Innovative Work Behavior: Development and Validation of a Scale for Teachers[1]

Comportamiento Laboral Innovador: Desarrollo y Validación de una Escala para Docentes

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Abstract

The innovative work behaviour constitutes a set of actions of opportunity exploration, idea generation, idea promotion and idea realization. Although generic scales are available, there are none to explore innovative behaviour in teaching practice. The objective of this study was to develop and validate a scale to measure teacher's innovative work behaviour. It was designed as an instrumental- transversal study. A sample of 458 primary school teachers (86.4% women, M_{age} = 34.67 years, $M_{seniority}$ = 7.77 years) answered the developed scale with other standardized measures of psychological capital and job satisfaction. Factor analyses indicated a tetra-factorial structure that explained 69% of the total variance. Twelve items with high reliability integrated the final version of the scale. Evidence of convergent, discriminant and concurrent validity was obtained.

Palabras Clave: Innovative Behavior, Teachers, Scale, Statistical Validity, Psychometric Properties

Resumen

El comportamiento innovador constituye un conjunto de acciones tendientes a la detección de oportunidades de mejora y la producción, socialización y realización de ideas novedosas. Se trata de un tipo específico de comportamiento proactivo que apunta a promover nuevas ideas, procesos, productos o procedimientos que

se consideran útiles y beneficiosos. Si bien se dispone de herramientas genéricas para medir la conducta innovadora, los instrumentos diseñados para evaluarla en la práctica docente son escasos. Frente a este panorama, el objetivo del presente estudio fue desarrollar y validar una escala para medir el comportamiento laboral docente. Se diseñó una investigación empírica instrumental de corte transversal. Se elaboró un conjunto inicial de 42 ítems, de los cuales 30 integraron efectivamente la versión preliminar de la escala. Se efectuó una prueba piloto sobre una muestra de 64 docentes, a partir de la cual se examinó la capacidad de discriminación de los reactivos. Producto de este análisis se eliminaron 13 ítems. Los 17 ítems restantes fueron administrados a una nueva muestra de 458 docentes de nivel primario (86.4% mujeres; M_{Edad}= 34.67 años; $M_{antigüedad}$= 7.77 años), conjuntamente con medidas estandarizadas de capital psicológico y satisfacción laboral. Análisis factoriales (exploratorio y confirmatorio) indicaron una estructura tetrafactorial que explicó el 69% de la varianza total. Se obtuvo evidencia de la validez convergente y discriminante de las cuatro subescalas. La validez concurrente quedó demostrada a partir de las correlaciones obtenidas entre las variables estudiadas. La versión final de la escala quedó integrada por 12 ítems que miden cuatro dimensiones del comportamiento innovador con elevados índices de consistencia interna y confiabilidad. Se discuten los hallazgos y se señalan las fortalezas y limitaciones del estudio realizado.

Keywords: **Comportamiento Innovador, Docentes, Escala, Validez Estadística, Propiedades Psicométricas**

In a social scenario marked by the complexity and speed of changes, the innovation has been positioned as a strategic issue for all social actors, among which the school is no exception. Innovation can be understood as the transformation of an idea into a new or improved product or process. It is an essentially creative and transformative activity, capable of developing at an individual or organizational level (Oeij, Rus, & Pot, 2017; Palazzeschi, Bucci, & Di Fabio, 2018). Applied to the educational field, innovation is understood as the novel configuration of resources and practices, focused on producing improvements. From this perspective, innovation involves positively transforming curricular or pedagogical aspects or processes in order to accomplish a higher quality in students learning (United Nations Educational, Scientific and Cultural Organization, UNESCO, 2016). However, the strategies that emerged as a result of global educational plans and reforms developed in a technocratic dome, repeatedly proved to be ineffective. Hence, innovation is now conceived as an internal process of the school, with teachers being heavily involved in it (Rivas-Navarro, 2000).

