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Development of the "Seven Principles for Good Practice" Scale for Academics

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This study aims to develop a valid and reliable scale to assess academics' perceptions of the quality of undergraduate educational environments and to examine whether these perceptions differ across various variables. An exploratory sequential design was used. First, the researchers created an item pool of 55 items. The item pool was then presented to 17 experts. The researchers administered the scale to 397 academics from various universities using the snowball sampling method. As a result of the exploratory factor analysis, 38 items with sufficient factor loadings were grouped under a single factor. To test the construct validity of the scale, a confirmatory factor analysis was conducted with 268 academics. The Cronbach's alpha internal consistency coefficient was found to be .99. In addition, In addition, the AVE value exceeded .50, while the CR value exceeded .70. Overall, the findings supported the validity and reliability of the 38-item, single-factor scale. The developed scale was then used to examine academics' perceptions across various demographic and professional variables. The analysis revealed no statistically significant differences in academics' perceptions of the seven principles for good practice according to gender, undergraduate or postgraduate teaching experience, academic title, and seniority. These findings suggest that demographic and professional variables do not influence academics' fundamental beliefs about effective educational practices.

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Introduction

In an era characterized by rapid change, in which information is produced rapidly and is increasingly accessible, one of the most important goals of education is learning how to learn (Jabar & Albion, 2016). In this context, universities occupy a central position among academic institutions because they train talented individuals with the qualifications needed to meet society's needs. By fulfilling their educational and research functions, these institutions contribute to social development (Rahimi, 2023). Furthermore, higher education institutions, which play a crucial role in transforming the social structure, have a reciprocal relationship with society, both influencing and being influenced by it (OECD, 2017). The quality of academics' teaching and research activities is one of the key indicators of an institution's academic quality (Kalaycı & Debbağ, 2016). Moreover, academics' knowledge and competencies within the learning and teaching process are among the most important factors affecting students' learning outcomes (Uygur & Yelken, 2019). Therefore, the presence of qualified academics is therefore essential for educating qualified individuals in higher education (Akgün, 2016).

On the other hand, structuring higher education courses with student-centred practices is essential for developing individuals with lifelong learning skills, core competencies, and the ability to respond to the needs of their time. However, designing a student-centred learning environment that encourages students to interact with faculty, peers, and course content requires care and attention. Additionally, student-centred practices that actively engage students in the learning process also transform the roles and responsibilities of academics (Weimer, 2002).

In student-centred teaching, academics are shifting from being direct transmitters of knowledge to becoming instructional designers who facilitate students' knowledge construction and create learning environments that support them in achieving their goals (Weimer, 2002; Woods & Copur-Gencturk, 2024). From this perspective, providing effective feedback to students is a crucial component of the learning process. Instructors' feedback in undergraduate education helps students improve their academic performance by directing them to further learning (Brown et al., 2016). In this regard, Chickering and Gamson (1987) proposed the "Seven Principles for Good Practice," a framework designed to enhance the effectiveness of undergraduate learning environments. These principles aim to improve the quality of academic practice by addressing the teaching and learning process holistically.

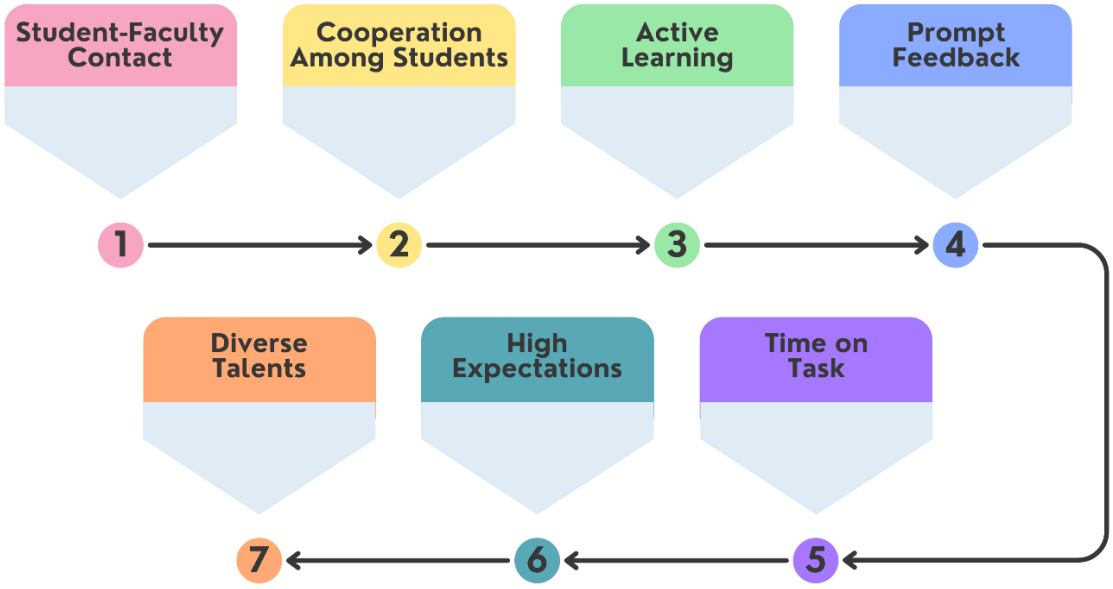


Figure 1. Seven Principles for Good Practice

Student-faculty contact

Providing opportunities for students to participate actively in learning while supporting and guiding their efforts is a primary responsibility of universities (İlhan et al., 2018). The effective fulfilment of these tasks is closely linked to sustained interaction between students and faculty. Student–faculty interaction is an important factor in determining the quality of teaching and learning processes (Cotten & Wilson, 2006; Hagenauer & Volet, 2014). Additionally, this interaction plays a crucial role in creating dynamic and interactive learning environments (Serna et al., 2024). Such interaction can enhance students' academic self-confidence and encourage them to take a more active role in their learning (Trinidad et al., 2024).

On the other hand, the development of undergraduate students' cognitive skills is an important outcome of university education (Pascarella &Terenzini, 2005). Students' cognitive development in this educational process is influenced by a range of factors. In this respect, student-faculty interaction is a crucial factor in supporting the cognitive development of undergraduate students. Additionally, frequent and positive interactions enhance students' retention and persistence in higher education (Pascarella & Terenzini, 2005).

