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Assessment of the implementation of psychological first aid training: adaptation and validation of determinants of the implementation behavior questionnaire

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ABSTRACT

Objective: Psychological First Aid (PFA) is essential in emergencies and disasters. However, if incorrectly applicated, it can have negative consequences for the mental health of both those providing assistance and those receiving it. Therefore, it is important to have adequate tools to measure the implementation the quality of PFA training. The Determinants of Implementation Behavior Questionnaire was adapted and validated in a sample of PFA trainers in Chile.

Methods: One hundred and one trainers completed the questionnaire translated into Spanish. The instrument was subjected to a process of item reduction to ensure its viability, the adjustment of the instrument's factorial structure to the theoretical frameworks used in the field was analyzed and its reliability was evaluated.

Results: A scale with 18 items divided into 5 dimensions was obtained. The results indicated an acceptable fit to the theoretical model ($\chi 2/gl = 1.106$, CFI = .997, TLI = .996, RMSEA = .033). All dimensions showed good reliability ($\Omega = .668$ -.793).

Discussion: The instrument validly and reliably assesses behavioral determinants of implementation. An adapted, validated, short-form instrument will facilitate evaluations of the implementation of PFA training.

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Implementation; psychological first aid; trainers; determinants of implementation behavior questionnaire; emergencies and disasters

Introduction

Disasters and emergencies have significant psychosocial consequences for both the communities and the people affected by them. Likewise, they can result in social and economic disturbances, loss of community cohesion and reduction of social support (Barrales Díaz, 2019). Additionally, people affected by a disaster may experience a series of immediate reactions that can last from days to weeks, including feelings of loss, grief and guilt. In the same line, some people may experience long-term effects, such as post-traumatic stress disorder, depression, anxiety and substance abuse (León-Amenero & Huarcaya-Victoria, 2019; North & Pfefferbaum, 2013).

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To address the psychosocial consequences of disasters and emergencies, providing mental health support and resources both at the individual and community levels is fundamental. These resources may include Psychological First Aid (PFA), counseling services and community-based interventions to promote resilience and social support (León-Amenero & Huarcaya-Victoria, 2019). Under the name of PFA, there is a wide variety of programs that share the common characteristic of being adaptable and flexible interventions that are evidence-based, considered an essential component of disaster response, and recommended by various international organizations and agencies (Hermosilla et al., 2023; World Health Organization, 2011). These interventions are designed to address the immediate psychosocial needs of affected people and communities, including the assistance to cover necessities such as water and shelter, as well as emotional support for helping them deal with the consequences of traumatic events.

Some studies suggest that PFA has been effective in reducing distress symptoms and improving well-being in survivors of natural disasters and conflicts in different countries (Hermosilla et al., 2023). PFA has also been effective in armed conflicts and other humanitarian emergencies such as the COVID-19 pandemic (Blake et al., 2021; Prykhodko et al., 2021).

In contrast to the conventional health interventions for addressing specific disorders, PFA provides immediate support after a traumatic event rather than long-term assistance such as psychotherapy or traditional counseling(Everly et al., 2014). Additionally, PFA can be applied in diverse environments, for example, schools, hospitals and shelters, and delivered face-to-face, on the phone or through videocalls, which gives it more accessibility in situations where access is limited (León-Amenero & Huarcaya-Victoria, 2019).

PFA training does not only benefit the people affected by disasters but also the people providing treatment. Among its positive effects is the increase in mental health knowledge, which can help victims recognize signs of distress in themselves and others; the increase in participants' confidence and self-efficacy when providing effective support, which potentially increases resilience and crisis management capabilities (Everly et al., 2014). Likewise, PFA training reduces negative attitudes and stigma associated with mental health problems, and promotes supportive behaviors such as active listening, empathy, problem-solving, and hope, which can mitigate the negative effects of trauma (Horn et al., 2019).