Based on the acknowledgment that innovations can be developed and applied in relation to various aspects or processes, Rivas-Navarro (2000) differentiates between (a) pedagogical innovations, originated from the teacher's initiative and developed at the classroom level in the context of their pedagogical practice; (b) educational innovations, emerged at the request of teachers and/or principals and applied in the school environment in relation to various institutional processes and; (c) socio-educational innovations, promoted by different social agents with the collaboration of school actors and implemented in the socio-community environment of the educational institution. The present study focuses exclusively on pedagogical innovations, considering teachers and their behaviors as a unit of analysis. In this sense, the term innovative work behaviour is adopted to designate the innovation that occurs exclusively at the individual level (De Spiegelaere, Van Gyes, & Van Hootegem, 2018; Janssen, 2000)

The innovative work behaviour represents the efforts invested by a person to create, propose and develop novel ideas. It is a specific type of proactive behaviour; that is, a voluntary, self-motivated and change-oriented behaviour that aims to promote new ideas, processes, products or procedures that are considered useful and beneficial (De Jong & Den Hartog, 2010; Janssen, 2000). Such behaviour exceeds the prescriptions of the position, referring to

the employee's discretionary actions that go beyond formal expectations and, therefore, are not directly or explicitly recognized by the organization's reward system (De Spiegelaere et al., 2018; Janssen, 2000; Oeij et al., 2017; Palazzeschi et al., 2018).

Academic literature conceives innovative behaviour as a multi-dimensional construct, consisting of at least three dimensions. In this sense, Janssen (2000) define innovative work behaviour as the set of actions that tend to the generation, promotion and realization of novel ideas that seek to benefit the individual or organizational performance through the introduction of positive changes (Janssen, 2000). From this theoretical perspective, innovation begins with the conception of a useful, original or novel idea that seeks to respond to inconsistencies or problems perceived in the work environment (idea generation). The next task is the promotion of the idea with the aim to obtain sponsors and build the necessary coalitions to support it (idea socialization). The innovative process concludes with the development of the novel idea (idea realization), through the design, production and application of a prototype or model capable of being experienced and evaluated (De Jong & Den Hartog, 2010; De Spiegelaere et al., 2018; Janssen, 2000; Oeij et al., 2017).

In addition to the idea generation, promotion and realization, some authors have identified other aspects of innovative work behaviour. In this sense, Messmann, Stoffers, van der Heijden, y Mulder (2017) have pointed out that the exploration of opportunities constitutes a key dimension, given that it covers the detection of needs and possibilities to introduce improvements and positive changes.

Innovative teacher behaviour can manifest itself in a wide variety of ways that widely transcend the sheer integration of technology. In this sense, for example, it is possible to identify innovations related to the layout of school spaces, the periodization of time and the use of pedagogical instruments; innovations related to curriculum content, pedagogical methods, teaching strategies, and learning activities; and innovations related to roles, relationships, objectives, values and goals. In turn, such innovations may involve adding, reinforcing, eliminating, replacing or restructuring content, objectives, activities, instruments, etc. (Messmann et al., 2017; Rivas-Navarro, 2000). Ultimately, innovation is not about absolute invention in a strict sense. The innovative behaviour constitutes an invention related to a singular context, where a new practice comes to produce a rupture with the routine practices that defined that space up to that moment (Messmann et al., 2017; Rivas-Navarro, 2000).

Although there are some generic tools available to measure innovative behaviour at work (Lukes & Stephan, 2017), there are not any instruments designed to assess the peculiarities of innovative behaviour in teaching practice. Therefore, in order to cover an empirical-instrumental gap, the objective of this research was to develop and validate a scale that allows the evaluation of the innovative behaviour of Argentine teachers.

Method

Design

The present research is an instrumental study (Ato, López, & Benavente, 2013), that were carried out through a Pilot Study and a Main Study, respectively.

