que incluir TikTok en las clases universitarias facilita que la universidad esté más conectada con la sociedad D1.5. Me gustaría que en la universidad se diese más formación sobre TikTok D1.6. Veo positivo que la universidad apueste por una mayor inclusión de TikTok como herramienta de enseñanza-aprendizaje
D2. TikTok como herramienta para el desarrollo del perfil profesional	D2.7. Considero que actualmente las empresas demandan conocimientos en uso y gestión de TikTok D2.8. TikTok puede ayudarme en mi desarrollo profesional D2.9. Dominar TikTok puede aumentar mis posibilidades de encontrar empleo D2.10. Dominar TikTok puede facilitarme la creación de una empresa D2.11. Dominar la gestión y uso de TikTok puede ayudarme a crear y/o mejorar mi marca personal D2.12. TikTok fomenta el emprendimiento D2.13. Debido a cómo puede ayudar TikTok a desarrollar un perfil profesional, el profesorado universitario debería integrarlo más en las clases
D3. TikTok como herramienta para interactuar y mantenerse informado sobre los avances en la industria del deporte	D3.14. TikTok pueden facilitar que conecte con organizaciones deportivas o empresas de la industria del deporte D3.15. TikTok puede facilitar que conecte con deportistas, entrenadores y periodistas D3.16. A través de TikTok puedo estar informado/a sobre novedades e innovaciones que se producen en mi campo profesional D3.17. TikTok puede favorecer el contacto con los grupos de interés (<i>stakeholders</i>) de mi sector profesional

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