PFA training

Efforts for disseminating this strategy have sought to achieve a diversity of possible suppliers at a low cost. Therefore, manuals have been aimed at both a general audience and workers from specific sectors (McCabe et al., 2010). For example, manuals have been translated into several languages (Jacobs et al., 2016), and designed for different training modalities (Lewis et al., 2014). Likewise, different replication modalities have been used, among which 'training of trainers' stands out for facilitating dissemination and skill transfer (Hambrick et al., 2014).

The objective of PFA training is to provide people with the knowledge and the skills to effectively respond to people who are in a state of distress and support meeting their emotional and practical needs. PFA training programs generally include the principles of creating a sense of safety and promoting calmness and connection of people

through social support, but they also may include the identification of signs and symptoms of PTSD and other mental health problems, as well as coping strategies and the promotion of resilience in affected people and communities (Wang et al., 2021).

PFA training is based on two types of methodologies: active, which emphasizes the creation of experiences and opportunities to apply the knowledge acquired, and passive, which uses unidirectional transmission of knowledge and skills. Table 1 describes the training methodologies most used in PFA training, which are often applied in a combined way. Role play stands out among these methodologies due to its capacity to reproduce emergency situations in controlled conditions, in which the principles of PFA are put into practice (Akoury-Dirani et al., 2015; Montenegro & Cabello, 2018).

The dose (quantity of sessions) through which the training is delivered is usually one day, with different blocks and times. The most usual time distribution often is a single day divided into two blocks, each one lasting 3 to 4 hours, a single 3-to-4-hour block, or a single 1.5-to-2-hour block (Chandra et al., 2014; Lewis et al., 2014; Montenegro & Cabello, 2018).

PFA training implementation

Despite the potential benefits of PFA training, it should be considered that a low-quality implementation of the training can pose risks to the individuals involved and exacerbate the negative consequences of emergencies and disasters (Hermosilla et al., 2023; Horn et al., 2019). Furthermore, it can bring about negative outcomes for survivors such as the stigmatization of mental health problems, lack of trust in healthcare providers, and low motivation to seek help, as well as increase in psychological distress, feelings of isolation, anxiety, stress, and physical health problems (Horn et al., 2019; Wang et al., 2021)

In this sense, it is known that in order to benefit from interventions that require intensive previous training – such as PFA – and to avoid the possible negative effects, their correct implementation is essential (Frank et al., 2020). However, researchers from the field have dedicated their efforts to assessing training in terms of its impact on the

Table 1. PFA training methodologies

Active methodologies	Passive methodologies
Role play. Simulation of emergency situations in which participants apply the skills learned from PFA, which allows trainers to provide modeling, molding and feedback.	**Face-to-face exposure to content.** One-way conference by PFA trainer, in which questions and comments from participants are allowed at some point.
Discussion groups. Group meetings between participants (face-to-face or not) in which experiences and knowledge about emergencies and PFA are shared. Meetings are moderated by trainers, who are responsible for synthetizing and linking the topics discussed to the conceptual and practical frameworks of the training.	**Online exposure to content.** Online training activities that should be completed individually. Among these activities are reading material, reviewing videoconferences and taking tests.
Group dynamics. Didactic activities that may range from presentations to group mobilization and icebreaking activities.	**Readings.** Readings to be conducted by participants before, during and after training (e.g. manual, leaflets).
Didactic resources for case presentation (generally supported with slides) Videos Slides and drawings Stories or testimonies	

knowledge, skills and attitudes of receivers at the expense of studying its implementation (Wang et al., 2021).

According to Nilsen (2015), implementation consists of a series of planned and conscious processes aimed at launching an intervention successfully, which implies that people follow a behavioral pattern governed by principles and prescriptions defined during the design of an intervention. Therefore, considering PFA training an intervention to achieve its effective implementation requires understanding the factors influencing trainers' behavior.

In implementation science, there are various models to identify and describe these factors, which are called determinant frameworks (Damschroder, 2020; Nilsen, 2015). Among the existing models is the COM-B, which proposes that capabilities (C), opportunities (O), and motivations (M) are the factors that influence implementation behavior (B) (West & Michie, 2020).

