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Development and psychometric properties of the assessment questionnaire for the process of the tutorial action plan

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ABSTRACT

Background: Internationally, most countries recognize the right of the student to receive assistance from teachers and tutors. The Tutorial Action Plan is a teaching tool that aims to promote academic, personal, and professional development in students. It is important to monitor this process of tutoring to be able to provide appropriate guidance to nursing students throughout their education.
Objective: The objective of this study was to design and validate an instrument to measure and monitor nursing students' perceptions of the Tutorial Action Plan process.
Methods: This was a cross-sectional study conducted in two phases. The first consisted of the development of the Assessment Questionnaire for the Process of the Tutorial Action Plan through discussion groups and participant consensus. With 35 items related to the tutoring process, the questionnaire was designed to monitor the impact of that process. The items were grouped into four dimensions: Usefulness of the Tutorial Action Plan, Opinion about Tutor and Development of the Tutorial, Development of the Degree Final Project, and Usefulness and Completeness of the Learning Folder. In the second phase the psychometric properties of the questionnaire were evaluated, utilizing a sample of 410 nursing students. Reliability was measured by means of internal consistency, and construct validity was measured by means of confirmatory factor analysis.
Results: The overall Cronbach's alpha was 0.93, ranging from 0.73 to 0.92 for the dimensions. Confirmatory factor analysis showed that the model fitted a four-factor structure.
Conclusions: The results indicate that the Assessment Questionnaire for the Process of the Tutorial Action Plan is a valid and reliable assessment tool. This instrument is essential in monitoring the impact of tutoring of nursing students throughout their time in the program, both from a global perspective of the construct of tutoring and from the perspectives of the four dimensions identified.

1. Introduction

Internationally, most countries recognize the right (LOU, 2001) or the need (Braine and Parnell, 2011) of the student to receive assistance from teachers and tutors. The tutor is intended to provide support and counsel to students, facilitate their learning, and assist in the management and organization of their learning habits (Potolsmy et al., 2003; Friesen, 2011). The tutor also fosters nursing students' personal development (Braine and Parnell, 2011) and stimulates motivation, autonomous learning, and a sense of responsibility and commitment (Mazurkiewicz and García, 2008). There are different types of tutors providing support to students during their academic careers (Newton and Smith, 1998). Of note among these is the mentor working with the student during the clinical practicum. Another type of tutor is a

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personal tutor, who provides support for the student throughout his or her academic career in the university (Newton and Smith, 1998).

The Tutorial Action Plan (TAP), is a teaching tool that aims to promote academic, personal, and professional development in students (Alvarez and Forner, 2008), as well as to integrate them into the university setting (Stephen et al., 2008). The TAP also seeks to instill the professional values of nursing that the students are trained to pursue (Watts, 2011). For the student, the TAP tutor represents a professional leadership model to follow, with abilities and capacities—a source for learning skills and someone with whom to share knowledge (Barry et al., 2016). The relationship established between student and tutor may be a positive indicator of, or a precondition for, success in studies, especially for those students who might otherwise be tempted to drop out (Hagenauer and Volet, 2014).

Students require personalized tutoring to help them confront the difficulties inherent in professional practice, achieve defined competences, and overcome the innate vulnerabilities of their age in order to develop autonomy as nursing students and future nursing professionals (Ross et al., 2014). Tutoring is an indispensable factor in the improvement of the quality of teaching (Salmeron and Lopez, 2000). Nevertheless, true pedagogical change depends on setting in motion the research processes that allow reflection upon the effect of the practicum on innovation in teaching (Stenhouse, 1968). This is why it is necessary to have instruments that allow for the monitoring of innovations in teaching, in order to be able to objectivize their impact on the training processes of future nursing professionals.

2. Background

The absence of specific instruments to measure the impact of tutoring in university education means that many rely upon pre-existing tools that have their roots in the world of business (Chen et al., 2016); this is the case with the *Mentoring Functions Scale* (Hu et al., 2011). However, these tools do not correspond conceptually to the reality of nursing training (Chen et al., 2016). According to Dobinson-Harrington (2006) and Urwin et al. (2010), the experience of support implicit in tutoring is fundamental in that it allows a student to offer high quality care. For this reason, some researchers have opted to design measurement instruments specific to this domain (Berk et al., 2005).

In a review carried out by Chen et al. (2016) of various measurement scales for tutorial activity, it was found that the majority of these had been validated in the USA and in several educational contexts. Only three instruments were validated for use in the health sciences (Berk et al., 2005; Jakubik, 2008; Suen and Chow, 2001). Nevertheless, it was demonstrated that these instruments required more exhaustive and advanced psychometric testing in order to achieve higher quality standards (Chen et al., 2016).