Furthermore, the literature highlights a positive relationship between student–faculty interaction, academic achievement, and learning (Cuseo, 2018; Gnoleba, 2015; Jafari & Asgari, 2020). Student–faculty interaction in university education can contribute to the development of students' cognitive and affective competencies. Studies conducted in this context reveal that it significantly increases students' academic motivation (Chickering & Gamson, 1987; Gnoleba, 2015) and self-efficacy perceptions (Gnoleba, 2015). As a result, high-quality interaction between students and faculty contributes to a more effective educational environment by promoting deeper learning (Chickering & Gamson, 1987) and increasing course attendance (Pascarella & Terenzini, 2005).

Cooperation among students

Chickering and Gamson (1987) argue that collaborative work, rather than individual work, at the undergraduate level leads to higher-quality learning. In this context, applications that require group work, such as cooperative learning, may be preferred. This is because cooperative learning not only provides students with a pleasant, empathetic, and safe learning environment but also fosters collaboration and teamwork. It also allows students to strengthen their individual and communication skills (Keramati & Gillies, 2022). Therefore, students feel more comfortable and are more willing to learn. In addition, cooperative learning encourages students to be more involved and motivated in the course process (Keramati & Gillies, 2022; Subiyantoro et al., 2024), increases students' academic achievement and supports their course participation (Keramati & Gillies, 2022; Qureshi et al., 2023).

Furthermore, cooperative learning fosters students' open-mindedness and enhances their communication and social skills (Keramati & Gillies, 2022; Mendo-Lázaro et al., 2018). Despite its positive effects, the effective integration of the cooperative learning method into learning environments depends on academics' internalisation of this approach. In this direction, it is not enough for academics to adopt only cooperative learning approaches. They also require access to suitable tools, pedagogical support, and application examples tailored to their disciplines to integrate these approaches into their teaching practices effectively.

Active learning

An education system based solely on acquiring and transmitting knowledge is insufficient to achieve the targeted goal. The learner-centred approach to education aims to cultivate students who can identify and develop ways of accessing knowledge, possess problem-solving skills, engage in higher-order thinking, and have a desire for continuous learning (Bonwell & Eison, 1991; Chickering & Gamson, 1987). In this context, it is crucial to place active learning at the centre of the learning process to ensure effective teaching and foster lasting skills among students (Bonwell & Eison, 1991). Within this framework, academics use various student-centred teaching practices to make the learning process more effective, which is a key goal of higher education (Cherney, 2011).

Prompt feedback

Feedback is an effective tool for students to monitor and evaluate their learning processes and support their development as independent learners who can adjust their learning accordingly (Evans, 2013). Feedback is not only used as an evaluation tool in the education process. If it is used to provide information about the student's performance, this is referred to as evaluation-oriented feedback (Hounsell, 1987). On the other hand, if it is provided to support students' development processes and improve their performance, this is called instructor-oriented feedback (Hester, 2001). In other words, feedback serves various functions, including addressing deficiencies, improving performance, and reinforcing appropriate learning, and supporting correct learning (Hattie, 2012). For this reason, feedback can promote higher-quality learning among students in higher education (Chickering & Gamson, 1987; Evans, 2013). When feedback is provided to students, they can use it to regulate their learning and identify areas for improvement (Orsmond et al., 2013). Thus, students are motivated to succeed by learning from their mistakes (Özalp & Kaymakcı, 2022).

Time on task

Using time effectively is critical for both students and academics. Allocating sufficient time to educational tasks facilitates effective learning for students and effective teaching for academics (Chickering & Gamson, 1987). However, students need to know how to manage their time effectively. Moreover, students are expected to be aware that task duration varies according to task difficulty and instructor expectations (Çağıltay et al., 2001). Students who are aware of these time demands learn to work more diligently, develop self-discipline, and take responsibility for their learning (Chickering & Gamson, 1987; Wolters & Brady, 2021).

High expectations

Throughout the educational process, students encounter various challenges stemming from individual characteristics, environmental conditions, and social interactions. These difficulties can hinder students' academic success both within and outside the school environment. Therefore, completing their courses becomes both more difficult and a more important goal (Çavdar & Doymuş, 2016). Setting high expectations for students can enhance their academic performance. Accordingly, academics provide challenging assignments, offer examples and models to follow, and then explain the strengths of these examples in detail to guide students toward higher goals (Graham et al., 2001). Students with high expectations may approach their future with greater confidence. It is important to provide an education that meets students' expectations.

Diverse talents

Students have unique characteristics and abilities and may therefore learn in different ways (Chickering & Gamson, 1987; Kolb, 2014). In this regard, successful teaching cannot be achieved by employing a single teaching method or technique in a learning environment with diverse student profiles (Chickering & Gamson, 1987). Given these differences in learning environments, an educational approach that adopts more flexible, diverse learning methods is of great importance. In this context, academics should pay attention not only to what they teach but also to how they teach, how well they understand their students, and how effectively they respond to their expectations and needs. This is because education that takes into account individual student differences has been shown to increase student success (Aktepe, 2005; Du Plooy et al., 2024). However, creating such learning environments is not easy and requires effort (Chickering & Gamson, 1987). At this point, responsibility for creating effective learning environments should not rest solely with academics. To prepare these learning environments, there is also a need for administrative and support staff (Aktepe, 2005).

Significance

Studies have shown that the seven principles are effectively applied in blended learning contexts, where online and face-to-face learning are combined (Hathaway, 2014). In this regard, several studies have examined the seven principles in undergraduate education (Alyar & Doymuş, 2022; Aziz, 2021; Bangert, 2004; Crews et al., 2015; Legg et al., 2020).

The seven principles pertain not only to students but also to educators. In this context, the literature also includes studies involving teachers and academics (Bishoff, 2010; Gün, 2022; Naborsa & Zientek, 2021; Uğraş & Çil, 2014). In general, most studies on the seven principles have reported successful implementation and generally positive attitudes toward them (Tirrell, 2009). However, in contrast to these positive results, some studies have highlighted the adverse effects of the seven principles (Naborsa & Zientek, 2021; Tirrell,

2009). The varying results suggest that challenges in implementing the seven principles may differ depending on context and the specific implementation process. Therefore, to better understand the impact of these principles on creating a good learning environment, it is crucial to gather the views of both students and academics. For this purpose, a limited number of scales and questionnaires have been developed in the literature to measure stakeholders' perceptions (Bangert, 2004; Çakıroğlu, 2014; Jabar & Albion, 2016; Zhang & Zhu, 2020). For example, Zhang and Zhu (2020) developed a questionnaire to assess the functionality of learning processes. In addition to these data collection tools, Çakıroğlu (2014) and Jabar and Albion (2016) prepared questionnaires to determine the applicability of the seven principles in distance education. Similarly, Bangert (2004) developed questionnaires to evaluate online learning environments. These studies indicate that existing instruments developed within the framework of the "Seven Principles for Good Practice" have primarily been questionnaires rather than scales. A questionnaire is a series of questions designed to collect information about a specific topic. Scales are data collection tools used to quantitatively measure individuals' attitudes, perceptions, behaviours, or characteristics. While questionnaires typically collect broader information, scales provide more structured and systematic measurement of specific constructs, such as the "Seven Principles for Good Practice."