In this model, capabilities refer to the skills, knowledge, and resources needed to perform a behavior; these are divided into psychological capabilities, refers to an individual's capacity to engage in the necessary thought processes, comprehension, and reasoning to perform the implementation behaviour, and physical capabilities relates to physical skills, strength and stamina required to perform the implementati behaviour. Motivations refer to the internal processes that influence decision-making and behaviors, and are divided into reflective motivation, which includes planning and evaluation, and automatic motivation, which includes desires, impulses, and inhibitions. Opportunities correspond to external factors that facilitate or hinder the performance of a behavior. These are divided into physical opportunities, which include time, place, and resources, and social opportunities, which include cultural norms and social cues. Understanding these factors and specific subcategories can help identify behavior change strategies and improve the implementation of interventions in different contexts (Michie et al., 2011).

On the other hand, the Theoretical Domain Framework (TDF), originally developed by Michie et al. (2005), serves as a guide for evaluating the different variables that influence implementation behavior. It is the result of coherently integrating the positions of 33 theories into a simpler model of 14 domains that group the factors that influence implementation behavior (Cane et al., 2012).

In previous research, the TDF has been adequately integrated with the COM-B, with all the domains of the former mapped and assigned as subcategories of the constructs of the latter, as can be seen in Figure 1 (Cane et al., 2012). Meanwhile, the COM-B is integrated into an intervention design tool called the Behavior Change Wheel and can facilitate the use of information to generate improvements in implementation, the TDF provides greater detail in the analysis of the psychological determinants of implementation behavior (Atkins et al., 2017; West & Michie, 2020; Willmott et al., 2021).

Thus, the classification of the determinants of PFA trainers' behavior in any of the COM-B categories may allow for the identification of evidence-informed strategies that contribute to improve PFA training implementation. For example, if trainers are identified as having a low understanding of methodological strategies, the transfer model could be perfectioned through educational material, and supervision or mentorship sessions. In this way, an individual determinant approach could be useful for designing more effective implementation strategies adapted to the personal needs and characteristics of PFA trainers (Nilsen, 2015).

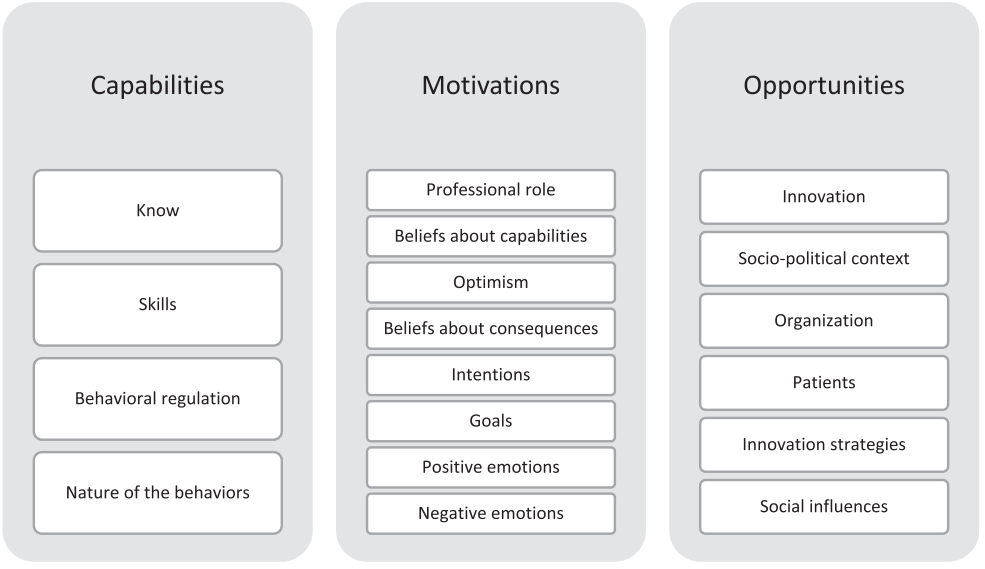

Figure 1. Integration between COM-B and TDF models.