In contrast a study by Andrews and Wallis (1999) and most measurement instruments have focused on assessing the impact of tutoring by mentors in the clinical area (Jakubik, 2012; Suen and Chow, 2001; Tiew et al., 2017) or in that of research (Fleming et al., 2013; Steiner et al., 2004; Meagher et al., 2011). However, there are few tools designed to measure the impact of tutoring provided by a personal tutor over the full course of university training.

For the above reasons it was determined that there was a need for a scale that would permit assessment of the impact of tutoring on nursing students for application throughout university training. The objective of this study was therefore to design and validate an instrument to measure and monitor the perceptions of nursing students with respect to the TAP process.

3. Methods

3.1. Design

This was a cross-sectional study, conducted in two phases: Development of the Assessment Questionnaire for the Process of the Tutorial Action Plan (CuPPAT) and Validation of the psychometric properties of the CuPPAT.

3.1.1. Phase 1: development of the CuPPAT

The design and construction of the instrument was carried out in three stages, following a distinct methodology for each stage. In the first stage, two working groups were formed. The first group consisted of ten nursing students from various years of the morning teaching shift. The second group was made up of ten nursing students from various years of the afternoon teaching shift. The aim was to identify those items that they considered to be fundamental to making tutoring effective during their study. Potential items were then identified and agreed upon by consensus among the participants.

The first working group identified a total of 48 items, while the second group came up with 36. In the second stage, a single list was prepared based upon the items provided by each group, eliminating duplicate items. This list consisted of 62 items.

In the third stage, each researcher evaluated each item in terms of its relevance on a scale from 1 to 4, with 1 being not relevant and 4 highly relevant. The validity of the content for each item was calculated as the percentage of researchers giving a score of 3 or 4 to the item. Following the recommendations of Lynn (1986), only those items with a validity index equal to or > 0.80 were chosen for the instrument.

Of the 62 identified items only 35 were considered relevant or highly relevant with concordance of values equal to or > 0.80. With the selected items, a new instrument consisting of 35 items was designed to assess the perceptions of nursing students with respect to the TAP process.

The 35 items were grouped into four dimensions agreed upon by consensus in the research team: **D1** (Usefulness of the Tutorial Action Plan), **D2** (Opinion about Tutor and Development of the Tutorial), **D3** (Development of the Degree Final Project), and **D4** (Usefulness and Completeness of the Learning Folder). The number of dimensions was established based on an *a priori* determination. This method may be used when researchers have experience in the topic that is being analyzed (Hair et al., 2010). The instrument was named the Assessment Questionnaire for the Process of the Tutorial Action Plan (Cuestionario de Valoración del Proceso del Plan de Acción Tutorial—CuPPAT).

3.1.1.1. Pilot testing and structure of the questionnaire. A pilot test was carried out with the definitive questionnaire in a group of 25 nursing students from different years of the program, with the aim of assessing the time needed to complete the questionnaire, the comprehensibility of the questions, and the ease of scoring them. The time it took them to complete the questionnaire was 10–15 min. After debriefing, it was determined that no changes were needed in the design or the content.

3.1.2. Phase 2: Validation of the psychometric properties of the CuPPAT

3.1.2.1. Participants and setting. The psychometric properties of the questionnaire were analyzed in the cohort of students from the four years (first through fourth) of the nursing degree program.

The selection criterion for the participants was enrolment in the nursing degree program during the period of the study.

The sample size was calculated on the basis of recommendations from several authors whose suggestions ranged from 5 to 20 subjects for each item on the questionnaire (Tabachnick and Fidell, 2007; Streiner et al., 2015). For this study, it was decided to use 10 subjects for each item making up the questionnaire. As the number of registered students was quite close to the number of students to be included in the study, it was decided to include the entire student cohort. Therefore, the psychometric properties of the instrument were analyzed in the 410 nursing students enrolled in the nursing degree program at the Campus Docent Sant Joan de Déu, during the 2014–2015 academic year.

3.1.2.2. Variables and information source. A two-part on-line

Table 1
Distribution by category of the evaluation questionnaire items for the Process of the Tutorial Action Plan, and minimum and maximum values for each item and for the questionnaire overall.

