

Italian validation of the Academic Behavioural Confidence Scale with Teacher Education Students

Validazione italiana dell'Academic Behavioural Confidence Scale con studenti di Scienze della Formazione Primaria

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Double blind peer review

Citation: Pagani, V., & Delbosq, S. (2023). Italian validation of the Academic Behavioural Confidence Scale with Teacher Education Students. *Italian Journal of Educational Research*, 30, 96-109
<https://doi.org/10.7346/sird-012023-p96>

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Received: February 28, 2023

Accepted: May 16, 2023

Published: June 30, 2023

Pensa MultiMedia / ISSN 2038-9744
<https://doi.org/10.7346/sird-012023-p96>

Abstract

Academic Behavioural Confidence represents a variant of self-efficacy and refers to students' beliefs and expectations about their ability to respond appropriately to the demands posed by university study (Sander & Sanders, 2009; Putwain & Sander, 2016). This construct is associated with several positive student outcomes, such as effective academic coping strategies or academic achievement. Moreover, it constitutes one of the dimensions on which universities could intervene to reduce academic dropout and increase academic performance. The aim of the study was to validate the Academic Behavioural Confidence (ABC) scale developed by Sander and Sanders (2003, 2006, 2009), with a sample of Italian undergraduates. Participants were 1141 students enrolled in the Master's Degree Programme in Teacher Education. Based on the available literature, several models were tested. Factor analysis showed a three-factor structure deviating from the original one. The factors ("Grades-Studying", "Verbalizing", and "Attendance") were significantly associated with academic performance and reasons for not being on track with exams. Discrepancies between the solution found and the original factorial model are discussed from a theoretical and cultural perspective.

Keywords: Academic Behavioural Confidence; Self-efficacy; Higher Education; Validation; Dropout.

Riassunto

L'Academic Behavioural Confidence (fiducia nel comportamento accademico) rappresenta una variante dell'auto-efficacia e fa riferimento alle credenze e alle aspettative degli studenti in merito alle loro capacità di rispondere adeguatamente alle richieste poste dallo studio universitario (Sander & Sanders, 2009; Putwain & Sander, 2016). Questo costrutto risulta associato a diversi outcome positivi per gli studenti, come l'adozione di strategie di coping efficaci nella vita universitaria e i risultati accademici. Costituisce peraltro una delle dimensioni su cui le università hanno la possibilità di intervenire al fine di ridurre l'abbandono universitario e favorire il successo accademico. Lo scopo del presente studio è quello di validare la scala Academic Behavioural Confidence (ABC) messa a punto da Sander e Sanders (2003, 2006, 2009). La versione italiana è stata somministrata a un campione di 1141 studenti italiani del corso magistrale a ciclo unico in Scienze della Formazione Primaria. A partire dall'analisi della letteratura, sono stati testati diversi modelli alternativi. L'analisi fattoriale ha mostrato una struttura a tre fattori che si discosta da quella originaria. I tre fattori ("Grades-Studying", "Verbalizing" e "Attendance") sono risultati significativamente associati con la performance accademica e con le possibili motivazioni che inducono gli studenti a rimanere indietro con gli esami. Le differenze tra la soluzione emersa e il modello fattoriale originale vengono discusse a partire da una prospettiva teorica e culturale.

Parole chiave: Academic Behavioural Confidence; Auto-efficacia; Higher Education; Validazione; Dropout.

Credit author statement: The authors confirm contribution to the paper as follows: study conception and design: Valentina Pagani; data collection: Valentina Pagani; analysis and interpretation of results: Valentina Pagani and Stefano Delbosq. Paragraphs 1, 2.1, 2.2, 2.4 and 4 were written by Valentina Pagani; Paragraphs 2.3 and 3 were written by Stefano Delbosq; Paragraph 5 was written by both authors. All authors reviewed the results and approved the final version of the manuscript

1. Introduction

In line with the Europe 2020 strategy, improving completion and reducing dropout are key concerns for higher education in order to increase the number of young people holding a tertiary degree (European Commission, 2015). Yet, academic underachievement is still a significant issue in several countries and particularly in Italy (European Commission, 2020; OECD, 2009). According to the Education and Training Monitor Report (European Commission, 2020), Italy has the second lowest percentage of university graduates in the European Union (27.6% of people aged 25–34 years hold a degree), outperformed only by Romania (25.8%). Moreover, according to Eurostat data (2016), Italy ranks second among the EU countries for the highest number of dropouts, with a total dropout rate of 15.8% (Perchinunno et al., 2021).