Although there are studies that show the barriers and facilitators of PFA training implementation, such as the reviews by Wang et al. (2021) and Movahed et al. (2023), most of them center on training design (e.g. quality of materials, content adaptation, dose and duration, modality, schedules and standardization, among others) and organizational support (e.g. lack of funding, institutional structures, incentives, personnel selection, follow-up and monitoring, among others). This is a partial perspective that can be broadened by incorporating the COM-B and TDF models into the study of implementation, which allows for a more precise differentiation of individual variables. In this sense, it is necessary to begin to scientifically differentiate, for example, whether an implementation problem is people's perception of the manual, the graphic design of the manual, or the intervention transmitted through it. Each factor leads to interventions of a different nature. These questions support the use of both frameworks, COM-B and TDF, in this area of research.

To study the determinants of implementation from this perspective, diverse instruments have been proposed, such as interviews, focus groups and questionnaires (Birken et al., 2017; Michie et al., 2005). Among them, the Determinants of Implementation Behavior Questionnaire (DIBQ) has been one of the most used by researchers due to its psychometric properties and capacity to assess implementation determinants from different interventions (Atkins et al., 2017; Evans et al., 2022).

DIBQ has been used in diverse contexts and tests in mental health, medical care or psychological interventions online, via physiotherapy and hospital protocols, among others (Birken et al., 2017; deJonge, 2021; Evans et al., 2022; Huijg et al., 2014; Paukkunen et al., 2022; Ris et al., 2021). For example, through its application, usefulness perception and ease of implementation were found to be the most influential factors for the successful implementation of a training program in full care for patients with major depressive disorder (Schröder et al., 2020); while in a physiotherapy intervention for patients with

musculoskeletal disorders, findings show that the most important determinants for implementation are health care professionals' perceptions about the usefulness of the intervention and previous training (Ris et al., 2021).

Despite its usefulness, DIBQ presents some limitations that may affect its applicability in international studies and broader contexts. One of them is its length, as DIBQ is a 93-item questionnaire, which restricts its application in real contexts where time and resources are limited. In addition, there is no Spanish version available for use in Spanish-speaking countries. Likewise, its factor structure and reliability have not been tested in international studies, which compromises the validity and generalization of its results.

Purpose of the study

The effective identification of the factors influencing the implementation of PFA training is key for the successful transfer of knowledge and skills to practice in real emergencies and disasters. To this end, validated instruments adapted to the local context should be used. In low- and middle-income countries like Chile, the scarcity of these instruments poses a challenge and therefore the adaptation of the existing tools, such as DIBQ, is fundamental.

In this framework, the main goal of this study was to adapt and validate DIBQ in the Chilean population of PFA trainers in order to obtain a tool that improves the implementation of training programs in this area and potentially in other Spanish-speaking countries.

Materials and methods

Setting and Chile's PFA train-the-trainer model

The study is conducted in the context of the implementation assessment study of the national plan for PFA training, which was imparted in Chile by government institutions such as the Ministry of Health of Chile (MINSAL), the former National Office for Emergencies of the Ministry of Internal Affairs (today's National Service for Disaster Prevention and Response), the Ministry of Education, Chilean National Police, and the Forensic Medical Service, among others. Training is aimed at both professionals and non-professionals who play an active role in the response to people affected by disasters. The instruction content and methodology are a cultural adaptation of the Psychological First Aid: Facilitator's Manual for Orienting Field Workers (World Health Organization et al., 2013) that was refined through pilot trainings (MINSAL et al., 2018) by applying a 'training of trainers' model. Training has an approximate duration of 8 hours and follows an active-participative methodology that comprises reflection activities, role play and simulations.

