Adaptation and validation of the Argentine version of an instrument to assess continuing professional development activities

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ABSTRACT

Introduction. Canadian researchers developed a self-administered questionnaire to ask participants of continuing professional development (CPD) activities about their intention to translate the knowledge acquired in the classroom into clinical practice. The questionnaire may facilitate quality improvement processes in such CPD activities.

Objective. To translate, cross-culturally adapt and validate the original English REACTION questionnaire (A theoRy-basEd instrument to assess the impACT of continuing professional development activities on professional behavIOr chaNge) for its use in Argentina.

Population and methods. The 12 questionnaire items were translated and cross-culturally adapted using a five-step process. The construct validity was assessed using an exploratory factor analysis, whereas reliability, with Cronbach's coefficient and the G coefficient.

Results. The final questionnaire version was administered to a sample of 133 physicians who attended 9 CPD activities at a teaching hospital in the Autonomous City of Buenos Aires (average age: 38 years; 23.3 %, men; 76 %, family physicians). The exploratory factor analysis showed 3 factors (social influence, confidence in one's abilities, and ethical judgment). Cronbach's coefficient was 0.82 and the G coefficient, 0.72.

Conclusions. The Argentine version of the REACTION questionnaire was adapted and validated to assess the impact of CPD centered on clinical skills training on physicians' intention to implement it in their practice.

Key words: *medical education, education, health care providers' attitude, surveys and questionnaires, attitude.*

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INTRODUCTION

There is a growing interest in the promotion of initiatives that allow knowledge translation in order to bridge the gap between the generation of scientific knowledge and the improvement of health care for the population.[1] This dynamic and iterative process involves multiple actors at different levels (individual, social, and organizational): patients, investigators, educators, policy-makers, and health care providers.

A component of the complex knowledge translation system is continuing professional development (CPD), which implies the acquisition and maintenance of new skills, together with a reflective practice and the consideration of contextual factors, in a practice community.[2,3]

The impact of CPD activities on the performance of health care providers depends, in part, on the strategies used for their design. Interactive sessions, including participatory techniques focused on the opportunity of practicing skills, promote a greater change in professional practice compared to more traditional activities, where interaction, discussion, and the implementation of new knowledge are scarce.[4]

In addition, the translation of new knowledge into clinical practice depends on health care providers' individual decisions, which are influenced by social and cognitive factors. Although different theoretical frameworks have been proposed that may account for professional behavior, the variables that have been identified as more relevant to predict behavior include confidence in one's abilities, beliefs about potential consequences,

moral standards, social influences, and habits.[5]

These aspects were considered by a group of Canadian investigators, who developed a questionnaire to assess the intention of CPD activities participants to implement acquired skills in their own practice.[6,7] The REACTION questionnaire (A theoRy-basEd instrument to assess the impACT of continuing professional development activities on professional behavIOr chaNge) is a simple, short and self-administered instrument that may provide information to facilitate quality improvement processes in CPD activities. The objective of this study was to translate and cross-culturally adapt this questionnaire for its use in Argentina, based on the original English version, and provide evidence about its validity and reliability.

POPULATION AND METHOD

The REACTION questionnaire is a multidimensional instrument made up of 12 items corresponding to 5 constructs: confidence in one's abilities, beliefs about potential consequences, moral standards, intention, and social influences. Each item in the instrument is assessed using a 7-point Likert-like scale, except for item 2, which includes 5 options.[7]

After obtaining the permission of the original authors,[7] we translated and cross-culturally adapted the REACTION questionnaire in accordance with the step sequence described by Ramada-Rodilla.[8] First, two non-licensed, bilingual translators independently translated the instrument directly into Spanish (Argentine version). After both translations were synthesized, the text was back-translated into English. Then, an expert panel made up of the participating investigators and translators gathered to obtain the pre-final, consolidated Argentine version. This version was administered in a pilot test to assess its applicability.

During the second stage, the instrument's validity was assessed in a cross-sectional, analytical study. Physicians who had been part of CPD activities centered on training a single professional skill were selected by consecutive sampling and invited to participate.

Eligible CPD activities were those that took place in person, in groups of not more than 50 participants, with learning objectives focused on behavior change, and about clinical or surgical topics. These activities had to include a single intervention, with at least 25 % of interaction (considered in terms of active exchange among participants and with the trainer), with a duration of, at least, 1 hour and, at most, 3 hours.[6]

The following participant data were registered: sex, age, and medical specialty. The ability targeted during the training session, the scope of implementation, the duration of the activity in hours, and any educational resource used were also recorded.

The REACTION questionnaire version obtained in the first stage of this study was completed, in paper format, in an anonymous and self-administered manner by participants, whose oral informed consent had been obtained in advance. The study was conducted between June 2017 and April 2018.