Current research

Although this framework was developed for undergraduate education, academics need to be at the centre of the educational and training process and take an active role in effectively integrating these principles. A scale based on the seven principles will make a crucial contribution to the literature, enabling the determination of the academic's strengths, identification of characteristics that require development, and objective monitoring of the learning process. Accordingly, this study aims to develop a valid and reliable scale to assess academics' perceptions of the quality of undergraduate educational environments and to examine whether these perceptions differ across various variables. In this context, answers are sought to the following research questions:

- RQ1: What is the factor structure of the Seven Principles for Good Practice Scale (SPGPS)?
- RQ2: What evidence supports the validity and reliability of the SPGPS?
- RQ3: What are the perceptions of academics towards the SPGPS?
- RQ4: Do academics' perceptions of the SPGPS differ significantly according to gender, instructional experience, academic title, and seniority?

Method

Research design

In the study, a mixed-methods research approach was adopted, and the research followed a tool development model within an exploratory sequential design. The exploratory sequential design involves collecting qualitative data to develop an in-depth understanding of a phenomenon and then collecting quantitative data to apply the findings to a larger sample (Creswell, 2012, p. 544). Since the primary purpose of the study was to develop a measurement tool and then test its validity, an exploratory sequential design was adopted. In this context, the qualitative phase was conducted first, followed by the development of the quantitative scale.

In the qualitative phase of the study, the document review method was utilised. This method involves the systematic examination and evaluation of electronic or printed sources. Based on this, the literature is reviewed, and the information obtained is reported. The survey method was used in the quantitative phase. In this method, the participants' opinions, attitudes, habits, and expectations regarding a particular topic are examined, and information about them is obtained (Fraenkel et al., 2012). Figure 2 presents a symbolic representation of the study procedures based on the tool development scheme of the exploratory sequential design. In the figure, the qualitative phase is represented by pink, the quantitative phase by yellow, and the use of both methods together by green. In addition, The arrow (→) indicates progression between stages, while uppercase and lowercase letters indicate the relative priority of the methods.

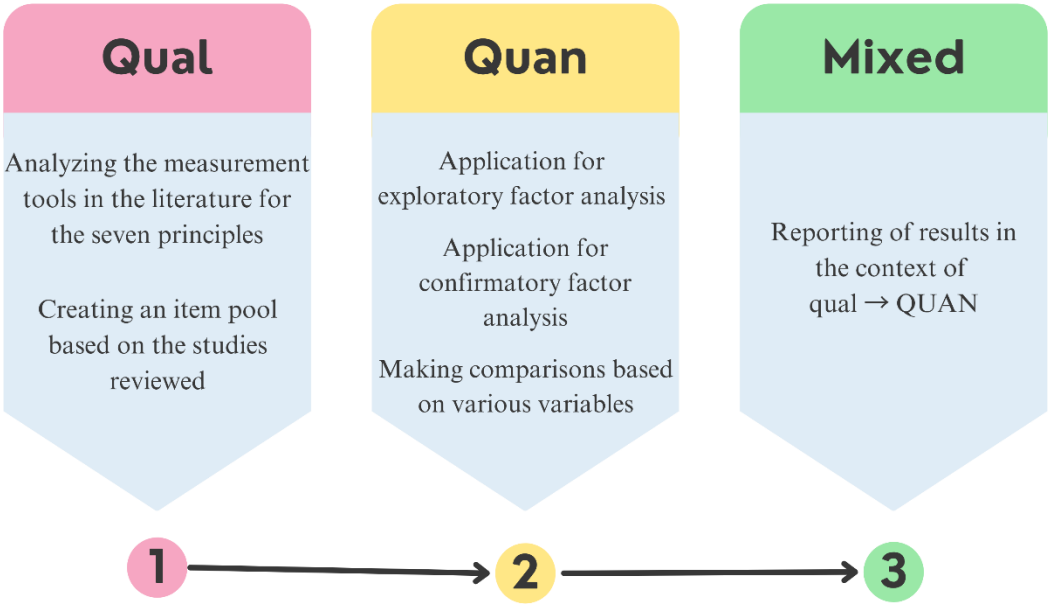


Figure 2. Symbolic Representation of the Study Procedures

Academics' perceptions of the seven principles were investigated using the developed scale. The survey model is used to determine the status, attitudes, opinions, or behaviours of individuals, groups, or systems (Fraenkel et al., 2012).

Participants

The qualitative data sources consisted of academic studies identified through a keyword search for "seven principles." Among the aforementioned studies, those that developed measurement tools were examined in detail, with particular attention to the items included in these instruments. On the other hand, lecturers and faculty members at universities in Türkiye constituted the quantitative study group. Given the difficulty of accessing the target population, efforts were made to obtain an adequately sized sample. Accordingly, as recommended for exploratory and confirmatory factor analyses and the main study, the aim was to achieve a sample size at least 10 times the number of items on the scale. However, to account for the possibility of outliers, the target sample size was increased by at

least 20% at each stage. Thus, data were collected from 397 individuals for the exploratory factor analysis and from 268 individuals for the confirmatory factor analysis. Furthermore, regardless of the item-to-participant ratio, it is generally accepted that an absolute sample size of at least 300 is sufficient and appropriate for reliable factor extraction in Exploratory Factor Analysis (Comrey & Lee, 1992, p. 217; Tabachnick & Fidell, 2013, p. 618). In this regard, a sample size of 397 therefore meets the established criteria for robust statistical analysis.

Additionally, a study involving 243 participants was conducted following the scale development phase. Participants were recruited through snowball sampling during the fall and spring semesters of 2024/2025. In this method, different participants are reached through participants included in the study in the first stage (Cohen et al., 2007; Goodman, 1961). Based on this approach, the researchers initially invited individuals in their professional networks and at other universities to complete the scale via email and encouraged them to share it with other potential participants. Also, the scale was also formally distributed through universities, and volunteers were invited to participate. Subsequently, these participants completed the scale and sent it to various individuals.