On the other hand, the training of trainers is carried out in four blocks or modules, each lasting 4 hours, spread over two days. These courses are taught by universities in Chile, and a certification is granted issued by the OPS, UNICEF and MINSAL. The modules cover the following contents: (1) Reception and presentation of the participants, and introduction of the national civil protection system and the Mental Health model in

Disaster Risk Management in Chile; (2) theoretical bases of PFA, needs of people during an emergency or disaster, and simulation of a natural disaster; (3) principles of action, preparation of materials, collection of information about the emergency or disaster, and identification of safety measures; (4) training in simulation exercises and role play, bases for the care of people in vulnerable situations, general evaluation of the PFA model, bureaucratic aspects of the model used in Chile (MINSAL et al., 2018).

Participants

The sample used is by convenience. It was composed of 101 people who received the training from a PFA trainer and then applied the training with other people. On average, trainers conducted 2.1 workshops (Min: 1; Max: 10). The age range was 20 to 67 years, with a mean of 40.32 years ($SD = 10.319$). 66.3% of the sample were women. Regarding the main sociodemographic variables, people from 14 of the 16 regions in Chile participated; the Metropolitan Region had a higher representativity of 24.8%. Regarding the educational level of the participants, 62.4% were professionals in the area of Psychology, while the rest belonged to other social sciences, pedagogy or administrative positions. In addition, 21.8% of participants had graduate studies.

Measures

Determinants of implementation behavior questionnaire. The scale is based on the TDF model. It has 94 items with a 5-point Likert answer format, which ranged from 1 ('strongly disagree') to 5 ('strongly agree'), and a response estimated time of approximately 45 minutes. The items are distributed in 18 dimensions that showed reliability levels of $\alpha = .68$ a $\alpha = .93$ in previous research (Huijg et al., 2014).

Procedure

Two members of the research team, both bilingual and native Spanish speakers, one of them an expert in implementation sciences, performed a semantic translation from English to Spanish and vice versa to ensure that each statement had the same meaning. Based on their expert criteria, 7 items were removed from the original instrument as they did not fit the reality of PFA training, and 8 items were substituted before achieving a final version with 94 items in Spanish. These modifications can be found in Appendix 1.

For data collection, the DIBQ questionnaire was sent via e-mail to a database provided by MINSAL in the context of an assessment study. The database contained information from people who had participated in PFA trainings across the country, which were 827 people in total. The questionnaire was responded to by 117 PFA trainers, which represents a response rate of 14.15%. After eliminating incomplete questionnaires, the final sample was composed of 101 people.

Subsequently, the structure of the complete instrument was assessed through a confirmatory factor analysis (CFA) using the Weighted Least Squares Means and Variance method, while the reliability of each dimension and subdimension was measured through McDonald's omega index. Firstly, the instrument was tested considering the

original 18 dimensions of the TDF. However, a full adjustment of the instrument to this was not found. Therefore, with the intention of reducing the instrument to a number of items that would facilitate its future application, as well as the limitations caused by the sample size, it was decided to verify the adjustment of the instrument to the domains of the COM-B. This theoretical framework has been used previously to organize and simplify the TDF. It was expected to also serve as a theoretical basis for the subsequent item reduction procedure and for the final reduced version of the DIBQ. In this case, an adjustment was found to the three-category structure of the COM-B model (see Appendix 2). However, these results should be interpreted with caution due to the sample size.

Based on these previous results, with a factorial structure that does not fully adjust to what is expected by the TDF, with low reliability in some of the domains (<.65), added to the length of the instrument and the long application time that hinder its administration and reduce the number of complete responses, led the research team to carry out a process of reducing the instrument, a validation of its factorial structure, and an evaluation of its reliability.

Data analysis

The Psych and Lavaan packages for R were employed in data analysis. In order to obtain a more valid and reliable instrument for use in the PFA, the following item reduction process was carried out. Firstly, given that there are indications that the instrument fits the structure of the COM-B and taking into account that a small sample is being used, exploratory factorial analyses (EFA) were carried out treating each dimension of the model separately. The maximum likelihood method was used and, with the intention of maintaining all the contents of the TDF, only the item with the highest factorial load from each of the 18 domains, as can be seen in Appendix 3 (Acar Guvendir & Özer Özkan, 2022; Lloret-Segura et al., 2014).