Pilot study

The objective of this study was to elaborate the prototypical version of the Innovative Work Behaviour Scale for Teachers. For this purpose, a thorough review of the international literature on innovative behaviour in the workplace (De Spiegelaere et al., 2018; Oeij et al., 2017; Palazzeschi et al., 2018) and in the teaching profession in particular was carried out (Messmann et al., 2017; Rivas-Navarro, 2000; Thurlings, Evers, & Vermeulen, 2015). At the same time, three focus-group meetings and four in-depth interviews were conducted in order to explore the particular configurations assumed by the innovative behaviour of Argentine teachers. On this occasion, a theoretical sample composed of 10 teachers was studied. Throughout the meetings, the participants

were asked to remember and describe episodes in which they had effectively imagined, suggested and/or implemented some novel idea in order to improve their practice.

From the collected material, 42 items were written, of which 24 were prepared based on the information provided by the focal meetings and interviews, and the remaining 18 were derived from the analysis of the specialized literature (De Spiegelaere et al., 2018; Messmann et al., 2017; Oeij et al., 2017; Palazzeschi et al., 2018; Rivas-Navarro, 2000; Thurlings et al., 2015). In order to ensure adequate content validity, the 42 items were subjected to evaluation using the expert method, in which three judges (one occupational psychology specialist, one educational psychology specialist and another psychometrics specialist) examined the items. In this sense, the judges were asked to evaluate the adequacy of the items set to explore the construct; and to classify each item as typically representing the exploration and identification of opportunities, the generation, promotion or realization of novel ideas. The inter-judge concordance rates calculated from the classification of each of the remaining statements, yielded highly satisfactory values ($k > .82$; $p < .001$). As a result of this preliminary analysis, 12 items containing terms that could hinder the understanding of the respondents were eliminated.

Participants

A non-probability sample of 64 teachers of primary school belonging to different educational institutions located in Rafaela. The 95% of the participants were women. The mean age was around 29 years old ($SD = 5.77$) and the mean seniority was 3 years ($SD = 3.69$).

Instrument

The pilot version of the Innovative Work Behaviour Scale for Teachers was constituted by a total of 30 items. The items were presented with a Likert-type format of frequency, varying between 1 (never) and 5 (always). The data collection protocol also included a sociodemographic information section in order to describe the sample under study.

Procedure

The data collection was carried out in four educational institutions selected by availability. The participants who voluntarily agreed to participate completed the scale during working hours and in the physical places designated by the institutions for this purpose. The objectives of the study were made explicit and the anonymity and confidentiality of the information provided were ensured. Once the application of the scale was completed, a space was created so that the participants could express their opinion on the tool in development (for example, the relevance of the items, possible ambiguities, clarity of the wording, the time required to complete it, etc.). These observations were capitalized to perfect the instrument, facilitating the necessary semantic and syntactic adjustments.

Analysis strategy

The discrimination capacity was examined by contrasting the medians of each item; an alternative that corresponds more to the type of ordinal level measurement with which the Likert scale operates. To do this, the median value of each item was first determined by combining the groups consisting of 25% of the subjects with the highest scores and 25% of the subjects with the lowest scores on the scale. Then the values were dichotomized in a contingency table of 2 x 2 for each item, and the chi-squared statistic was computed. Those items whose chi-squared indicated significant differences will be selected. The internal consistency of the instrument was determined through the calculation of the item-total score correlation and the analysis of the reliability of the test if the item is eliminated. The response frequencies observed in the various categories of the scale were examined. The distribution of the variables was analyzed by means of the calculation of descriptive statistics (means and

standard deviations) and asymmetry coefficients and univariate kurtosis (Tabachnick & Fidell, 2013).

Main study

The objective of this study was to determine the factorial structure and the psychometric properties of the developed scale. For this purpose, evidence of internal validity, criterion validity, and reliability of the instrument were obtained.

Participants

A non-probability sample of 458 teachers from public and private schools located in Rafaela was studied. The average age of the participants was 34.67 years (SD = 8.84). The average seniority was 7.77 years (SD = 7.88). 89.5% of the sample worked in state-run organizations. The 86.4% of the sample were women.

Instruments

Participants individually completed a booklet that contained: in the first page, the objective of the study and the instructions to answer the questions; in the second page, the informed consent form and; in the remaining pages, the items corresponding to the instruments described below. These items were randomly distributed. The collection protocol also included a section of sociodemographic characteristics in order to characterize the sample under study.