Dimensions	Items	Minimum score	Maximum score
D1: Usefulness of the Tutorial Action Plan	1[a], 2, 3[a], 4[a], 5[a], 6, 7[a] and 8[a]	8	32
D2: Opinion about the Tutor and Development of the Tutorial	9[a], 10, 11[a], 12[a], 13, 14[a], 15[a], 16[a], 17[a], 18[a], 19[a], 20 and 21[a]	13	52
D3: Development of the Degree Final Project	22[a], 23, 24[a], 25, 26, 27 and 28	7	28
D4: Usefulness and completeness of the Learning Folder	29[a], 30[a], 31, 32, 33[a], 34 and 35	7	28
Total for questionnaire	From 1 to 35	35	140

[a] Items for which the scores need to be inverted.

Table 2
Sociodemographic characteristics of the study population.

Variables	n	%
Age	23.5 (SD 5.3)	
Sex		
Male	72	17.6
Female	338	82.4
Access route		
Baccalaureate	239	58.3
Professional training of a superior level	144	35.1
Others	27	6.6
Transfer from other university		
Yes	17	4.1
No	393	95.9
Teaching shifts		
Morning	205	50.0
Afternoon	205	50.0
Academic year		
First	96	23.4
Second	80	19.5
Third	117	28.5
Fourth	117	28.5
Currently employed		
Yes	207	50.5
No	203	49.5
Living		
Alone	17	4.1
With parents or family members	292	71.2
With partners	50	12.2
Dormitory	10	2.4
Other	41	10.0

questionnaire was prepared. The first part consisted of a form to collect sociodemographic and other social variables such as age, sex, academic year, teaching shifts, employment status, and the access route leading to enrolment in the nursing degree program. The second part of the on-line questionnaire consisted of the CuPPAT, made up of 35 items. The items consisted of statements, both positive and negative, and the responses for each ranged from 1 to 4 points in line with the student's level of agreement: totally agree, agree, disagree, and totally disagree. According to Nunnally and Bernstein (1994), it is sometimes preferable to use a scale with even numbers and no neutral position. The intermediate position provides no information, whereas this approach forces a response with agree/disagree scoring.

The scores allowed us to obtain a value as a single measure (with all the items) indicating the level of the nursing students' opinions with respect to the TAP process, and also allowed us to obtain partial scores for each dimension identified. To obtain this score, the values of certain items were inverted (Table 1). The higher the score, the stronger the nursing student's opinion.

Regarding the procedure used, a day was scheduled for the nursing students in each of the four years to complete the on-line questionnaire. All of them were informed orally of the aims of the study, and they were invited to participate voluntarily. The instrument was entirely anonymous and confidential. The nursing students accessed it *via* a link in a web browser. The platform used to create the online questionnaire was www.encuestafacil.com.

3.2. Statistical analysis

SPSS (SPSS Inc. Released (2008). SPSS Statistics for Windows, Version 17.0. Chicago: SPSS Inc.) was used for all analyses. In order to assess the reliability of the questionnaire, an analysis of its consistency and that of each of its dimensions was carried out using Cronbach's alpha coefficient, with a value of $\alpha \geq 0.70$ considered acceptable (Nunnally and Bernstein, 1994).

To assess the convergent and discriminant validity, an analysis of the Pearson correlation between the total score and the score for each of the dimensions was performed, based on the hypothesis that the correlation between each dimension and the questionnaire overall should be stronger than that between the dimensions (Fayers and Machin, 2000).

A confirmatory factor analysis (CFA) was conducted using the generalized least squares method. This method has the same properties as the maximum likelihood method, albeit under less rigorous multivariate normality considerations, used as it is mostly for items of ordinal measurement (Batista-Foguet et al., 2004; Rial et al., 2006). The absolute, incremental, and parsimony fit indices were calculated. For this study the Goodness of Fit index (GFI) and the Root Mean Standard Error of Approximation (RMSEA) were utilized. An appropriate model being a GFI close to 0.90 and a RMSEA ranging between 0 and 0.05; RMSEA values from 0.05 to 0.08 were also considered acceptable (Browne and Cudeck, 1993). The incremental indices used in the study were the Adjusted Goodness of Fit Index (AGFI), the Bentler Bonnet Normed Fit Index (BBNFI), and the Bentler Bonnet Non-Normed Fit Index (BBNNFI). These indices also range between 0 and 1, and an acceptable model is one with an index of approximately 0.90 (Rial et al., 2006). Finally, the parsimony index used was the normalized X^2, defined as the ratio between the X^2 value and the number of degrees of freedom. Values between 2 and 6 were considered acceptable (Hu and Bentler, 1998).

The construct validity of the CuPPAT was also determined using confirmatory factor analysis (CFA). Structural equation modeling (EQS. 6.1. (2006)) for Windows, Multivariate Software, Inc., Encino, CA, USA) was used.