As recent studies at the international level have pointed out (e.g., Mackie, 2001; Kehm, Larsen & Sommersel, 2019; Morelli et al., 2021), dropout is a multiform phenomenon. Thus, there is no simple explanation which can account for its complexity, since several factors can play a determining role in explaining academic persistence and withdrawal from tertiary education. According to Mackie's life stress reduction model (2001), which the author developed from Tinto's (1975) student integration model, the decision by a student to leave or stay is the result of a complex interplay of forces at different levels: 1) individual (e.g., motivation, emotions, beliefs, confidence); 2) social (e.g., relationships with other students, academic integration); 3) organizational (e.g., teaching quality, academic student services); 4) external/contextual (e.g., financial support, working while studying). The recent literature review by Behr et al. (2020) suggests a similar taxonomy, dividing dropout determinants into three categories according to the level at which they exert their influence and to what extent they are malleable (Larsen et al., 2013): 1) factors associated with the national education system (e.g., financing policy in the form of financial support, higher education reforms); 2) elements related to the institution of tertiary education (e.g., teaching quality, class size, relationship between students and teachers); and 3) individual student factors divided into pre-study determinants (e.g., student's sociodemographic background) and study-related individual aspects (e.g., learning motivation, self-confidence, learning strategies, social integration at university).

These elements are woven into a reciprocal and dynamic interrelationship and consensus cannot be reached in literature regarding the order of importance of each of these factors (Behr et al., 2020). However, the distinction between factors from outside the sphere of influence of the university (e.g., the sociodemographic background of the student) and the so-called "university malleable" factors (Larsen et al., 2013; Kehm, Larsen & Sommersel, 2019), namely those «capable of being altered or controlled by university authorities and/or politicians more directly and to a greater extent» (Larsen et al., 2013, p. 15), can be useful for universities and researchers in order to develop strategies and interventions aimed at identifying students who are more at risk of withdrawing from tertiary education and reducing university dropout rates (Larsen et al., 2013; Morelli et al., 2021; Aina et al., 2022).

Among the university malleable factors (e.g., learning environment and learning quality, support and counselling services, social integration at university), the beliefs held by students about their academic competence play a relevant role in explaining academic achievement and failure (Robbins et al., 2004; Richardson et al., 2012; Nicholson et al., 2013). They impact a range of outcomes related to student learning and achievement, having a positive effect on students' motivation, learning-related emotions and metacognitive learning strategies (Hayat et al., 2020), approaches to studying (Prat Sala & Redford, 2010) and, ultimately, academic performance (Chemers et al., 2001; Sander, 2009; Nicholson et al., 2013).

Two main frameworks have been associated with the investigation of competence beliefs, namely the academic self-concept and the academic self-efficacy frameworks (Nicholson et al., 2013). Academic self-concept, emerging principally from the work of Marsh, refers to students' knowledge and perceptions about themselves in achievement situations. Academic self-efficacy, as defined by Bandura (1997), refers to one's self-perceived confidence to successfully perform a particular academic task (Bong & Skaalvik, 2003). One of the most notable differences between the two constructs, arising from their theoretical definitions, is that self-concepts are past-oriented, embodying fairly stable perceptions of the self; whereas self-efficacy refers to inherently future-oriented conceptions of the self and its potential and, thus, is more malleable (Bong & Skaalvik, 2003). Nonetheless, as Bong and Skaalvik (2003) argue, these two constructs also share many similarities, such as their multidimensional nature, the centrality of perceived competence

in construct definition, and the role they play in influencing academic motivation and performance. Moreover, they are both considered domain-specific, such that students' perceived competence in one academic domain does not necessarily extend to other academic areas or subjects.

Drawing on both frameworks, Sander and Sanders (2006, 2009; Sander, 2004) proposed a third related construct: academic behavioural confidence. Academic behavioural confidence constitutes a variant of academic self-efficacy and refers to «students' beliefs, or expectations, about their capability of performing those behaviours required to successfully learn and achieve at university» (Putwain & Sander, 2016, p. 382; Sander & Sanders, 2009). Unlike its parent concept, the academic behavioural confidence construct is conceptualised at an intermediate level of domain/context specificity (Putwain & Sander, 2016). Lacking the domain-specific focus of self-efficacy (Bong & Skaalvik, 2003), it does not differentiate between competence beliefs in various academic subjects or tasks. Rather, it distinguishes between different undergraduate study-related behaviours, such as confidence in independent study, attaining grades, attending lectures and tutorials, discussing course material with academic teaching staff (Nicholson et al., 2013). These behaviours are particularly relevant in higher education, where students experience greater autonomy and responsibility for their learning than is typically required in pre-higher education settings (Coates, 2005; Putwain & Sander, 2016).