Innovative work behaviour. It was measured by a total of 17 items resulting from preliminary analyzes according to the pilot study (ex.: "I design novel activities to promote the learning of my students"; α = .87). The items were presented with a frequency Likert-type format, varying between 1 (never) and 5 (always).

Job satisfaction. It was evaluated and measured by the Generic Job Satisfaction Scale (Author). The instrument is composed of seven items (ex.: "In my job, I can apply all my abilities and capabilities" α = .87)

valued on a Likert-type scale of 5 points (1 = totally disagree, 5 = totally agree).

Psychological capital. It was measured with the homonymous scale developed by Author. The instrument is composed of 16 items with a 5-point Likert response format (varying from 1 = *never* to 5=*always*), which measure the four aspects of the psychological capital at a rate of 4 items per scale: hope (ex.: "I have faith that finally my work issues will improve"; α= .77); optimism (ex.: "I see the positive side of each work project I undertake"; α = .82); resilience (ex.: "when I have difficulty in my job, I successfully overcome it"; α = .80), and self-efficacy (ex.: "If I try hard enough, I can solve difficult problems in my job"; α= .88).

Procedure

The data collection was carried out within those educational institutions that, after acknowledging the objectives of the study, agreed to be part of the research. In all cases, the participants individually completed the instruments during working hours and in the physical places designated by the directors for that purpose. No incentives of any kind were offered. The techniques administration was in charge of personnel trained for this purpose. Its execution was carried out in accordance with the ethical guidelines established by the American Psychological Association. The approximate time to complete the questionnaire was 20 minutes. In each case, the objective of the study was previously explained; the instructions to answer the questions were made explicit, and the anonymity and confidentiality of the information provided were ensured. All subjects who agreed to participate voluntarily in the study signed the corresponding informed consent.

Analysis strategy

The processing and analysis of data was done with the programs Factor (Lorenzo-Seva & Ferrando, 2006), SPSS (version 22.0), and EQS (version 6.3).

Exploratory analyzes. The data were examined with the aim of detecting the presence of missing values and extreme scores. The analysis of lost data consisted, mainly, in assessing their proportion and the possible presence of biases in their distribution. For this, the Little's Test of Missing Completely at Random was applied. Atypical cases were identified by calculating Z scores and Mahalanobis squared distances. The distribution of the variables was analyzed by means of the calculation of descriptive statistics (means and standard deviations), coefficients of asymmetry and kurtosis, and discrimination indexes (from the computation of corrected item-total correlations) for each of the items. The Mardia Standardized Multivariate Normality Coefficient (Hair Black, Babin, Anderson, & Tatham, 2010; Tabachnick & Fidell, 2013) was computed.

Factorial analyzes. On one half of the sample, an exploratory factorial analysis (EFA) was carried out, after obtaining the sample adequacy indexes (Kaiser-Meyer-Olkin and Bartlett's sphericity tests). Due to the ordinal nature of the data, the polychoric correlation matrix and the Unweighted Least Squares method were used (Hoffmann, Stover, De la Iglesia, & Fernández-Liporace, 2013). To determine the number of factors, the information provided by (a) the Kaiser-Guttman or latent root criterion; (b) the screen test or fall contrast criterion and; (c) optimized parallel analysis, was considered. In the latter, 5000 sub-matrices were randomly extracted, and the minimum rank analysis was implemented. The extraction of the suggested factors was carried out, opting for the Promin oblique rotation, since there was a presumption that the elements of the scale were related. The criterion for the item's selection was that they weighted .40 or more on the factor and that they did not saturate more than one factor at the same time (Lloret-Segura, Ferreres, Hernández & Tomás, 2014).