3.3. Ethical considerations

The study was approved by the Research Ethics Committee of the Sant Joan de Déu. The students were informed about the authorship of Campus Docent Sant Joan de Déu and the purpose of the study, as well as being informed that all data provided would be treated anonymously. At no time were the researchers or the tutors able to identify students from the questionnaires.

All of the students were invited to participate exclusively by the study researchers. No researcher was participating as a tutor in the TAP at the time of the study.

4. Results

The study included 410 registered students at the Campus Docent Sant Joan de Déu of the Nursing School affiliated with the University of

Table 3
Descriptive statistics of the items of the CuPPAT instrument.

	Content of items, summarized	Average	SD	Medians	Mode	% floor	% ceiling
D1: Usefulness of the Tutorial Action Plan (TAP)							
P1	System improves my academic performance	2.5	0.7	3	3	11.7	5.6
P2	I think that the TAP tutor should be different from the final project tutor	2.7	0.9	3	3	14.1	23.9
P3	The dedication and motivation of the tutor determine the development of the TAP	3.2	0.7	3	3	3.4	41.2
P4	I consider the TAP tutors to be useful	2.5	0.8	3	3	12.9	9.0
P5	My TAP tutor has shown an interest in my personal problems	3.0	0.8	3	3	7.8	32.0
P6	On occasion during the tutorials I asked for information on topics of an academic nature but did not receive without receiving the support that I expected	2.7	0.9	3	3	11.7	23.9
P7	I consider the TAP to be useful in my learning process	2.4	0.8	2.5	3	13.7	6.6
P8	My tutor provides me with sufficient information concerning the TAP	2.8	0.8	3	3	9.3	18.3
D2: Opinion about the Tutor and Development of the Tutorial							
P9	I feel that my tutor resolves questions and provides me with personalized orientation in subjects	2.7	0.8	3	3	9.0	19.8
P10	On occasion my tutor fails to attend planned sessions	3.3	0.8	4	4	4.4	57.8
P11	I feel that my tutor has the technical competence and is qualified to tutor my TAP	3.0	0.8	3	3	5.9	29.8
P12	My tutor is concerned with my problems and helps me resolve them, both personals and academic	2.9	0.8	3	3	5.6	25.4
P13	My tutor creates expectations that are not always met	2.6	0.7	3	3	7.3	11.2
P14	My tutor guides me when I present a difficulty	2.9	0.7	3	3	4.6	22.2
P15	My tutor devotes the time needed to resolve questions and guide me	2.8	0.8	3	3	7.3	25.1
P16	My tutor radiates trust and confidence	2.9	0.8	3	3	7.6	27.1
P17	My tutor is motivated to tutor me in the learning process	2.9	0.8	3	3	6.3	25.1
P18	My tutor responds to me emails in a reasonable time frame	2.9	0.9	3	3	9.5	29.3
P19	I am satisfied with the work carried out by my tutor	2.7	0.9	3	3	10.0	20.7
P20	The tutors don't know how the school works and at times the students are better informed than they are	2.1	0.7	2	2	23.4	7.3
P21	My tutor channels the demands that I put forward	2.8	0.8	3	3	4.6	15.9
D3: Development of the Degree Final Project (DFP)							
P22	My tutor resolves my questions about the DFP	2.7	0.8	3	3	7.8	18.3
P23	I believe that the choice of DFP tutor should be based on the topic chosen	1.6	0.7	2	1	47.8	1.7
P24	The DFP tutorials carried out have been useful	2.7	0.8	3	3	9.0	13.9
P25	I have the feeling that the tutor hasn't read my final project	2.9	0.9	3	3	9.3	26.6
P26	I have the feeling that the tutor doesn't know enough about the methodology to guide me in developing my DFP	2.5	0.9	3	3	15.4	18.0
P27	I have the feeling of being alone when I set about working on my DFP	2.4	0.9	2	3	18.8	13.2
P28	I feel that I have not been given enough information regarding the DFP	2.3	0.9	2	3	19.5	11.5
D4: Usefulness and completeness of the Learning Folder (LF)							
P29	The documentation in the LF is very useful	2.0	0.8	2	2	30.2	3.9
P30	The criteria for completing the reports are clearly defined	2.5	0.7	3	3	10.2	7.1
P31	Generally I have trouble preparing the reports (I'm not sure how to express my personal opinion)	2.6	0.8	3	3	9.3	15.1
P32	I feel that the LF is more useful for the tutor tan it is for the student	2.0	0.8	2	2	26.8	4.9
P33	The basic documents to be included in the LF are properly identified for content	2.6	0.7	3	3	9.0	10.7
P34	I don't know what the purpose of the reports is	2.1	0.9	2	2	29.0	7.8
P35	Most of the documents in the LF are completed as a duty rather than as something of utility	1.5	0.6	1	1	50.7	1.7

Barcelona. The sociodemographic characteristics of the nursing students are presented in Table 2.