Recognizing that understanding the level of confidence that students have towards their studies could be valuable for making sense of their expectations regarding teaching, learning and assessment (Sander et al., 2000), Sander and Sanders (2003, 2006, 2009; Sander, 2009) developed the Academic Behavioural Confidence (ABC) scale.

The ABC scale was developed in the UK to provide a psychometric means of assessing higher education students' confidence in the study skills and behaviours required for undergraduate study (Sander & Sanders, 2006, 2009). It was meant to provide a better understanding of students as learners, especially in relation to largely lecture-based courses, using survey techniques. The rationale was that, with large classes, there is little or no opportunity for the informal interactional discourse possible within small groups that allows teachers to support their students more effectively (Sander, 2004). Thus, knowing students' ABC scores could contribute to helping lecturers better understand a cohort of students, optimising their teaching styles and designing more effective learning environments for their many and diverse learners (Sander, 2004; Sander & Sanders, 2009).

The scale consists of 24 items representing crucially distinct domains of students' academic behaviour in four subscales (see Appendix 1): Grades (e.g., "How confident are you that you will be able to attain good grades in your work?"), Studying (e.g., "How confident are you that you will be able to manage your workload to meet coursework deadlines?"), Attendance (e.g., "How confident are you that you will be able to attend most taught sessions?") and Verbalizing (e.g., "How confident are you that you will be able to ask lecturers questions about the material they are teaching, during a lecture?"). Students respond on a five-point scale (from 1 = "not at all confident," to 5 = "very confident"), and higher scores indicate greater confidence in each domain.

Previous research has confirmed that the four-factor model (confidence in attaining grades, studying, attending classes, and discussing course material) shows adequate reliability and validity (Nicholson et al., 2013; Sander & Sanders, 2009) in the UK context. Over the years, several studies have confirmed the validity of the construct proposed by Sander and Sanders (2006, 2009). The ABC scale meaningfully discriminates between students in different degree programs (Sander & Sanders, 2009). Moreover, academic behavioural confidence is positively associated with a deep learning approach (de la Fuente et al., 2013), self-regulation (Nicholson et al., 2013; de la Fuente et al., 2015), effective academic coping strategies (Kirikkanat and Kali-Soyer, 2018), and correlates positively with positive achievement emotions and negatively with negative emotions (Putwain et al., 2013; Sander & de la Fuente, 2020). Further studies using the ABC scale also show that academic behavioural confidence is positively related to and predicts academic achievement (de la Fuente et al., 2013; Nicholson et al., 2013; Sander et al., 2013). Taken together, these findings seem to suggest that the ABC scale could be a useful means to identify undergraduates at risk of academic underachievement and withdrawal from tertiary education.

Since its publication, the ABC scale has been widely used at the international level to assess students' academic confidence beliefs in Australia (Hill, 2017), Indonesia (Arjanggi et al., 2020), Ireland (Maguire et al., 2014), Mexico (Ochoa & Sander, 2012), Spain (Sander et al., 2011), South Africa (Matoti & Jun-

quiera, 2009; Hlalele & Alexander, 2011; Hlalele, 2012) and Turkey (Kirikkanat & Kali Soyer, 2015). However, some of these studies (Sander et al., 2011; Ochoa & Sander, 2012; Kirikkanat & Kali Soyer, 2015; Arjanggal et al., 2020) have reported psychometric inconsistencies with regard to the original factorial model that question the validity of the ABC scale when applied in cultural contexts different from that of origin.

The cross-cultural adoption of existing tools offers multiple advantages compared to developing new instruments, including time and cost savings as well as a common ground for comparisons across countries (Pastori & Pagani, 2017; Pagani, 2021). Nonetheless, the cross-cultural use of psychometric instruments comes with cultural and methodological complexities that should be addressed and problematized to prevent imposing etic or naïve transference of constructs and/or measures across cultures (Smith et al., 2006; Pastori & Pagani, 2017; Pagani, 2021; Sander et al., 2011). This is particularly relevant considering the culture-bound nature of competence beliefs (Lundeberg et al., 2000; Creed et al., 2002; Scholz et al., 2002; Klassen, 2004; Zlata, 2013; Gebauer et al., 2021; Liu et al., 2022;).