A confirmatory factorial analysis (CFA) was carried out on the other half of the sample. The strategy of rival models was chosen (Hair et al., 2010), contrasting the model derived from the EFA with two alternative models suggested by the literature and empirical evidence (De Jong & Den Hartog, 2010; Janssen, 2000). To estimate each model, the maximum likelihood estimate method was used with the Satorra-Bentler (SB) robust correction. To evaluate the goodness of fit, it was analyzed that: (a) the $SB\chi^2$ index on the degrees of freedom ($SB\chi^2/gl$) was less than 3; (b) that the Comparative Fit Index (CFI) reached values equal to or greater than .90; and (c) that Root Mean Square Error of Approximation (RMSEA) was less than .05. Likewise, the Akaike Information Criterion (AIC) was examined, knowing that the lower its value, the more parsimonious the model (Bentler, 2006; Hair et al., 2010).

Validity analyzes. Convergent and discriminant validity were determined by calculating Average Variance Extracted (AVE) and its square root, respectively (Cheung & Chang, 2017). The AVE allows estimating the common variance between the indicators and their latent factor, considering that values higher than .50 indicate that more than 50% of the construct variance is due to its indicators. On the other hand, values of the AVE square root higher than the correlation between the latent factors show that each construct shares more variance with its indicators than with the other constructs. The criterion validity was obtained from the calculation of the correlations between the scores of the used scales, using the Spearman's rank correlation coefficient.

Reliability analyzes. Evidences of reliability were established based on the calculation of the composite reliability coefficient (H) and McDonald's Omega coefficient (ω) with their respective confidence intervals. Values of H higher than .70 are considered evidence of adequate reliability. The coefficient ω is an internal consistency estimator based on factorial loads, which indicates the proportion of variance attributed to the totality of the common variance. Values between .70 and .90 are considered acceptable (Domínguez-Lara, 2016).

Results

Pilot study

The performed contrasts showed that 13 items showed low discriminative capacity (χ^2 with $p > .05$); while the frequency analysis showed that not all response cate-

gories were observed. Considering that an increase in reliability could be obtained, it was decided to disregard those items. The 17 resulting items showed adequate coefficients of asymmetry and kurtosis, as well as an appropriate internal consistency (α = .87).

Main study

Exploratory analyzes. The percentage of data lost in each item did not exceed 5%, finding missing values in item 2 (2.06%), in item 4 (2.87%), and in item 7 (3.11%). Little's test indicated that the pattern of missing values was completely random (MCAR; $\chi^2_{(144)}$= 152.08, p= .215). These data were replaced mathematically by values calculated from the EM (expectation-maximization) method. The values of asymmetry and univariate kurtosis were adequate (less than +/- 2). However, the coefficient of standardized multivariate kurtosis was located outside the range +/- 3 recommended by the literature (Bentler, 2006). Five univariate atypical cases were found by calculating standard scores (Z values > +/- 3), while the Mahalanobis test did not indicate the existence of multivariate outliers (Hair et al., 2010; Tabachnick & Fidell, 2013). Finally, the item-total correlations were all positive. Table 1 reports the descriptive statistics, asymmetry coefficients, and kurtosis, coefficient of multivariate kurtosis and discrimination indexes.

Factorial analyzes. In response to the recommendation of having a minimum of 200 observations to ensure that the factorial solution was stable and generalizable (Lloret-Segura et al., 2014), 229 cases were randomly selected. The data matrix was considered factorizable (Bartlett's sphericity test: $\chi^2_{(136; 229)}$ = 2356.13, p=.000; Sampling adequacy index of Kaiser-Meyer-Olkin= .82). The Kaiser-Guttman criterion identified four factors with eigenvalues greater than 1.0; being of 7.91; 2.00; 1.42 and 1.19, which would explain 69% of the total variance of the items. The screen test also indicated the presence of four factors. In the same line, the optimized parallel analysis suggested 4 factors with eigenvalues (47.0, 13.3, 12.1, and 10.2) on the 95th percentile of the eigenvalues

obtained in the random samples (12.9, 12.1, 10.8, and 6.4). Five items were eliminated due to cross saturations or for being below the established limit. The EFA was repeated on the 12 items, confirming the tetra-factorial structure. Table 1 reports the pattern coefficients and structural coefficients. According to the content of the items, these factors were dubbed as "opportunities exploration" (Factor 1), "idea generation" (Factor 2), "socialization and resources search" (Factor 3), and "idea realization" (Factor 4).