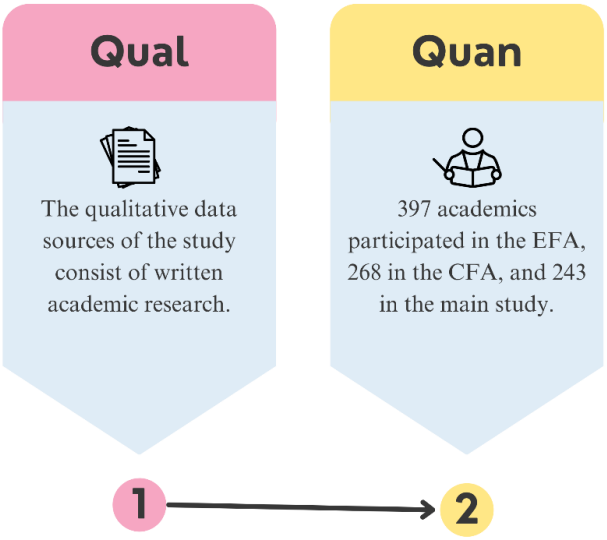


Figure 3. Information about the Study Group

Data collection tool

The Seven Principles for Good Practice Scale (SPGPS) was developed to determine the quality of the educational environment at the undergraduate level. In this context, the researchers conducted a literature review and examined the measurement tools developed within the framework of the seven principles. The items in the relevant tools were evaluated according to the study's scope and then translated into Turkish. Subsequently, a pool of 55 items was created by selecting items suitable for academics. Then, the items were revised based on feedback from 17 experts and classified according to their similarities and differences. In this process, some statements that were likely to be misunderstood were rephrased to clarify their meaning, and some items that did not align with the scale's purpose were removed, resulting in a reduced item pool of 38. Subsequently, the scale was revised based on feedback from a language expert.

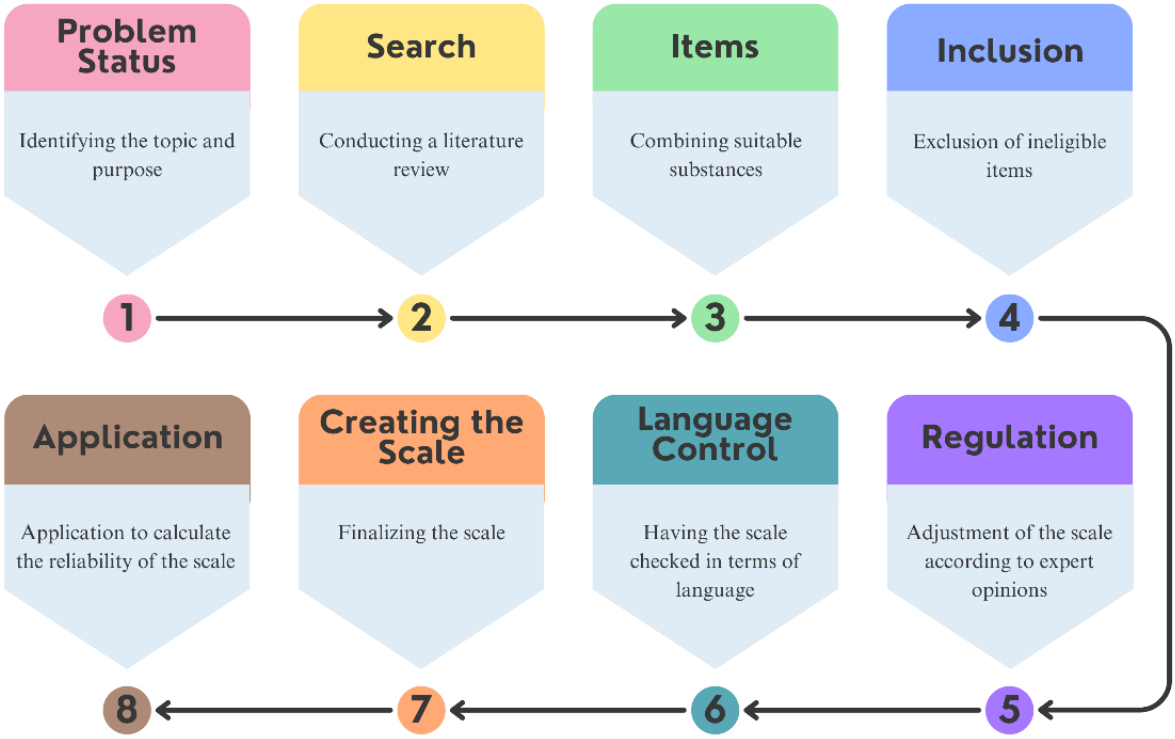


Figure 4. Steps Followed in the Development of the Data Collection Tool

The SPGPS is a five-point Likert scale (1 = never; 2 = rarely; 3 = sometimes; 4 = often; 5 = very often). The final scale consists of 38 positively worded items, all loading onto a single factor. Therefore, the highest score participants can achieve on the scale is 190, and the lowest is 38. The items were designed to cover the following seven principles:

(1) A good learning environment fosters effective communication among students and teaching staff.
(2) A good learning environment ensures cooperation among students.
(3) A good learning environment encourages active learning.
(4) A good learning environment provides immediate and accurate feedback.
(5) A good learning environment emphasizes the importance of completing a task or learning a subject on time.
(6) A good learning environment responds to high-level expectations.
(7) A good learning environment is tolerant of different abilities and learning methods.

Data analysis

The written documents used to create the item pool were analysed descriptively. On the other hand, SPSS software was used to conduct exploratory and confirmatory factor analyses of the quantitative data. Using this program, the normality of each item was first evaluated separately, followed by an assessment of the normality assumption based on the total score. In this context, the skewness and kurtosis values ranged from -2 to +2, and the data exhibited a normal distribution (George & Mallery, 2010). The study's sample size was then examined, and Kaiser-Meyer-Olkin (KMO) and Bartlett's tests were performed. The factor structure of the scale was then examined using exploratory factor analysis. Afterwards,

confirmatory factor analysis was performed using the LISREL program to evaluate the construct validity of the identified factor structure.