The aim of the study was to examine the psychometric qualities of the ABC scale to determine whether it could be applied to the Italian academic context with data from Teacher Education students. If the ABC scale has an equivalent factor structure to that found in UK samples when applied to Italian students, the usefulness of the scale can be extended to this country.

2. Method

2.1. Participants

This study was conducted during the academic year 2021-22 and there was a total number of 1.141 valid responses to the survey. All the participants were students enrolled in the Master's Degree Programme in Teacher Education at the University of Milano-Bicocca, fluent in Italian.

Mirroring gender imbalance among educational professionals in Italy (Colombo & Barbanti, 2020), the majority of participants (93.3%) were female, while only 5.4% were male (0.5% declared as non-binary and 0.7% didn't disclose this information). With regard to age, 69% of the respondents was 30 years-old or less, while only 7.5% were over 40. There was a significant number of participants (38%) who were pursuing a second degree, having already graduated. Working students constituted 68.2% of the sample (45.3% were employed as teachers in preschools and primary schools).

2.2 Measures

ABC scale. The Italian translation of the ABC was developed with a back-translation procedure, one of the most widely used approaches for producing equivalent versions of a measure across different languages and cultures (Van de Vijver & Poortinga, 2005).

The original version of the scale (Sander & Sanders, 2009) was translated into Italian and then back-translated into English by two independent bilingual translators. To maximise the meaningful equivalence of the measure (Kristjansson et al., 2003; Epstein et al., 2015;), discrepancies between the original version and the back-translated version of the tool were discussed by an expert committee of academicians until they reached agreement on a common version. Finally, the updated version of the scale was pilot tested on a volunteer sample of ten Teacher Education students, who were asked to complete the questionnaire with the aim of highlighting the differences between the cultural contexts. All the students labelled item 19 ("Make the most of the opportunity of studying for a degree at university") as troublesome. Similar difficulties in understanding this item were also pointed out by Ochoa and Sander (2012) with regard to the Mexican context. Therefore, in a final expert committee meeting, the scale was finalised taking into account students' feedback and omitting item 19 from the final version of the measure. The resulting 23 item scale (see Appendix 1) was re-numbered accordingly.

Academic performance. Academic performance was investigated using a self-reported indicator with 5 options (1 = "I'm on track with exams", 2 = "I'm an irregular student (e.g., transfer from another university; recognition of the exams of my previous career)", 3 = "I've fallen behind in 1-2 classes", 4 = "I've

fallen behind in 3-5 classes”, 5 = “I’ve fallen behind in more than 5 classes”). A dichotomous variable was created with 0 when the students reported not being on track with exams and 1 when they reported they reported they were.

Students who reported not being on track with exams (i.e., not answering 1 on the previous question) were presented with 6 possible reasons for which they fell behind (with the possibility of adding others). The reasons were: “Low motivation”, “Excessive study load”, “Difficulty in finding a suitable study method”, “Complexity of subjects”, “Difficulty in balancing study and attending courses/workshops and internship”, “Difficulty in balancing study and work”. Each reason was categorised with 0 if it wasn’t reported and 1 if it was reported.

2.3 Statistical analysis

By using IBM SPSS 28, a Principal Component Analysis (PCA) was performed on the ABC scale in order to identify a factorial structure. The number of factors was determined by considering the eigenvalues and the scree plot. Item saturations were considered in order to retain or reject the items. When the solution presented problematic elements, the item with the worst saturations was eliminated and a new PCA was launched. The procedure was repeated until the solution had no problematic items. A rotated solution (Oblimin rotation) was requested at every iteration and it was maintained since the factors correlated. Cronbach’s Alpha was used to determine the reliability of the factors. PCA were also launched in order to verify if the structures identified in other studies using the PCA would fit in this sample.

Confirmatory Factor Analysis (CFA) was performed by using the Lavaan package of the software R. The model fitness was evaluated by using the following indicators (Schweizer, 2010): the model χ^2 , the Root Mean Square Error of Approximation (RMSEA), the Standardized Root Mean Square Residual (SRMR) and the Comparative Fit Index (CFI). As regards to the overall model fit, RMSEA values lower than 0.05 are usually considered good, while values lower than 0.08 are considered acceptable; SRMR values lower than 0.08 are usually considered good, while values lower than 0.10 are considered acceptable. For CFI, values equal to or higher than 0.90 are considered acceptable, while values equal to or higher than 0.95 are considered good (Schweizer, 2010).