On the other half of the sample (n=229) a confirmatory factorial analysis was carried out, contrasting the tetra-factorial model suggested by the EFA (Model A) with two rival models; namely:

Model B: unifactorial model integrated by a general factor of innovative teacher behavior, 12 items as observable indicators and their respective measurement errors

Model C: a trifactorial model with 12 items as observable indicators and their respective measurement errors, composed by three correlated factors identified as "idea generation" (that joins the items corresponding to the opportunity exploration factor and the generation factor), "socialization and resources search" and "fulfillment of ideas." The adjustment indexes are reported in Table 2. As can be observed, although the tetra and trifactorial models present similar indexes, the AIC criterion suggests that the four-factor alternative is slightly more parsimonious, therefore, it has been decided to keep it as the most suitable solution.

Validity and Reliability Analyzes. Table 3 shows the correlation coefficients between the latent and visible factors, the values corresponding to the AVE index and its square root, and the reliability indexes.

The inspection of Table 3 shows that innovative behaviour is associated in the expected direction with the rest of the studied variables, presenting positive associations with job satisfaction and psychological capital. In turn, the values obtained in the AVE coefficient and its square root indicate that the Teaching Innovative Behaviour Scale has an adequate convergent-discriminant validity; while reliability indexes show that the instrument has high consistency and composite reliability.

Table 1

Descriptive statistics, coefficients of asymmetry and kurtosis and discrimination indexes corresponding to the items of the Innovative Work Behaviour Scale for Teachers

ITEMS	X	SD	As	Ks	r i-total	Configuration matrix				Structural matrix			
						I	II	III	IV	I	II	III	IV
1. Estoy atento a las necesidades de aprendizaje de mis alumnos	3.65	1.11	-.42	-.67	-.61	**.67**	.22	.13	.09	**.77**	.18	.07	.10
2. Busco sistemáticamente nuevos métodos, técnicas o instrumentos de trabajo	3.61	1.20	.24	.31	.66	**.78**	.17	.11	.14	**.70**	.21	.15	.12
3. Examino críticamente mi práctica para ver cómo puedo mejorarla	3.75	.98	-.39	.93	.69	**.65**	.19	.08	.12	**.72**	.23	.17	.09
4. Imagino soluciones originales para los problemas que encuentro en mi trabajo	3.24	.96	.07	-.91	.58	.21	**.56**	.10	.08	.22	**.63**	.08	.12
5. Diseño actividades novedosas para promover el aprendizaje de mis alumnos	3.61	1.09	-.19	-.62	.52	.16	**.46**	.06	.13	.26	**.57**	.11	.15
6. Pienso nuevas estrategias para enseñar los contenidos	3.57	1.01	.40	-.72	.53	.24	**.45**	.12	.07	.19	**.54**	.13	.07
7. Convenzo de la importancia de mis propuestas a colegas, directivos, supervisores, etc.	3.29	.97	-.31	.34	.66	.12	.15	**.74**	.20	.12	.09	**.76**	.14
8. Trato de lograr la aprobación de mis ideas	3.54	1.02	.27	-1.10	.54	.09	.11	**.63**	.18	.18	.14	**.69**	.19
9. Consigo los recursos necesarios para poder llevar a la práctica mis ideas	3.25	.99	.02	-.70	.67	.13	.13	**.64**	.24	.15	.05	**.70**	.07
10. Modifico sistemáticamente mis estrategias de enseñanza para lograr mejores resultados	3.69	1.27	.06	-.08	.71	.10	.16	.23	**.76**	.12	.15	.17	**.78**
11. Incorporo recursos variados y novedosos para desarrollar los contenidos	3.75	1.00	-.13	.07	.83	.07	.12	.21	**.89**	.08	.13	.06	**.91**
12. Implemento actividades originales para favorecer el aprendizaje	3.52	1.12	.18	-.03	.50	.14	.14	.19	**.48**	.12	.08	.19	**.56**