The average age of the nursing students was 23.5 (standard deviation 5.3), and 82.4% were female. The main access route to the nursing degree program was through the baccalaureate (58.3%) and only 4.1% had commenced their nursing studies in other universities. Approximately half of the students were working as well as studying (50.5%). In terms of their living conditions, 71.2% lived with their parents or other family members, while 12.2% were living with a partner.

4.1. Item analysis

Table 3 shows the values for measures of central tendency and variability for each of the 35 items on the questionnaire. In terms of the floor effect there was a minimum score in > 20% of cases for item 20 of dimension D2 (Opinion about Tutor and Development of the Tutorial), item 23 of dimension D3 (Development of the Degree Final Project), and items 29, 32, 34, and 35 of dimension D4 (Usefulness and Completeness of the Learning Folder).

The maximum score of ceiling effect was found in > 20% of cases for items 2, 3, 5, and 6 of dimension D1 (Usefulness of the Tutorial Action Plan), items 10, 11, 12, 14, 15, 16, 17, and 18 of dimension D2 (Opinion about Tutor and Development of the Tutorial), and item 25 of dimension D3 (Development of the Degree Final Project).

Most of the items with a floor effect indicate a weak opinion about D4 (Usefulness and Completeness of the Learning Folder). In contrast, most of the ceiling effect items indicate a strong opinion about the TAP and about the Tutor and Development of the Tutorial.

4.2. Reliability

The Cronbach's alpha internal consistency coefficient for the scale overall was 0.93, while values of 0.70 or higher were obtained for each of its four dimensions: D1 (Usefulness of the Tutorial Action Plan), D2 (Opinion about Tutor and Development of the Tutorial), D3 (Development of the Degree Final Project), and D4 (Usefulness and Completeness of the Learning Folder). Cronbach's alpha was also calculated for each item of the questionnaire; their exclusion was not seen to improve the internal consistency of the scale overall (Table 4).

The homogeneity index was also analyzed for all the items of the CuPPAT, both overall and for each dimension. Overall values for the questionnaire were above 0.20 for all the items. In the homogeneity index for the items in each dimension, values were also above 0.20 for all except for item 3 (The dedication and motivation of the tutor determine the development of the TAP).

4.3. Convergent and discriminant validity

The analyses of the correlations among the dimensions of the

Table 4
Internal consistency coefficient (Cronbach's alpha) for the CuPPAT instrument.

Item contents summarized		Cronbach's alpha		
		Total subscale	Total subscale without item	Total subscale with item
D1: Usefulness of Tutorial Action Plan (TAP)		0.762		
P1	System improves my academic performance		0.739	.938
P2	I think that the TAP tutor should be different from the final project tutor		0.758	.938
P3	The dedication and motivation of the tutor determine the development of the TAP		0.773	.940
P4	I consider the TAP tutors to be useful		0.713	.937
P5	My TAP tutor has shown an interest in my personal problems		0.710	.935
P6	On occasion during the tutorials I asked for information on topics of an academic nature but did not receive without receiving the support that I expected		0.762	.938
P7	I consider the TAP to be useful in my learning process		0.723	.937
P8	My tutor provides me with sufficient information concerning the TAP		0.703	.935
D2: Opinion about the tutor and development of the tutorials		0.924		
P9	I feel that my tutor resolves questions and provides me with personalized orientation in subjects		0.914	.935
P10	On occasion my tutor fails to attend planned sessions		0.932	.939
P11	I feel that my tutor has the technical competence and is qualified to tutor my TAP		0.915	.936
P12	My tutor is concerned with my problems and helps me resolve them, both personals and academic		0.914	.935
P13	My tutor creates expectations that are not always met		0.927	.938
P14	My tutor guides me when I present a difficulty		0.915	.935
P15	My tutor devotes the time needed to resolve questions and guide me		0.912	.935
P16	My tutor radiates trust and confidence		0.911	.934
P17	My tutor is motivated to tutor me in the learning process		0.912	.935
P18	My tutor responds to me emails in a reasonable time frame		0.921	.937
P19	I am satisfied with the work carried out by my tutor		0.911	.934
P20	The tutors don't know how the school works and at times the students are better informed than they are		0.933	.940
P21	My tutor channels the demands that I put forward		0.914	.935
D3: Development of the Degree Final Project (DFP)		0.835		
P22	My tutor resolves my questions about the DFP		0.800	.935
P23	I believe that the choice of DFP tutor should be based on the topic chosen		0.855	.939
P24	The DFP tutorials carried out have been useful		0.826	.936
P25	I have the feeling that the tutor hasn't read my final project		0.819	.937
P26	I have the feeling that the tutor doesn't know enough about the methodology to guide me in developing my DFP		0.795	.937
P27	I have the feeling of being alone when I set about working on my DFP		0.784	.936
P28	I feel that I have not been given enough information regarding the DFP		0.795	.937
D4: Usefulness and completion of the Learning Folder		0.735		
P29	The documentation in the LF is very useful		0.680	.939
P30	The criteria for completing the reports are clearly defined		0.695	.939
P31	Generally I have trouble preparing the reports (I'm not sure how to express my personal opinion)		0.747	.940
P32	I feel that the LF is more useful for the tutor tan it is for the student		0.728	.940
P33	The basic documents to be included in the LF are properly identified for content		0.718	.939
P34	I don't know what the purpose of the reports is		0.671	.938
P35	Most of the documents in the LF are completed as a duty rather than as something of utility		0.676	.939
Total CuPPAT		0.939		