Multiple binary logistic regression models were conducted with variables regarding being on track with exams and reasons for not being on track with exams as dependent variables. The scores of the ABC factors (means of the items) were used as independent variables. Nagelkerke’s R^2 was used as an effect size measure. Significant changes in Nagelkerke’s R^2 after were measured with the Omnibus test of model coefficients offered by SPSS. Model 0 is the baseline model predicting the most common outcome as default: if the Omnibus test is not significant with regards to “Model 0”, the proposed Model (Model 1) does not have any additional explanatory value.

2.4 Ethics

Data was stored anonymously and participants were informed about the aims of the study. Participation in the study was voluntary and no monetary or financial rewards were offered. The study was conducted according to the ethical principles defined by the Declaration of Helsinki (World Medical Association, 2001) and the American Psychological Association Code of Conduct (American Psychological Association, 2017). Prior to recruitment, the study was approved by the ethics committee of University of Milan-Bicocca.

3. Results

3.1 Principal Component Analysis

Following the procedures described in the statistical analysis section, several PCA were launched. Examining the eigenvalues and scree plot of the first solution (Model 1, 23 items, Table 1), the ideal number of

factors appeared to be 3. Model 1 presented several problematic items: therefore, the solution was not adequate. Model 2 and 3 (Table 1), based on the studies of Sander (2009) and Nicholson and colleagues (2013), also presented eigenvalues and the scree plot indicating a 3-factor structure. They also presented problematic items.

Two adequate 3-factor solutions (Model 4 and 5) were reached by eliminating problematic items from the initial 23 items scale, with respectively 16 and 15 items (Table 2).

The first factor had 9 or 8 items (respectively for Model 3 and 4) and combined items from the original factors “Studying” (1, 4, 21, 22) and “Grades” (2, 7, 15, 20 and 16 in Model 3). Perhaps, this is because these factors encompass interrelated aspects of the university experience, addressing students’ confidence in using effective learning and studying strategies and, consequently, having success in the academic context. Cronbach’s alpha was, respectively, .892 and .892.

The second factor had 4 items corresponding to items of the “Verbalizing” dimension of the original scale. Cronbach’s alpha was .761.

The third factor had 3 items corresponding to items of the “Attendance” dimension of the original scale. Cronbach’s alpha was .766.

ITEMS	MODEL 1			MODEL 2				MODEL 3			
	Model matrix – initial solution based on eigenvalues			Model matrix – based on Sander (2009)				Model matrix – based on Nicholson et al. (2013)			
	1	2	3	1	2	3	4	1	2	3	4
ABC1	.821	.089	-.059	.753	.127	-.066	-.145	.691	.155	-.039	.229
ABC2	.793	.161	.044	.809	.115	.141	.077	-	-	-	-
ABC3	.382	.386	.511	.368	.279	.644	.094	.239	.251	.732	-.016
ABC4	.688	-.244	-.088	.683	-.281	-.012	.001	.720	-.228	.022	-.035
ABC5	.253	.107	.518	.088	-.008	.627	-.145	.053	-.041	.678	.130
ABC6	.013	-.747	-.067	.101	-.815	.046	.150	.077	-.799	-.012	-.108
ABC7	.721	-.125	.042	.616	-.128	.087	-.168	.534	-.126	.098	.251
ABC8	-.014	-.039	.720	-.060	-.095	.768	-.077	-	-	-	-
ABC9	-.117	-.086	.801	-	-	-	-	-	-	-	-
ABC10	-.181	.015	.869	-.110	-.042	.855	.041	-.154	-.079	.892	-.048
ABC11	.341	-.103	.425	-	-	-	-	-	-	-	-
ABC12	.050	-.549	.391	-	-	-	-	-	-	-	-
ABC13	.330	-.574	.127	-	-	-	-	-	-	-	-
ABC14	.192	-.355	.330	-	-	-	-	-	-	-	-
ABC15	.530	-.283	.171	.165	-.159	.058	-.695	.150	-.214	.058	.675
ABC16	.477	-.010	.223	.026	.153	.042	-.856	-.029	.078	.021	.899
ABC17	.241	.036	.561	-	-	-	-	-	-	-	-
ABC18	-.039	-.783	-.047	-.010	-.782	-.030	-.038	.620	-.023	.026	.260

ABC20	.770	-.065	-.020	.611	-.045	-.017	-.271	.919	-.040	-.081	-.098
ABC21	.804	-.106	-.167	.838	-.122	-.119	.037	-.023	-.795	-.049	.031
ABC22	.622	-.055	.077	.604	-.085	.103	-.041	.722	-.027	.144	-.088
ABC23	.412	-.371	.159	.127	-.347	.125	-.496	.189	-.378	.137	.383
ABC24	.129	-.719	-.039	.053	-.742	.029	-.124	.040	-.768	.032	.092