Note: As: coefficient of asymmetry; Ks: kurtosis coefficient; Total r-i: item-total scale correlations. Opportunities Exploration (Factor I), Idea Generation (Factor II), Socialization and Resources Search (Factor III), and Idea Realization (Factor IV). Standardized Mardia´s multivariate kurtosis coefficient = 7.89. The items were not translated into English because the scale was validated in Spanish

Table 2

Adjustment indexes for the different measurement models of the Innovative Work Behaviour Scale for Teachers

MODEL	S-Bχ²	CFI	TLI	RMSEA	AIC
A	1.46	.88	.90	.05 [.03; .07]	242.55
B	1.54	.80	.77	.11 [.07; .14]	251.43
C	1.44	.81	.84	.08 [.06; .11]	244.81

Note: Model A: four factors correlated called "opportunities exploration", "idea generation", "socialization and resources search" and "idea realization" with 3 items as observable indicators each and their respective error terms. Model B: a general factor of innovative work behaviour with 12 items as observable variables and their respective measurement errors. Model C: three correlated factors called "idea generation" (6 items as observable indicators), "socialization and resources search" (3 items as observable indicators) and "idea realization" (3 items as observable indicators). Each observable variable carries, in turn, an error term

Table 3
Descriptive statistics, correlation indexes between latent and observable factors, average variance extracted and reliability of the variables under study

Variables	X	SD	1	2	3	4	5	6	AVE	√ AVE	ω	H
1. Opportunities Exploration	3.87	1.23	-	.82	.60	.61	.35	.64	.72	.84	.81[.77; .83]	.78
2. Idea generation	3.54	1.19	.63	-	.70	.81	.30	.60	.64	.80	.80[.75; .82]	.77
3. Socialization and resources search	2.91	1.22	.47	.45	-	.51	.37	.52	.71	.84	.77[.74; .80]	.72
4. Idea realization	3.35	1.36	.61	.68	.41	-	.33	.51	.75	.86	.89[.85; .91]	.85
5. Job satisfaction	3.48	1.17	.31	.25	.33	.31	-	.53	.80	.89	.87[.86; .92]	.83
6. Psychological capital	3.25	1.28	.55	.48	.42	.40	.48	-	.76	.87	.86[.84; 90]	.82

Note: The values under the diagonal correspond to the correlations between the observable factors. The values on the diagonal correspond to the correlations between the latent factors. All correlations are significant (p <.01)

Discussion

The aim of this study was to develop and validate an emic tool aimed at measuring the innovative work behaviour in teachers. For this purpose, an empirical instrumental two-stage research was developed. In a first study, a pool of initial items was elaborated based on the specific literature and the information gathered in focal meetings and in-depth interviews. Based on the expert judgment of three professionals, and the preliminary evidence regarding the ability to discriminate the items, the prototypical version of the scale was formed. This version was applied during the second stage of the investigation to a new sample of the target population. From the collected data, factorial analyses were carried out and validity and reliability indicators of the instrument were obtained.

In this sense, the exploratory factorial analysis showed that the items were distributed among four oblique factors, which were identified according to the content of the respective items under the labels of "exploration of opportunities", "idea generation," "socialization and resources search" and "idea realization." Through a confirmatory factorial analysis, the adjustment of this model was compared with two other alternative rival models: a unifactorial model and a three-factor model (Janssen, 2000). Since it has been argued that the exploration, generation, promotion and realization of novel ideas are manifestations rather than causes of the innovative work behaviour

(that is to say, innovative individuals show behaviors related to the search of opportunities, the generation, promotion and implementation of ideas, instead of innovative behaviour being a consequence of such actions); all models analyzed were reflective models.

The comparison of the different adjustment indexes obtained for each model showed that the tetrafactorial solution was the one that best represented the variance-covariance matrix of the studied sample. Therefore, this model was retained as the most suitable solution. These findings correspond with the conclusions of several authors who have also underlined the multidimensional nature of the construct (Messman et al., 2017). In this sense, the innovative teaching behaviour, as it is operationalized in this instrument, comprises a set of actions oriented to pedagogical innovation; namely: (a) the identification of learning needs and the acknowledgment of opportunities to improve the practice itself; (b) the conception of useful novel ideas that can capitalize these opportunities and/or respond to the needs of the students; (c) the sharing of such ideas among the people whose support is important, as well as the assurance of the means and resources essential for its realization and; (d) the implementation of such ideas through pedagogical interventions and concrete changes within the scope of the praxis itself.