questionnaire and with the questionnaire as a whole are presented in Table 5. Dimensions D1 (Usefulness of the Tutorial Action Plan), D2 (Opinion about Tutor and Development of the Tutorial) and D3 (Development of the Degree Final Project) correlated strongly with the full questionnaire ($r = 0.889$, $r = 0.933$ and $r = 0.876$, respectively), while dimension D4 (Usefulness and Completeness of the Learning Folder) showed the weakest correlation with the full questionnaire ($r = 0.556$). The strongest correlation between subscales was that of dimensions D1 and D2, and D2 and D3 ($r = 0.789$), while the weakest was that of dimensions D2 and D4 ($r = 0.314$). All of the correlations were statistically significant.

4.4. Construct validity

The factor structure was analyzed using CFA with a four-dimension model set for the structure, as described above.

Estimation of the parameters was carried out using the least squares method. The results made clear that factors 1 and 4 were those carrying the heaviest factor loads or saturations, while factors 2 and 3 were the ones most poorly reflected by their indicators. All of the saturations were statistically significant (Table 6). As to the correlations among the factors, all of them showed high correlations with the other factors (Fig. 1).

The X^2 test was statistically significant and the fit ratio was 3.70; if it is between 2 and 6, the fit is reasonably good (Rial et al., 2006). In like manner, both the other indices of absolute fit and the incremental and parsimony goodness of fit analyzed showed the same trend, so that it may be concluded that the model fit correctly (Table 7).

5. Discussion

Regarding the sociodemographic characteristics of the participants ($n = 410$), a majority was female. Nursing has traditionally been a female-dominated profession and, moreover, a majority of university students in Spain are female (Ariño and Llopis, 2011; De Valle et al., 2012; Rocha et al., 2012). The route of access to the degree program in nursing was the baccalaureate for a majority of the sample, but of note, almost half of the students came through vocational education and training (*Formación Profesional*—FP); this channel has shown an increase in recent years. In Spain, vocational education and training are post-secondary studies aimed at labor insertion. They last for four years, and when these studies are completed, the student obtains the qualification of *Técnico Superior* (Advanced Technical Diploma) in that field.

The average age of the students is similar to that of the students in

Table 5
Instrument correlations of the CuPPAT.

Categories	D1: Usefulness of the tutorial Action Plan	D2: Opinion of the figure of the tutor and development of the tutorial	D3: Development of the Degree Final Project	D4: Usefulness and completeness of the Learning Folder
D1: Usefulness of the tutorial Action Plan	1			
D2: Opinion about the Tutor and Development of the Tutorial	0.789*	1		
D3: Development of the Degree Final Project	0.701*	0.789*	1	
D4: Usefulness and completeness of the Learning Folder	0.431*	0.314*	0.359*	1
Total	0.889*	0.933*	0.876*	0.556*

* All the correlations are significant $p = 0.01$; Significance level $p < 0.05$.

Table 6
Factor load derived from estimation of the LS (least squares) of the confirmatory factor analysis (λ_{ij}).