The CFA was repeated with the remaining 18 items using Weighted Least Squares Means and Variance method to verify the factorial structure of the instrument, taking into account the integration of the COM-B and TDF models, as well as the structures suggested by the software. This estimation method was employed as it adapts well to ordinal variables, for which a normal distribution is not assumed, such as the variables under study (Li, 2016).

Finally, McDonald's omega index was calculated for scale and subscale reliability, having > .65 as fit criterion. This index is employed because due to being calculated in factor loads, it works well for estimating the reliability of multidimensional instruments, as it also does not assume a normal distribution of the variables (Kalkbrenner, 2021).

Results

Table 2 presents the different factor models tested in the study, using the 18 items selected after the elimination process. For Model 1, items were divided based on their theoretical belonging to the three COM-B dimensions. For Model 2, a second-order model, with three dimensions matching those from COM-B, and five first-order dimensions from an analysis of the modifications suggested by the software. Finally, Model 3 uses the five factors above without grouping them into second-order factors.

Table 2. Adjustment indexes obtained for the confirmatory factor analysis.

Adjustment index	Model 1 of 3 factors	Model 2 of 3 factors	Model 3 of 5 factors	Adjustment criteria
χ2	< .001	< .001	.197	>.05
χ2 /gl	2.194	19.730	1.106	< 2
CFI	.964	.438	.997	.90–1
TLI	.958	.344	.996	.90–1
RMSEA	.109	.433	.033	< .50 – .80

After the analysis, it was observed that Model 3 was the most suitable from a statistical point of view, and it coincided with the integration of the COM-B and TDF models (see Figure 2). The items of the Know, Skills, Behavioral regulation and Nature of the behaviors dimensions are grouped into one dimension that matches the description of the Psychological Capability; the items of Beliefs about capabilities, Optimism, Beliefs about consequences, Positive emotions and Negative emotions were grouped under the same factor, which was denominated Automatic Motivation; the items corresponding to Professional role, Intentions and Goals were also classified into one factor denominated Reflective Motivation; questions about Socio-political context, Organization and Innovation strategies were categorized as Physical Opportunity; and lastly, Innovation, Patients and Social influences make up the Social Opportunity dimension. Once the factor structure was established, the instrument was denominated DIBQ-18.

Table 3 shows the descriptive statistics for each dimension and item in the questionnaire, as well as the reliability calculations through McDonald's omega index and the factor loads of each item with its dimension.

To calculate the score obtained in each dimension, the mean of the scores obtained in each of their items was used after reversing the value of the item that assesses Negative Emotions. Physical Opportunity is the factor with the lowest score ($M = 3.360$; $SD = .905$), while Automatic Motivation is the factor with the highest score ($M = 4.252$;