Statistical analysis

Data tabulation and descriptive statistics of the participants' demographic outcome measures were established. For continuous numerical outcome measures, the measures of central tendency and dispersion were estimated according to their distribution, whereas categorical outcome measures were described as proportions.

The questionnaire's construct validity was analyzed using an exploratory factor analysis (EFA), with the principal components technique and the Varimax rotation. Reliability was assessed using Cronbach's alpha coefficient (where a value between 0.70 and 0.90 was considered acceptable)[9] and the generalizability (G) coefficient. The PSPP and the EduG 6.1e software programs were used. A two-facet generalizability design was used: observations (O), as a differentiation facet, and items (I), as a generalizability facet: O/I. Such design allowed to estimate the variance components of these sources, as well as the interaction between observations and items. Since 10 % of questionnaires had missing data, and to provide more stability to the G coefficient, missing values were imputed using the mean substitution technique for valid values.[10]

Based on a total of 12 items included in the questionnaire, and considering that at least 10 observations were required for each item to perform the EFA, the sample size was estimated at 120 subjects.[10]

Ethical considerations

The protocol of this study was approved by the Research Protocol Ethics Committee of Hospital Italiano de Buenos Aires (HIBA) under protocol number 2864.

RESULTS

Stage I: Translation and cross-cultural adaptation

After completing the translation and cross-cultural adaptation process, the Spanish, consolidated Argentine version of the questionnaire was obtained (see *Annex*). The pilot test was done in 25 physicians who had attended a CPD activity aimed at providing training in subdermal contraceptive implant indications and insertion. Survey respondents did not suggest any changes to the questionnaire. The reliability analysis, through the G coefficient, showed a value of 0.87, with a variance of 36 % among participants.

Stage II: Instrument validity assessment

The questionnaire was administered to 133 physicians who attended 9 CPD activities. Participants' average age was 38 years (standard deviation [SD]: 9). Besides, 23 % were males and 76 %, family physicians. All activities lasted 2 hours. Different education strategies were implemented, including group discussions, clinical case discussions, role-playing, and use of manikins (*Table 1*).

A total of 120 complete questionnaires were included in the EFA. Although the original questionnaire[8] described 5 factors, in our analysis, items were grouped into 3 factors. Cronbach's alpha coefficient was 0.827. *Table 2* shows the EFA saturations for each item and alpha's coefficients for each factor. The absolute G coefficient was 0.72. The variance associated with the observation facet was 17.3 %.

DISCUSSION

This study established the translation and cross-cultural adaptation process of the REACTION questionnaire, originally developed by a team of Canadian experts on CPD and knowledge translation, and provided evidence on its validity for its use in Argentina. After administering the consolidated Argentine version of the instrument to 133 participants of 9 interactive CPD activities, it was observed that its reliability, measured based on Cronbach's alpha coefficient and the G coefficient, was adequate. In the EFA, the 12 items included in the questionnaire showed an acceptable saturation in 3 factors, called social influence, confidence in one's abilities, and ethical judgment.

In the factor that accounted for **social influence**, items 2, 6, and 9 showed saturation; these 3 items corresponded to the same construct in the original questionnaire.[7] The **confidence in one's abilities** domain was represented by the items corresponding to *intention* (1 and 7), *belief in one's abilities* (3, 5, and 11) and one element of the *moral standard* construct (10) of the original questionnaire. Lastly, in relation to **ethical judgment**, the items about *beliefs about consequences* (8 and 12) and the remaining item of the *moral standard* construct (4) showed an adequate saturation.

Although the difference between the number of factors identified in our study and those of the original questionnaire may be considered a limitation, it is believed that item regrouping is the result of the complex theoretical framework supporting this instrument, whose repetitive nature[11] may hinder the discrimination of certain constructs. The convergence of items related to intention, beliefs in one's abilities, and moral standard under the same factor may be explained by the integrated theoretical framework proposed by Godin et al.,[7] and may be consistent with the perceived self-efficacy concept. This term was coined by Bandura to describe a person's reliability in their ability to achieve the desired outcomes when performing a specific task, and the author claims it is a major determinant of intention.[12]

In addition, the convergence of items related to *beliefs about consequences* and *moral standard* under the factor called **ethical judgment** may

TABLE 1. *Characteristics of assessed continuing professional development activities*

Activity	No. of activities	No. of participants N (%)
Etonogestrel subdermal implant	3	50 (38 %)
Levonorgestrel-releasing intrauterine system	1	13 (10 %)
Insulinization	3	42 (31 %)
Benign paroxysmal positional vertigo	1	19 (14 %)
Myofascial pain syndrome of the upper trapezius	1	9 (7 %)

be associated with the moral principle of nonmaleficence.[13] Since items 12 and 8 ask about the consideration of a behavior that is the target of a CPD activity as harmful/beneficial or useful/useless, respectively, it seems acceptable that they both showed saturation in the same factor as item 4, which asks about considering such behavior as ethical or unethical.