Furthermore, the scale's internal consistency, composite reliability, and convergent validity coefficients were calculated. Subsequently, using the validated and reliable scale, comparisons were made according to gender, academic title, seniority, and previous undergraduate or postgraduate teaching experience. Independent-samples t-tests were used to compare gender and previous teaching experience. Also, one-way analysis of variance (ANOVA) was used to compare groups based on academic title and seniority.

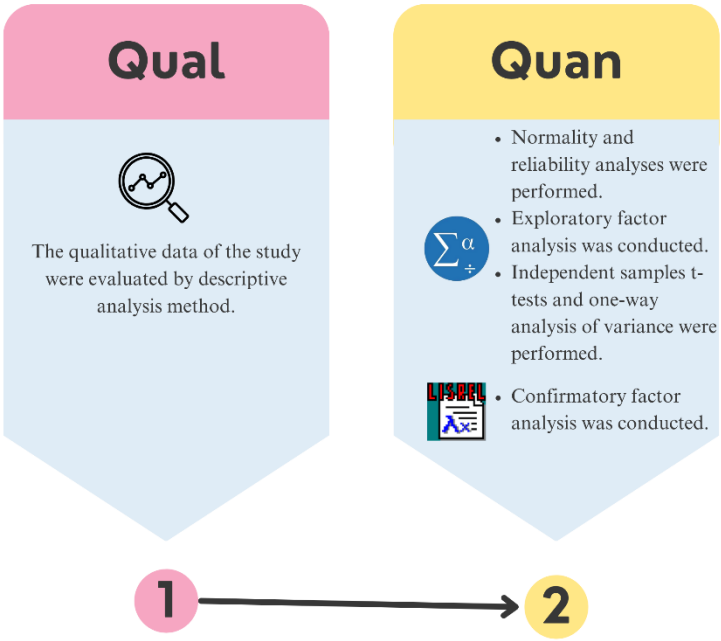


Figure 5. Stages followed in the data analysis process

Data integration and quality indicators

Since the study employed a mixed-methods research design, the data were integrated at two different levels. At the design level, an exploratory sequential design was utilised. At the methodological level, a building approach was adopted, whereby the findings from one data set informed the collection of the subsequent data set. On the other hand, the quality of the mixed-methods research was evaluated using the criteria proposed by Hirose and Creswell (2023). Additionally, the mixed-methods design was clearly explained and visually represented.

Findings

Findings related to exploratory factor analysis

The construct validity of the SPGPS was assessed using KMO and Bartlett's test of sphericity; the results are presented in Table 1. The KMO test result is .964. This result indicates that the sample size is adequate for factor analysis. Moreover, Bartlett's test of sphericity yielded a significant result ($\chi^2 = 9479.84$; df = 703; p = .00), indicating that the data were suitable for factor analysis (Kaiser, 1974, p. 35). Therefore, factor analysis can be

performed reliably with this 38-item scale. Additionally, the dataset met the assumption of multivariate normality.

Table 1. Data obtained from Kaiser-Meyer-Olkin and Bartlett's tests

Kaiser-Meyer-Olkin Measure of Sampling Adequacy	.964
Bartlett's Test of Sphericity	9479.838 703 .000

In line with these findings, an exploratory factor analysis was conducted, using a cut-off point of .40 (Seçer, 2015). According to the analysis, six factors with eigenvalues greater than 1 were identified in the scale. Additionally, the 38 scale items were distributed across these six factors. However, when the eigenvalues and factor loadings were evaluated together, a substantial difference was observed between the variance explained by the first (44.64%) and second (6.27%) factors.

Table 2. Data on Factor Structure

Component	Extraction Sums of Squared Loadings		
	Total	% of Variance	Cumulative %
1	16.962	44.637	44.637

Likewise, the scree plot graph indicates that the breakpoint corresponds to the first factor (Figure 6). Thus, according to Table 2, the one-factor structure explained 44.64% of the total variance of the scale. Since this value exceeds 40%, as noted by Tavşancıl (2014), the scale's factor structure is robust.

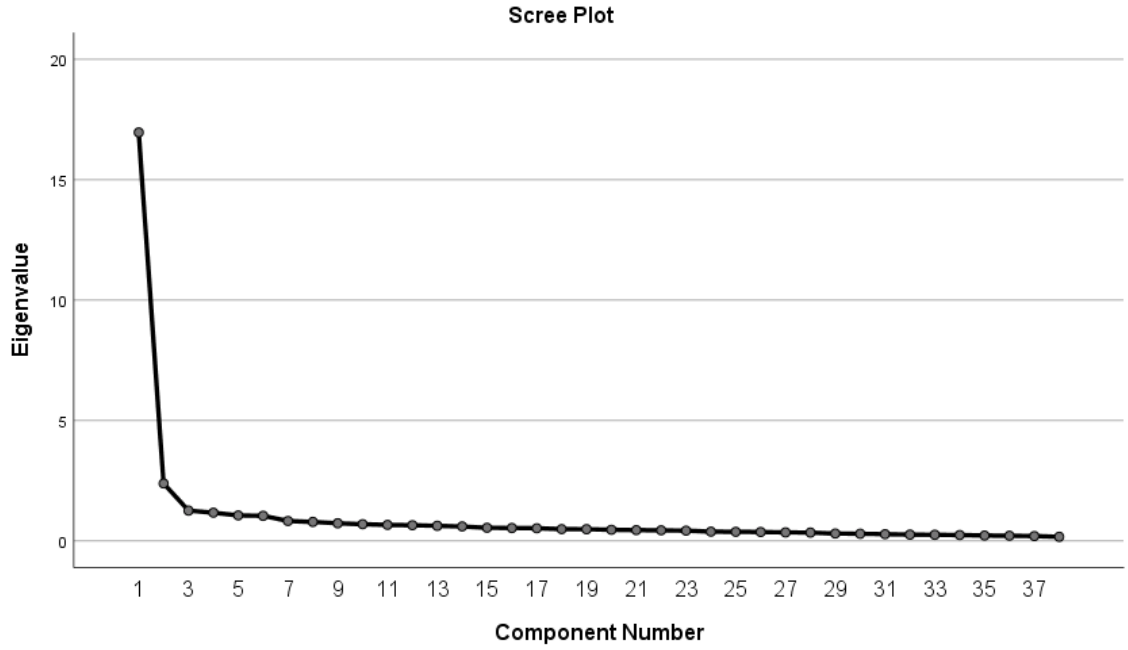


Figure 6. Scree Plot Graph

Therefore, the exploratory factor analysis yielded a one-factor structure comprising 38 items. Overall, the factor loadings of the scale items ranged from .42 to .76.