Item	Factor 1	Factor 2	Factor 3	Factor 4
1	0.819*			
2	0.791*			
3	0.955*			
4	0.688*			
5	0.379*			
6	0.740”			
7	0.741*			
8	0.347*			
9		0.310*		
10		0.916*		
11		0.396*		
12		0.355*		
13		0.819*		
14		0.345*		
15		0.293*		
16		0.191*		
17		0.254*		
18		0.671”		
19		0.215*		
20		0.926*		
21		0.279*		
22			0.214*	
23			0.918*	
24			0.465*	
25			0.706*	
26			0.576*	
27			0.464*	
28			0.605*	
29				0.618*
30				0.618*
31				0.886*
32				0.853*
33				0.733*
34				0.482*
35				0.646*

* $p < 0.05$.

the study conducted by Ariño and Llopis (2011). It may be the case that in this sample the results were similar, because of the high number of nursing students passing through FP, who enter university at least one year later than those with the baccalaureate. Half of the nursing students were performing some kind of paid work, in contrast to other fields of study in which the percentage of students with paid jobs was considerably lower (Ariño and Llopis, 2011; De Valle et al., 2012). This may be explained by the fact that those with vocational training have greater access to the working world. On the other hand, almost three quarters of nursing students lived with their parents. In a study by De Valle et al., (2012) younger nursing students are not able to leave the nuclear family in which they were raised, and require the financial support of their family.

Regarding analysis of the CuPPAT items, while floor and ceiling effects exist in some items, the responses are distributed throughout the scale (totally agree, agree, disagree, and totally disagree) for all questions.

The results of this study show that the psychometric properties of the instrument to measure and monitor the perceptions of nursing students with respect to the TAP process (CuPPAT) are appropriate. A Cronbach's alpha value of 0.93 was obtained for the questionnaire as a whole, as well as values > 0.70 for each of the dimensions (Nunnally and Bernstein, 1994). This internal consistency places it in the same class as other instruments, such as that reported on in *Mentoring Benefits Questionnaire among Pediatric Nurses* (Jakubik, 2012), with values above 0.90. With regard to construct validity, confirmatory factor analysis demonstrated that the questionnaire comprises a factor structure with four dimensions, or latent variables, and 35 items.