Table 1: Model 3

ITEMS	MODEL 4*			MODEL 5**		
	Model matrix – 16 items			Model matrix – 15 items		
	1	2	3	1	2	3
ABC1	.837	-.079	-.116	.832	-.056	-.126
ABC2	.776	.042	-.133	.791	.063	-.161
ABC4	.663	-.040	.276	.678	-.028	.251
ABC5	.246	.555	-.040	.245	.565	-.052
ABC6	-.014	.012	.830	-.013	-.001	.829
ABC7	.732	.055	.121	.729	.073	.109
ABC8	.049	.740	.026	.043	.745	.019
ABC9	-.027	.807	.044	-.039	.810	.042
ABC10	-.109	.858	-.012	-.110	.859	-.023
ABC15	.616	.120	.174	.573	.138	.199
ABC16	.585	.141	-.106	-	-	-
ABC18	-.024	-.003	.811	-.027	-.014	.816
ABC20	.786	-.029	.048	.782	-.009	.038
ABC21	.787	-.126	.107	.808	-.110	.075
ABC22	.626	.089	.038	.645	.102	.007
ABC24	.109	.030	.756	.109	.024	.754

Table 2: Models 4 and 5

3.2 Confirmatory Factor Analysis

After the identification of the 3-factors solutions (Model 3 and 4) by PCA, the models were tested with a CFA in order to verify their goodness of fit.

Model 3 (Table 3) overall did not fit the data: the SRMR was good but RMSEA and CFI presented higher values than those regarded as acceptable. Model 4 overall fitted the data (Table 3, Figure 1): the

SRMR was good, the RMSEA and the CFI were acceptable. The χ^2 test was significant in both models ($p < .001$) but this is often the case when the sample is large, making the test not really indicative of goodness of fit (Schermelleh-Engel et al., 2003).

FIT STATISTICS	MODEL 3	MODEL 4
χ^2	740.643	594.872
Degrees of freedom	101	87
RMSEA (90% CI)	0.082 (0.076 - 0.087)	0.078 (0.072 - 0.084)
SRMR	0.060	0.058
CFI	0.898	0.913

Table 3: Fit statistics of the confirmatory factor analysis

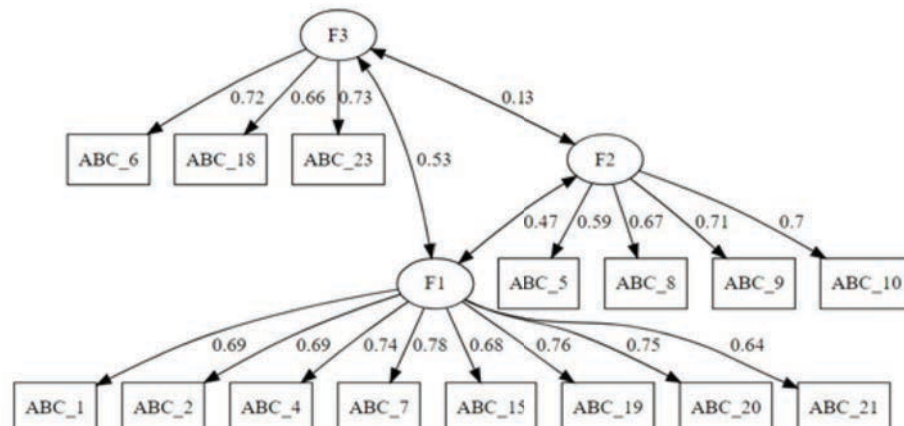


Figure 1: *Explained variance: 59.01%; Kaiser-Meyer-Olkin test: .899, Barlett sphericity test: $p < 0.001$; **Explained variance: 60.74%, Kaiser-Meyer-Olkin test: .897, Barlett sphericity test: $p < 0.001$

3.3 Multiple logistic regressions

Multiple logistic regressions were launched to establish if there were associations between the scores of the ABC factors and academic performance. In the sample, the “Grades-Studying” factor had a mean of 3.53 (standard deviation: 0.76), the “Verbalizing” factor had a mean of 3.20 (sd: 0.89), the “Attendance” factor had a mean of 3.28 (sd: 1.16).