Reliability and validity analyses showed that the instrument thus developed represents a tool with

adequate psychometric properties; comparable to other scales available for the measurement of the construct. In this sense, the analysis of the inter-correlations between the different aspects shows that they are positively associated with each other, being the associations between exploration of opportunities, generation of novel ideas and fulfillment, the highest. These results correspond with the findings of other instrumental studies (Messman et al., 2017), reinforcing the conclusion that these are related dimensions of the same construct. However, the convergent-discriminant validity of the scale is demonstrated by the values of the AVE index. Specifically, the variance captured by each of the four factors identified is greater than that due to measurement errors (AVE> .50); while, the square root of the AVE is greater than the squared correlation between each factor and the others (Cheung & Chang, 2017). Finally, the reliability indexes show that the instrument has high consistency and composite reliability, exceeding the minimum suggested by the literature (Domínguez-Lara, 2016).

Regarding the evidence of criterion validity, the found correlations correspond with those reported in other investigations. Such is the case, for example, of a recent Egyptian study (Sameer, 2018) implemented on a sample of 250 professionals, whose results reveal positive links between psychological capital, innovative behaviour, and job satisfaction. In the same line, other people (Thurlings et al. 2015) report significant associations between positive resources such as self-efficacy, hope, and optimism (constitutive facets of psychological capital), job satisfaction and innovative behaviour in teachers.

Despite these encouraging results, in line with the contemporary debate it should be noted that validity is not a matter of "all or nothing", and is far from being an intrinsic property of the instruments (Messick, 1980). On the contrary, the validity is defined according to the purpose of the measurement, the population to which it is addressed and the specific context of the application. Thus, an instrument can exhibit an acceptable degree of validity for a specific purpose and for a particular population, but not for others. In fact, the dimensions that underlie a given construct are not always stable and may vary according to the characteristics of the population in which it is studied (Boateng, Neilands, Frongillo, Melgar-Quiñonez, & Young, 2018). Therefore, it cannot be said conclusively that an instrument is valid, but that it exhibits an acceptable degree of validity for certain specific uses and with certain populations. Taking into account such warnings, it is necessary to conclude that the findings of this study should be interpreted with caution, and within the limits of the investigation carried out.

Among the main limitations of the research performed, it is necessary to mention the representativeness of the sample, which having been selected according to sampling by availability, prevents extrapolating the results to the total of teachers. However, by comparatively analyzing the studied sample and the target population, it surfaces that, for instance, the studied sample approximates in age and gender to the teaching population from Santa Fe in general, and from Rafaela, in particular. In this sense, according to published official surveys, 8 out of 10 teachers are women, and the average age ranges between 35 and 39 years. Likewise, the proportion of teachers who work in public and private establishments is also relatively well represented in this sample; given that in the Rafaela education system, 87% of the primary schools are state schools (Secretary of Education, Municipality of Rafaela, 2016).

Given that the stability of the analyzed instrument was not verified in the present study, it would be advisable that future studies explore the test-retest reliability of this adaptation, as well as its predictive and incremental validity with respect to other organizationally relevant results. In this sense, for example, the findings obtained show high correlations with job satisfaction, suggesting that innovative behavior could contribute to this attitude. It would be important that future studies delve into these conjectures and provide relevant empirical evidence.

The present proposal represents a genuine contribution to the organizational and educational literature since it covers a vacant area thanks to the development of a specific measurement instrument for the teaching population. It is expected that the

instrument developed here will become a valuable resource for academics of the subject, thus being able to replace instruments of foreign origin that, generally, do not reflect the idiosyncrasy of the Argentine population; and to replace the generic scales of work innovation that do not contemplate the specificities of the teaching profession.

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