Table 3. Factor Loadings of The Items in the SPGPS

Items	Scale Items	Factor Loadings
I1	I use alternative/complementary assessment and evaluation techniques in my lessons, taking into account students with different learning styles.	.622
I2	At the beginning of each semester, I inform my students about the way and content of the lessons.	.429
I3	I organise various activities, taking into account my students' readiness (prior knowledge).	.668
I4	I ask my students to do a peer review.	.509
I5	I ask my students to come up with new and different ideas about the topics they see in their lessons.	.655
I6	I help my students set goals that challenge them in their learning.	.681
I7	I encourage my students to participate in different activities (academic or social).	.663
I8	I inform my students about individual differences in learning.	.688
I9	I inform my students about scientific activities in my field and encourage their participation.	.679
I10	I create an environment that supports my students in learning from one another.	.760
I11	I make the necessary updates to my lessons by staying up to date with developments in my field.	.599
I12	I guide my students by encouraging them to work in line with their interests and passions.	.745
I13	I guide my students to acquire regular study habits.	.688
I14	I ask my students to conduct self-assessments (evaluations of their learning) and share them with me.	.708
I15	I create environments that encourage my students to share their knowledge, experiences, or interests.	.741
I16	At the beginning of each semester, I strive to learn about my students' learning styles, interests, and experiences.	.719
I17	I emphasise to my students the importance of having high academic expectations.	.652
I18	I ask my students to apply the topics covered in the lessons to their daily lives.	.607
I19	I guide my students in preparing projects they can work on collaboratively.	.696
I20	I develop solutions to address the challenges that my students encounter during the educational process.	.688
I21	I conduct research to use alternative learning methods and techniques in my lessons.	.713
I22	I prepare various classroom activities to assess my students' learning progress.	.713
I23	I provide my students with appropriate environments to discuss with friends who have different ideas or knowledge.	.742
I24	I encourage my students to examine, question, or share ideas from course resources.	.672
I25	I inform my students about efficient and effective learning.	.746
I26	I recognise my students' achievements to encourage them to work harder.	.631
I27	I create lessons that accommodate my students' diverse learning styles.	.739
I28	I provide my students with necessary warnings to ensure they complete their homework on time.	.571
I29	I involve my students in the active learning process through the in-class and out-of-class activities I prepare.	.750
I30	I encourage my students to participate in social, cultural, or sporting activities at the university.	.600
I31	I help all my students like a counsellor or guide.	.608
I32	I give my students feedback through formative assessment (quizzes, homework, performance tasks, etc.).	.608
I33	I guide my students on how to follow a path to success in my classes.	.653
I34	I employ various teaching methods and techniques, taking into account my students' individual differences.	.751
I35	I support my students in conducting additional research in their field.	.740
I36	I analyse my students' self-assessments and provide support to help them strengthen their weaknesses.	.678
I37	In my lessons, I create groups that allow my students to work together.	.677
I38	My students can easily reach me through various communication channels (email, student information system, social media, etc.).	.415

Findings related to confirmatory factor analysis

A confirmatory factor analysis was used to assess the scale's construct validity. In the analysis of the relationships between the latent and observed variables, the t values were statistically significant at the .01 level. Additionally, the RMSEA coefficient was not within the acceptable range.

For this reason, the modification indices were examined to improve model fit. However, to avoid the risk of overfitting and chance-based results, the proposed modifications were carefully evaluated for theoretical validity. Changes were made only when there was a clear theoretical or conceptual justification for the common residual variance. As a result, error covariances were identified between items 12 and 13, 19 and 37, 22 and 23, 31 and 38, and 32 and 37. In particular, the error terms of items 12 and 13 were allowed to covary because both items address active learning strategies and constructivist pedagogy, which emphasise students' active participation and real-world connections. The error terms for items 19 and 37 were correlated because both represent formative teacher guidance, student-specific support, and feedback mechanisms. The covariance between items 22 and 23 was justified based on their shared focus on instructional pace and classroom time management.

Additionally, Items 31 and 38 share a common framework related to proactive instructional design and preparation and teachers' proactive updates. Finally, the relationship between items 32 and 37 is grounded in differentiated instruction and a student-centred educational approach. Both items address taking into account students' individual differences, prior knowledge, and personal interests. These theoretically justified modifications helped avoid excessive model modification.

Following this modification process, model fit improved, and the RMSEA decreased to an acceptable level of .08. The standardised factor loadings were then examined. In this context, since no items had factor loadings below .30, no items were removed from the scale. In addition, the values obtained for the goodness of fit indices (x^2/sd= 2.84; NFI = .98; NNFI = .99; CFI = .99; IFI = .99; RFI = .98; RMR = .03; SRMR = .03; RMSEA = .08) indicated an acceptable overall model fit. The goodness-of-fit indices were evaluated according to the criteria for excellent and acceptable fit presented in Table 4 (Meydan & Şeşen, 2015, p. 37; Schermelleh-Engel et al., 2003).

Table 4. Generally Accepted Values for Goodness-of-Fit Indices

Fit Indices	Excellent	Acceptable
χ^2/df	$x \leq 3$	$3 < x \leq 5$
RMSEA	$x \leq .05$	$.05 < x \leq .08$
RMR*	$x \leq .05$	$.05 < x \leq .08$
SRMR	$x \leq .05$	$.05 < x \leq .10$
CFI	$x \geq .97$	$97 > x \geq .95$
NFI	$x \geq .95$	$x \geq .90$
NNFI	$x \geq .97$	$97 > x \geq .95$

*This value is taken from Meydan and Şeşen (2015) since it is not included in the source written by Schermelleh-Engel et al. (2003).

Based on these criteria, χ^2/df, NFI, NNFI, CFI, IFI, RFI, RMR, and SRMR indicated an excellent fit, whereas RMSEA indicated an acceptable fit. On the other hand, the factor loadings ranged from .53 to .89, with all values exceeding .30.