The model effectively predicted being on track with exams (see Table 4). All the factors were significantly associated with the outcome. The “Grades-Studying” factor was a significant predictor: the higher it was, the higher the probability of being on track with exams. This means that the more students are confident in their study method results, the better their academic performance. The “Verbalizing” factor was a significant predictor: the higher it was, the lower the probability of being on track with exams. This may seem counterintuitive: the more the students are involved and ask questions, the more they have difficulties attaining positive exam results. Perhaps this may be explained by the fact that students who have more difficulty with studying also have more difficulty in understanding lectures, have more doubts about the content taught and, therefore, ask more questions. The “Attendance” factor was a significant predictor: the higher it was, the higher the probability of being on track with exams. Confidence in attending lectures probably reflects actual lecture attendance which is related to better academic results.

The ABC scale factors proved their association with academic outcome.

Factors/tests	B (SE)	Exp (B)
ABC_GS	1.297 (0.136) ***	3.657
ABC_VERB	-0.236 (0.097) *	0.790
ABC_ATT	0.325 (0.075) ***	1.384
Nagelkerke's R ²	0.276	
Omnibus test of model coefficients (df)	199.143 (3) ***	

Table 4: Multiple logistic regression with academic performance (N = 858)

*** p < 0.05; * p < 0.001.

Logistic regressions were also performed with regard to reported reasons for not being on track with exams. All models, with the exception “Complexity of subjects”, were statistically significant. The ABC scale had more predictive power (based on Nagelkerke's R²) with regard to finding a suitable study method and balancing study and work.

The “Grades-Studying” factor was a significant predictor for 3 reasons for having fallen behind: the higher it was, the lower the probability of reporting low motivation, excessive study load and difficulty in finding a suitable study method.

The “Verbalizing” factor was a significant predictor for only 1 reason: the higher it was, the lower the probability of reporting low motivation.

The “Attendance” factor was a significant predictor for 4 reasons, with mixed results. The higher it was, the higher the probability of reporting low motivation and difficulty in finding a suitable study method. The higher it was, the lower the probability of reporting difficulty in balancing study and attending courses and difficulty in balancing study and work.

The ABC scale proved its association for reasons for not being on track with exams, thus highlighting the relationship between confidence and academic performance based on concrete reasons.

Factors/tests	Low motivation		Excessive study load		Difficulty in finding a suitable study method		Complexity of subjects		Difficulty in balancing study and attending courses/workshops and internship		Difficulty in balancing study and work	
	B (SE)	Exp (B)	B (SE)	Exp (B)	B (SE)	Exp (B)	B (SE)	Exp (B)	B (SE)	Exp (B)	B (SE)	Exp (B)
ABC_GS	-0.801 (0.235) ***	0.449	-0.767 (0.174) ***	0.464	-1.691 (0.246) ***	0.184	-0.236 (0.223)	0.789	-0.377 (0.160)	0.686	-0.053 (0.178)	0.949
ABC_VERB	-0.369 (0.170) *	0.692	-0.075 (0.105)	0.928	0.276 (0.158)	1.317	-0.243 (0.163)	0.784	0.009 (0.115)	1.009	0.177 (0.127)	1.193
ABC_ATT	0.447 (0.146) **	1.563	0.135 (0.105)	1.145	0.823 (0.145) ***	2.278	0.211 (0.139)	1.234	-0.207 (0.098) *	0.813	-0.903 (0.120) ***	0.405
Nagelkerke's R ²	0.107		0.085		0.232		0.025		0.052		0.234	
Omnibus test of model coefficients (df)	26.958 (3) ***		27.540 (3) ***		68.805 (3) ***		6.163 (3)		17.184 (3) ***		82.458 (3) ***	

Table 5: Multiple logistic regression with reasons for not being on track with exams (N = 429)
*** p < 0.05; * p < 0.001

4. Discussion

The aim of this study was to evaluate the applicability of the ABC developed by Sander and Sanders (2003, 2006, 2009; Sander, 2009) to the Italian academic context, investigating its validity and reliability.

Exploratory and confirmatory factor analysis supported a three-factor structure with 15 items as a better solution to fit the current sample than the original four-factor model – Grades, Studying, Verbalizing and Attendance. In our solution, the second and third factors were identified in the same way as the Verbalizing and Attendance dimensions suggested by Sander and Sanders (2009), respectively. However, the items from the original Grades and Studying subscales loaded together on the first factor, which seems to address confidence in using effective learning and studying strategies. This interpretation is supported by the relevant association, among the others, between the factor and the reason for not being on track with exams “Difficulty to find a suitable study method”. Even though the Italian data did not support the original model well, the identified three-factor solution effectively predicted students’ being on track with their exams, confirming the relationship between academic behavioural confidence and academic performance. Several potential reasons contribute to explaining these findings.