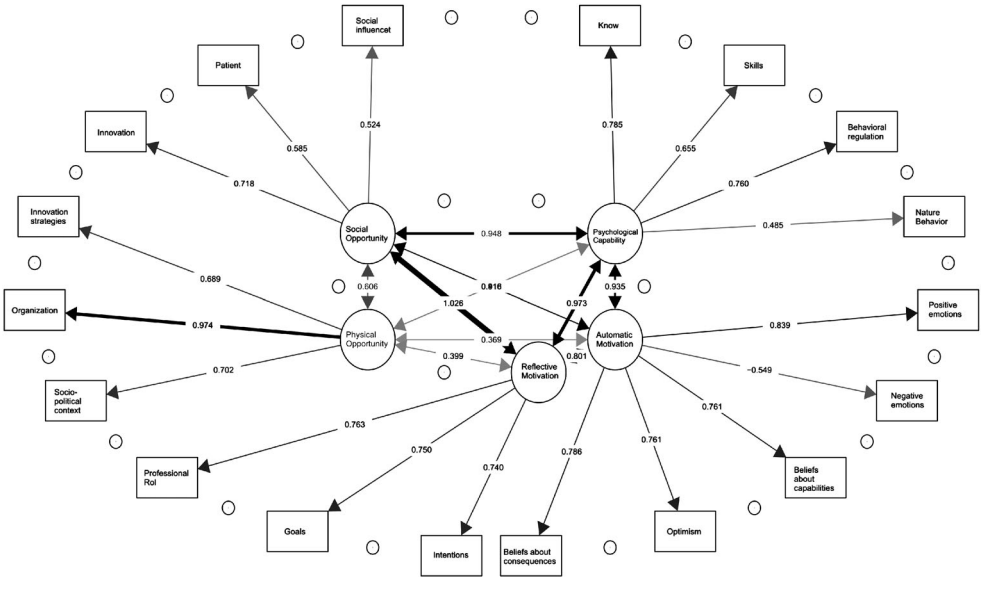

Figure 2. Model 3 AFC DIBQ-18.

Table 3. Descriptive statistics and reliability for each DIBQ-18 item

Domains	Items	M	SD	β	Ω
Psychological capabilities		3.904	.647		0.717
Know	Objectives of [intervention] and my role in this are clearly defined for me.	4.356	.672	.785	
Skill	I am practiced to deliver [intervention] following the guidelines.	4.079	.880	.655	
Behavioral regulation	I have a clear plan under what circumstances I will deliver [PA intervention] following the guidelines.	3.812	.924	.760	
Nature behaviors	Delivering [PA intervention] following the guidelines is something I do automatically.	3.257	1.007	.485	
Automatic Motivation		4.252	.678		0.688
Beliefs about capabilities	For me, delivering [intervention] following the guidelines is very easy.	4.099	.768	.761	
Optimism	I'm always optimistic about the future [intervention].	3.901	.964	.761	
Beliefs about consequences	For me, delivering [intervention] following the guidelines is very interesting.	4.422	.726	.786	
Positive emotions	When I work with [intervention] I feel cheerful.	4.238	.850	.839	
Negative emotions	When I work with [intervention] I feel sad.*	1.406	.710	- .549	
Reflective Motivation		3.581	.963		0.741
Professional Role	It is my responsibility as a [profession] to deliver [intervention] following the guidelines.	3.960	1.067	.763	
Intentions	I intend to deliver [intervention] following the guidelines in the next three months.	3.307	1.433	.740	
Goals	Delivering [intervention] is a personal goal.	3.475	1.055	.750	
Physical Opportunity		3.360	.905		0.793
Socio-political context	Local authorities provide sufficient support to interventions such as [intervention].	3.317	1.048	.702	
Organization	I can count on support from the management of the organization I work in, when things get tough guidelines.	3.515	1.073	.974	
Innovation strategies	[Implementing organization] provides sufficient intervention materials.	3.248	1.108	.689	
Social Opportunity		3.868	.707		0.668
Innovation	[intervention] is compatible with daily practice	3.624	1.148	.718	
Patient	Participants of [intervention] are positive about [intervention].	4.277	.680	.585	
Social influences	I can count on support from professionals with whom I deliver [intervention] when things get tough around delivering [intervention] following the guidelines.	3.703	1.073	.524	

Note. *Inverted score.

SD = .678). This implies that people who teach PFA are very willing to deliver trainings but lack the institutional support to do so.

Regarding the descriptive statistics for each item, high means (>4 points) were observed in the items of Know (*M* = 4.356; *SD* = .672) and Skills (*M* = 4.079; *SD* = .880), which implies that PFA trainers perceive they have a suitable level of knowledge and skills related to their labor. A similar case occurs with the items corresponding to Beliefs about capabilities (*M* = 4.099; *SD* = .768), Beliefs about consequences (*M* = 4.442; *SD* = .762), Positive emotions (*M* = 4.238; *SD* = .710) and Patients (*M* = 4.277; *SD* = .680).