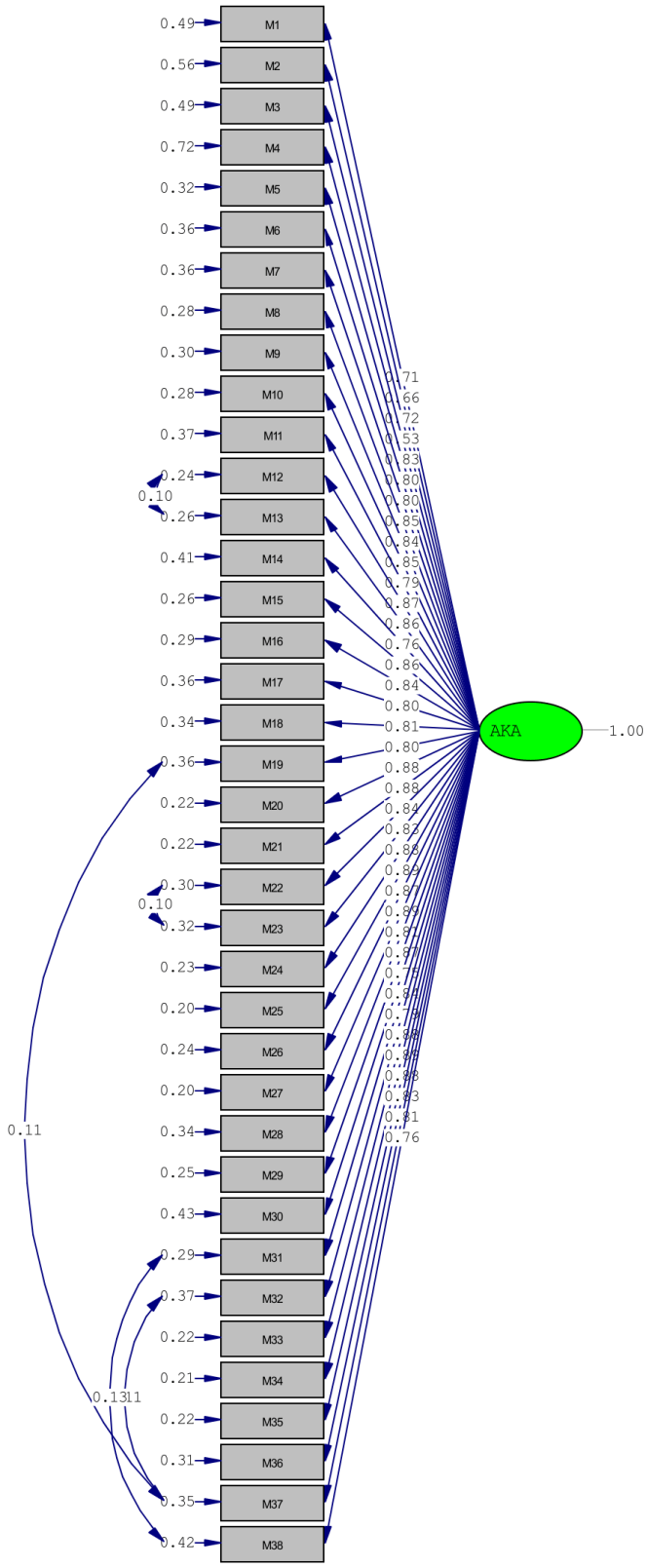


Figure 7. Path diagram of the SPGPS

Findings related to reliability coefficients

As a result, the reliability analysis of the final version of the scale yielded appropriate Spearman–Brown (r = .97) and Guttman split-half (r = .97) coefficients. Furthermore, within the scope of the scale's reliability analysis, the two-part reliability coefficient was calculated as .97 for the first part and .98 for the second part. Additionally, the Cronbach's alpha internal consistency coefficient for the total scale was .99. Consistent with these findings, the results indicate that the final 38-item scale has high reliability (Table 5). However, Cronbach's alpha coefficient may not be sufficient on its own for assessing internal consistency, especially since it tends to increase with the number of items. In other words, the presence of 38 items in this study may be one reason for the high internal consistency. Therefore, in addition to the calculated coefficients, different reliability analyses were also performed.

In this context, the composite reliability analysis proposed by Raykov (1998) was applied to assess the overall reliability of a scale comprising heterogeneous but interrelated items. Moreover, the scale's convergent validity was evaluated using the method proposed by Fornell and Larcker (1981) to examine the relationships among the items within each factor and between the items and their respective factor. According to the researchers, the AVE values of the scale should be above .50, and the CR coefficients should be above .70. For the SPGPS, the AVE and CR values were above .50 and .70, respectively (Table 5). Accordingly, the scale met the criteria for composite reliability and convergent validity.

Table 5. Reliability coefficients of the scale

Split-Half Reliability		Spearman Brown Coef.	Guttman Split-Half Coef.	Cronbach Alpha	AVE	CR
P1	P2	.97	.97	.99	.67	.99
.97	.98					

*Coef=Coefficient; P1=Part 1; P2=Part 2

Findings related to the study

Following the scale development process, the SPGPS was administered to a separate sample after its reliability had been established. Academics' responses to the scale were compared across demographic and professional variables. In this context, differences according to gender, academic title, seniority, and undergraduate or postgraduate teaching experience were examined using independent-samples t-tests and one-way analyses of variance (ANOVAs).

Table 6. Comparing academics' responses to the SPGPS according to various variables

Variables		n	M	SD	df1	df2	t/F	p
Gender	Male	124	135.43	24.79	240	-	-1.47	.14
	Female	118	140.05	24.19				
Instructional Experience	Yes	226	137.69	23.61	240	-	.03	.98
	No	16	137.50	36.39				
Title	Lecturer	37	140.11	26.39	4	237	1.54	.19
	Res. Assist.	14	130.36	25.00				
	Assist. Prof.	67	141.82	26.27				
	Assoc. Prof.	73	137.92	21.58				
	Prof. Dr.	51	132.16	24.24				
Seniority	1-5 years	33	143.42	28.63	6	235	1.06	.39
	6-10 years	41	141.27	26.71				
	11-15 years	56	139.18	23.35				
	16-20 years	34	136.12	17.48				
	21-25 years	31	130.61	25.53				
	26-30 years	18	134.11	20.70				
	30+ years	29	134.79	26.60				

According to Table 6, when examined by gender, both male (M=135.43; SD=24.79) and female (M=140.05; SD=24.19) academics have similar average values. This situation indicates that perceptions and approaches regarding the basic principles of a good educational environment are independent of gender. Indeed, as a result of the independent sample t-test performed, no statistically significant difference was found between the groups in terms of gender ($t_{(240)}$=-1.47, p>.05). Similarly, no statistically significant difference was found between faculty members who had previously taught at the undergraduate or graduate level (M=137.69; SD=23.61) and those without such experience (M=137.50; SD=36.39; $t_{(240)}$=0.03, p>0.05). This finding indicates that teaching experience is not a decisive factor in the adoption of fundamental principles of good education. However, this finding should be interpreted with caution due to the small sample size in the "no experience" group.