The REACTION questionnaire allows to assess health care providers' intention to implement knowledge acquired in a CPD session and facilitate a reflective teaching practice. Although this is a critical step in the knowledge translation process, it is necessary to bear in mind that this instrument does not measure the actual extent of implementation in clinical practice or the quality of care received by patients.

In relation to the limitations of this study, it is worth noting that, for the validation process, the questionnaire was administered in the setting of different CPD activities offered by a single university center in the Autonomous City of Buenos Aires. It would be advisable to administer it in other continuous training settings of Argentina to document additional information about its validity in different academic environments.

Future studies would allow to broaden the range of recipients so that the questionnaire could be used in other health professions that usually require CPD activities for the maintenance of clinical skills. In addition, as suggested by the instrument authors,[10] it could be assessed for its implementation in other CPD activities focused on behavior change, not only on specific skills training. Also, and considering the apparent redundancy of certain items[11] and the convergence of factors observed in our study, a simplified version of the questionnaire may be developed to facilitate its applicability.

CONCLUSIONS

This study allowed to obtain the Argentine version of the REACTION questionnaire to assess the impact of CPD activities centered on clinical skills training on physicians' intention to implement them in their practice. ■

TABLE 2. *Exploratory factor analysis: saturation of the items in each factor*

Item	Question	Original questionnaire domain	Argentine version questionnaire domain		
			Confidence in one's abilities	Ethical judgment	Social influence
1	I intend to (*behavior*).	Intention	0.657		
3	I am confident that I could (*behavior*) if I wanted to.	Belief in one's abilities	0.776		
5	For me, (*behavior*) would be...	Belief in one's abilities	0.616		
7	I plan to (*behavior*).	Intention	0.556		
10	It would be acceptable to (*behavior*).	Moral standard	0.515		
11	I have the ability to (*behavior*).	Belief in one's abilities	0.718		
4	(*Behavior*) is the ethical thing to do.	Moral standard		0.629	
8	Overall, I think that (*behavior*) is...	Belief about consequences		0.865	
12	Overall, I think that (*behavior*) is...	Belief about consequences		0.844	
2	To the best of my knowledge, the percentage of my colleagues who (*behavior*) is...	Social influence			0.588
6	Now think about a co/worker whom you respect as a professional. In your opinion, does he/she (*behavior*)?	Social influence			0.718
9	Most people who are important to me in my profession (*behavior*).	Social influence			0.815
Cronbach's alpha			0.791	0.715	0.630

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Annex

REACTION questionnaire for continuing professional development activities (Argentine version)

1. I intend to *(behavior).*	Strongly disagree							Strongly agree
		1	**2**	**3**	**4**	**5**	**6**	**7**
		□	□	□	□	□	□	□
2.To the best of my knowledge, the percentage of my colleagues who *(behavior)* is...	**0-20 %**	**21-40 %**		**41-60 %**		**61-80 %**		**81-100 %**
	□	□		□		□		□
3. I am confident that I could *(behavior)* if I wanted to.	Strongly disagree							Strongly agree
		1	**2**	**3**	**4**	**5**	**6**	**7**
		□	□	□	□	□	□	□
4. *(Behavior)* is the ethical thing to do.	Strongly disagree							Strongly agree
		1	**2**	**3**	**4**	**5**	**6**	**7**
		□	□	□	□	□	□	□
5. For me, *(behavior)* would be...	Extremely difficult							Extremely easy
		1	**2**	**3**	**4**	**5**	**6**	**7**
		□	□	□	□	□	□	□
6. Now think about a co-worker whom you respect as a professional. In your opinion, does he/she *(behavior)*?	Never							Always
		1	**2**	**3**	**4**	**5**	**6**	**7**
		□	□	□	□	□	□	□
7. I plan to *(behavior).*	Strongly disagree							Strongly agree
		1	**2**	**3**	**4**	**5**	**6**	**7**
		□	□	□	□	□	□	□
8. Overall, I think that *(behavior)* is...	Useless							Useful
		1	**2**	**3**	**4**	**5**	**6**	**7**
		□	□	□	□	□	□	□
9. Most people who are important to me in my profession *(behavior).*	Strongly disagree							Strongly agree
		1	**2**	**3**	**4**	**5**	**6**	**7**
		□	□	□	□	□	□	□
10. It would be acceptable to *(behavior).*	Strongly disagree							Strongly agree
		1	**2**	**3**	**4**	**5**	**6**	**7**
		□	□	□	□	□	□	□
11. I have the ability to *(behavior).*	Strongly disagree							Strongly agree
		1	**2**	**3**	**4**	**5**	**6**	**7**
		□	□	□	□	□	□	□
12. Overall, I think that *(behavior)* is...	Harmful							Beneficial
		1	**2**	**3**	**4**	**5**	**6**	**7**
		□	□	□	□	□	□	□