Regarding the items, factor analysis showed that all the items

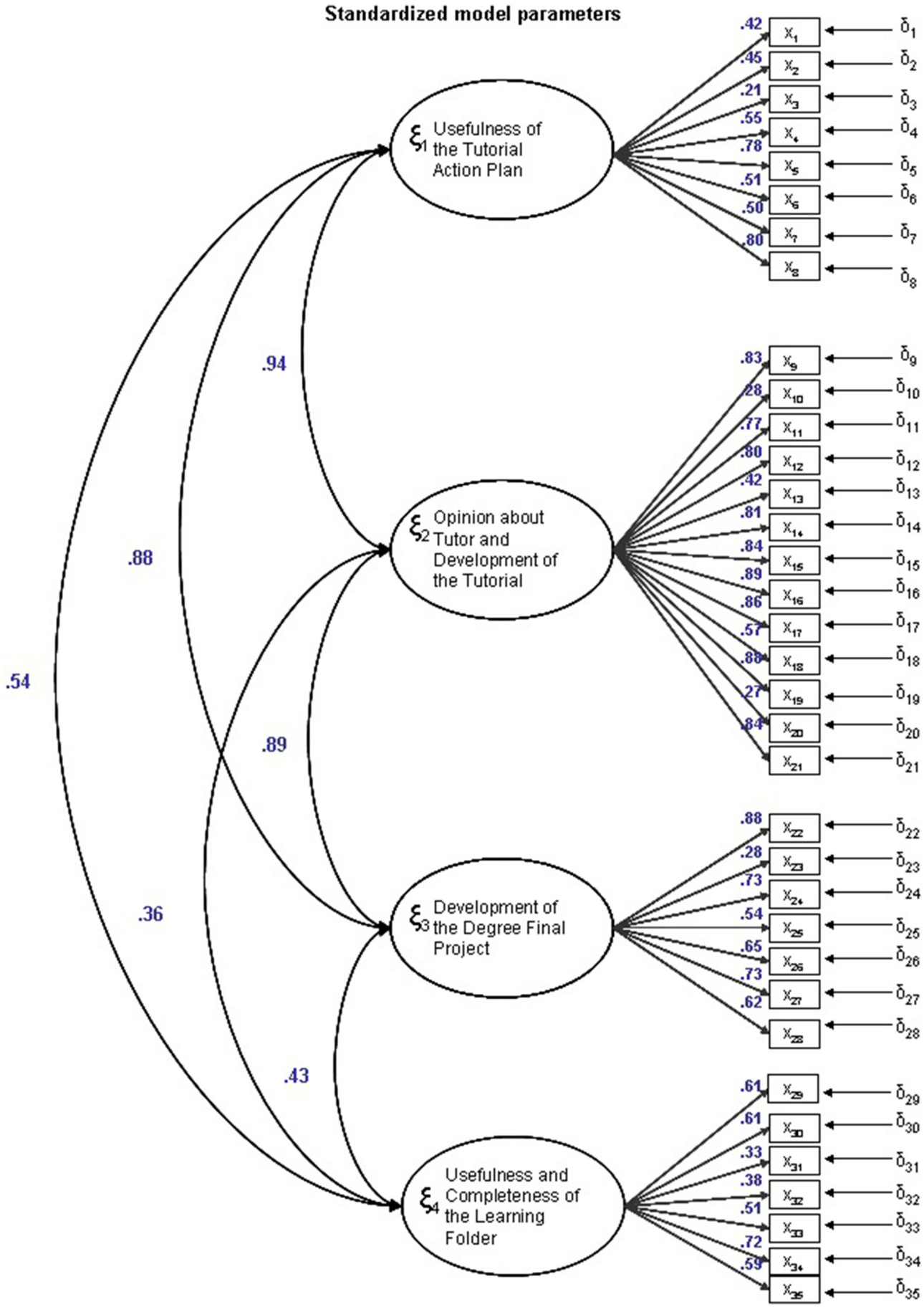

Fig. 1. Standardized model parameters.

Table 7
Indices of goodness of fit of the confirmatory model.

Index	Valor
BBNFI	.839
BBNNFI	.887
GFI	.895
AGFI	.958
RMSEA	.062
α Cronbach	.938
Goodness of fit test	χ^2 = 2052.035; gl = 554; p = 0.000
Reason for fit	χ^2/gl = 3.70 entre 2–6

BBNFI: Bentler Bonnet Normed Fit Index. BBNNFI: Bentler Bonnet Non-Normed Fit Index. GFI:
Goodness of Fit Index. AGFI: Adjusted Goodness of Fit Index. RMSEA: Root Mean Standard Error of Approximation.

carried an appropriate factor load. With respect to the absolute fit models analyzed, the GFI showed a value of approximately 0.90, indicating an appropriate model. Additionally, the Root Mean Square Error of Approximation (RMSEA) had an acceptable value (0.062) (Browne and Cudeck, 1993). Turning to the incremental fit models—the AGFI, the BBNFI and the BBNNFI—all had values of approximately 0.90, again indicating an appropriate model. The parsimony normed X^2 fit index had a value of 3.70, with acceptability in the range 2–6 (Hu and Bentler, 1998).

For analysis of the convergent-discriminant validity, the correlations between the overall score for the questionnaire and each of its component dimensions were analyzed. It was observed that all the correlations were significant and that those with the overall score were higher, thereby confirming the established hypothesis that the correlation between each dimension and the overall score should be stronger than the correlations between the different dimensions (Fayers and Machin, 2000).

5.1. Limitations

Firstly, the possibility of response bias is an inherent problem with any self-assessment questionnaire. The power of the tutor over the student may also have an impact on the response. These possible biases have been minimized by conducting the questionnaire anonymously. Moreover, no researcher was participating in the TAP as a tutor at the time of the study.

Secondly, the specific characteristics of the nursing students in the sample preclude generalization of the results to other populations of interest. However, this instrument can be used in other university studies in which there is a TAP with long-term follow-up throughout the academic program.

Future studies should examine the psychometric properties of this instrument in relation to other variables and in other samples populations in both educational and professional settings. It would also be of interest to investigate the predictive capacity (sensitivity and specificity) of the CuPPAT, as well as its stability over time.

6. Conclusions

The psychometric properties of the CuPPAT are favorable, so it may be concluded that the results indicate that the questionnaire is an essential instrument for measuring and monitoring the perceptions of nursing students with respect to the TAP process, both from the overall perspective of the construct of tutoring and from that of the four dimensions that were identified.

6.1. Ethical considerations

The study was approved by the Clinical Investigation Ethics Committee of the San Joan de Déu Foundation. The participants were informed about the authorship and purpose of the investigation and were ensured that all the data obtained would remain anonymous.

Authors' contributions

As noted in the paper, JR and NR conceived the research and designed the study. As well as preparing the article along with DM and OR, they participated in data collection. JR and DM analyzed the results as well. All of the authors critically reviewed the article and approved the final version.

Conflict of interest

The authors report no current or potential conflicts of interest.

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