When examined by academic rank, academics with different titles, ranging from teaching staff (M=140.11; SD=26.39) to professors (M=132.16; SD=24.24), had similar average scores and generally shared views on a good educational environment. This situation indicates a shared understanding of effective educational practices in the academic environment, regardless of title. One-way analysis of variance confirmed that there was no significant difference among the titles in terms of the seven principles (F(4, 237)=1.54, p>.05). Finally, academics were compared by seniority. There was no statistically significant difference in seniority among academics (F(6, 235)=1.06, p>.05). This result indicates that the length of academic experience does not alter perceptions of good educational principles.

Discussion and Conclusion

This study aimed to develop a valid and reliable scale for academics to assess the quality of undergraduate educational environments. To this end, a systematic process was followed to ensure the rigorous development of the assessment tool, including item development, expert content validation, and both exploratory and confirmatory psychometric tests (Stefana et al., 2025). Psychometric evaluations conducted via EFA and CFA demonstrated that the SPGPS possesses robust construct validity and exceptional internal consistency. Furthermore, the favourable goodness-of-fit indices and high factor loadings confirm that the 38 items accurately represent the latent structure. Additionally, the scale's internal consistency, AVE, and CR values were found to be at the desired levels. When these

findings are evaluated collectively, it becomes evident that the SPGPS is a robust and reliable tool; by providing academics with a targeted, objective, and single-dimensional instrument capable of assessing the quality of undergraduate education, it fills a significant methodological gap. According to the foundational criteria established by Cattell (1966), this substantial discrepancy between the first eigenvalue and the subsequent ones—in other words, the steep slope in the scree plot—is characterised as the primary indicator that the scale structure should be restricted to a single factor. In this approach, the first factor of the scale represents significant, large-scale variance, while the other factors constitute small, secondary variance components. Also, Aksu et al. (2017, p. 56) emphasise that when the eigenvalue of the first factor is significantly higher than that of the second factor, the scale essentially has a unifactorial structure.

Studies conducted within the framework of the seven principles have varied in their focus and methodology. Most studies have been based on the inventory developed by Chickering and Gamson (1987). This tool has generally been adapted to different cultural contexts and participant groups (Bishoff, 2010; Uğraş & Çil, 2014). In some studies, this inventory has been technically and structurally revised and transformed into a new measurement tool (Oberst, 1995). Despite these measurement tools, no specific scale targeting academics directly has been found. The absence of a measurement tool with proven validity for academics in the literature is a significant gap. This situation highlights the importance of the unidimensional scale developed in this study in filling this gap in the literature. Indeed, the single-factor framework offers deep pedagogical insight into the nature of these seven principles. In this context, although Chickering and Gamson (1987) identified seven distinct categories in their original framework, they argued that these principles do not operate independently of one another. On the contrary, they clearly stated that the seven principles mutually reinforce one another and that their effects are demonstrated when they are present together. Based on this, the unidimensional scale structure obtained in the study provides empirical support for this theoretical proposition within the context of higher education in Türkiye. Consequently, the stated result indicates that Turkish academics perceive effective educational practices as a holistic, integrated framework for teaching quality.

According to the implementation results, the research findings reveal that female and male academics have similar perceptions regarding good practice. It is noteworthy that there is no significant difference between academics who have previously taught at the undergraduate or postgraduate level and those who have not. This finding may suggest that academics' theoretical knowledge and awareness of good education are not influenced by practical experience. However, when examining the study on teacher education, it was found that there is a difference between teacher candidates and practising teachers. It is thought that this difference is due to professional obstacles encountered during implementation, which limit the effectiveness of the seven principles (Yılar et al., 2015). Bishoff (2010) conducted a study examining the extent to which academics in chemistry education apply the seven principles while accounting for various variables. In contrast to this study, the research found regional differences in the application of the seven principles.

Additionally, a significant difference in favour of women was identified in the principles of student collaboration, immediate feedback, and effective time use. In another study, the relationship between predictive variables—such as university faculty members' pedagogical training, the pedagogy courses they completed, their educational level, and years of teaching experience—and their level of application of the seven principles was investigated. It was determined that all four variables play an important role in faculty members' use of the seven

principles, but no significant differences were found among the variables (Collard, 2009). Moreover, in a study conducted by Hein (2010), it was found that faculty members with more professional experience showed a positive correlation with the first principle, leading to a different conclusion from this study.

The absence of significant differences among the variables can be interpreted as an indicator of pedagogical alignment. This finding suggests that academics' perceptions of good teaching practices are relatively consistent across gender, title, seniority, and teaching experience. Furthermore, the fact that academics with different academic titles, from lecturers to professors, hold similar perceptions of good educational practices indicates the existence of a common educational culture in the academic environment. The fact that academic seniority does not affect perceptions of good educational principles shows that the pedagogical knowledge and values held by experienced academics are also embraced by those at the beginning of their careers.

Limitations and Recommendations

The scale developed in this study is designed to assess undergraduate educational environments. In the future, the scope of this scale can be extended to graduate education, or separate scales specific to these levels can be developed. Thus, more comprehensive and comparable data can be obtained regarding the educational practices across different academic levels. Additionally, the study's sample was limited to academics in Türkiye. Therefore, applying the scale to academics in different cultural and national contexts may enable cross-cultural validity and reliability analyses.

On the other hand, although the single-factor structure was empirically supported and explained a substantial portion of the variance, it inherently limits the analysis of separate dimensions for each of the seven principles. Therefore, this unidimensional structure is a methodological limitation of the current study. Future research could test the validity of a multi-factor structure by developing and analyzing distinct sub-dimensions corresponding to each principle. Such an approach would allow for more fine-grained analyses and principle-specific interventions. Finally, the internal consistency coefficient for the 38-item scale was very high at .99. Although this indicates high reliability, such a high coefficient may also suggest item redundancy and should therefore be interpreted with caution. Indeed, since this coefficient typically indicates that the items are closely related, it should be interpreted with caution. Therefore, future studies could conduct item-reduction analyses to develop a shorter version of the scale.

Declarations

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