Firstly, as Sander (2009) pointed out, the ABC scale was originally developed to assess the confidence that UK psychology students had in their own anticipated study behaviours in relation to their degree programme. It was designed to consider the type of teaching and learning experiences that those specific students encountered, rather than being intended as a general tool for use in other higher educational settings. Therefore, «the scale may not be so readily useable in other countries, on other courses or with other teaching and learning modes» (Ibidem, p. 40-41). The present study involved Italian students enrolled in the five-year Degree Programme in Teacher Education, that covers both pedagogical and disciplinary notions (e.g., mathematics, history, geography) as well as the teaching tools necessary to convey this knowledge (Mortari & Silva, 2020). Along with the courses, fundamental elements of the degree program are the workshops and the compulsory direct and indirect internship, that both provide students ample opportunities to put into practice what they learned in theory and place emphasis on experiential learning and reflection on practices (Zanniello, 2008; Kanizsa & Gelati, 2010; Mortari & Silva, 2020). Thus, the acquisition of the learning outcomes may take place in ways that the ABC scale does not address.

Secondly, considering the multidimensional nature of academic self-efficacy – the parent concept from which academic behavioural confidence was derived (Sander & Sanders, 2003) – may assist in explaining our findings. According to Bandura (1997), self-efficacy beliefs arise from mastery experience as well as

from vicarious and physiological feedback, in a complex and dynamic relationship with the social environment (Schunk & Pajares, 2005). Several studies (e.g., Schunk & Pajares, 2005; Altermatt, 2019; Azila-Gbettor & Abiemo, 2021; Wei et al., 2022) indicate that psychosocial contextual factors – including perceived teacher support and students' ability to establish and maintain satisfying relationships and interactions with peers – play an important role in influencing undergraduates' academic self-efficacy. Particularly, relationships with peers and teachers are relevant factors for understanding Italian students' self-perceived confidence in managing academic demands (Greco et al., 2022). Nevertheless, the four dimensions of competence-related beliefs encompassed by the ABC scale (namely, achieving good grades in assessments; engaging in independent study; attending lectures, tutorials and other taught sessions; and discussing material with tutors, lecturers and peers) only marginally address the social component of self-efficacy, that is confined to the Verbalizing subscale.

Lastly, another possible explanation of the inconsistencies we found when the ABC scale was applied to the Italian sample may lie on a cultural level. Previous studies conducted in Indonesia, Mexico and Spain (Ochoa & Sander, 2012; Sander et al., 2011; Kirikkanat & Kali Soyer, 2015) framed the discrepancies between local and UK data in relation to the ABC scale within the contrasting dimensions of individualism and collectivism (e.g., Hofstede, 2011). While confidence beliefs remain significant factors in the motivational functioning of students from both individualist and collectivist cultural groups, self-efficacy can assume different expressions across cultures (Klassen, 2004; Scholz et al., 2002; Gebauer et al., 2021; Liu et al., 2022;). This raises the issue of the cultural equivalence of efficacy measures (Creed et al., 2002). Accordingly, the conceptualization of academic behavioural confidence proposed by Sander and Sanders (2009) may not overlap entirely across cultures.

This study presents strengths and limitations. First, although the sample consisted only of students from a Master's Degree Programme in Teacher Education, this constitutes the first validation of an Italian version of the ABC scale. Future studies could explore these dimensions in other university student populations. Second, the emerging solution differs from the models reported in previous studies. Nonetheless, the factors in the model here presented proved to be significantly associated with academic performance and reasons for not being on track with exams.

5. Conclusion

This study presented the validation of an Italian version of the ABC scale in a sample of Teacher Education students. The resulting 15-item three-factor structure was different from those emerging from previous studies. Nonetheless, its scores were significantly associated with academic performance and reasons for not being on track with exams. Therefore, despite the statistical inconsistencies between the solution we found and the original factorial model, the underlying ABC construct proved its usefulness as a predictor of student achievement. Possible applications of instruments such as the ABC scale may include administering the measure to students entering university in order to identify in the admission phase those less confident in their ability to respond appropriately to the demands posed by university study. That may allow to design targeted interventions to support them more effectively already at an early stage of their academic career (for instance, implementing programs to increase students' studying skills and metacognition, or peer tutoring/mentoring interventions).

Overall, these findings confirm the importance of developing and using culture-sensitive measures to assess undergraduate academic behavioural confidence to identify students who are more at risk of underachieving and withdrawing from tertiary education.

Conflict of interests

The authors declare no conflict of interest.

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