Finally, regarding instrument reliability, McDonald's omega values range from Ω = .793 (Physical Opportunity) and Ω = .668 (Social Opportunity), with all dimensions having acceptable reliability.

Discussions

The main objective of this study was to adapt and validate an abbreviated version of the DIBQ adapted to Spanish for the context of PFA training in Chile. The DIBQ-18 is

designed to assess trainers' capability, motivation and opportunity to implement PFA training in their local context, and has the potential to improve their work conditions and the efficiency with which they deliver training (Frank et al., 2020; Horn et al., 2019; Wang et al., 2021).

In this sense, given the characteristics of the instrument, which can be adapted for the assessment of different interventions for physical and mental health care (Birken et al., 2017; Evans et al., 2022; Huijg et al., 2014), its adaptation to Spanish can be considered a contribution to implementation science in the region, and could lead to its use for the study and assessment of different interventions in the Spanish-speaking context (see Appendix 1).

Regarding the psychometric properties of the instrument, it was found that, initially, the complete version of it did not present a factorial structure that fully adjusted to the integration of the COM-B and TDF models, nor did it have acceptable reliability indicators. In addition, a brief instrument is required to ensure complete responses from participants, this led the research team to assess the factor behavior of an abbreviated version of the instrument, the DIBQ-18.

Based on the factor structure found for the DIBQ-18, and the concepts of COM-B (Cane et al., 2012; Michie et al., 2005, 2011), the following definitions of the constructs are proposed for greater precision when interpreting the results (see Table 4)

In this regard, the model by Michie et al. (2011) proposes the existence of both physical and psychological capabilities. Initially, the difference lies in that the former refers to the knowledge and skills that people must have to carry out the implementation, while the latter refers to physical abilities, strength, and endurance. However, the results show that this separation between these constructs was not found in the DIBQ-18. This is mainly due to the fact that the original DIBQ instrument only contains one item that refers to the physical capabilities necessary to implement an innovation, and this was eliminated during the item reduction process.

This is a significant limitation in the translation of the results obtained into practice, as it is possible that PFA trainers may need some physical capabilities to complete the implementation of the workshops, an aspect that would not be evaluated if only the DIBQ-18 is used. Therefore, for its use, it is recommended to add a measure of the physical capabilities of the trainers to implement the innovation. Likewise, future research could evaluate the addition of a physical capabilities' subscale to the instrument.

Table 4. Definitions for the DIBQ-18 dimensions based on the COM-B framework.

Dimensions	Definitions
Psychological capabilities	The perception an implementer has about their real operative power (know-how) for performing a task when external circumstances allow for it.
Automatic motivation	The individual disposition to conduct a specific action based on a set of beliefs and emotions that evoke the intervention of the implementer.
Reflective motivation	The individual disposition to conduct a specific action based on the implementer's perception about their role in the context where the intervention is applied.
Physical opportunities	The implementers' perception about the characteristics of people and institutions with which they have a hierarchical relationship (organizations, leaderships, etc.), that form the structure that allows them to respond with success and quality at the moment of implementation.
Social opportunities	The implementers' perception about the characteristics of people and institutions with which they have a non-hierarchical relationship (other implementers, health care professionals, beneficiaries, etc.), that form the structure that allows them to respond with success and quality at the moment of implementation.

Note. *Definitions based on* Cane et al. (2012); Michie et al. (2005, 2011).

Regarding reliability, McDonald's omega indicated acceptable reliability for each factor (Kalkbrenner, 2021), with the internal consistency of each dimension being good enough for its use, which is in agreement with the findings of other studies that have adapted and reduced DIBQ in other contexts (deJonge, 2021; Paukkunen et al., 2022; Ris et al., 2021). In this sense, having a shorter questionnaire may facilitate future evaluations of the implementation of innovations such as this one, by reducing the response time and, therefore, the number of people willing to fill it out.

On the other hand, the data obtained in this study indicate that, in the Chilean context, PFA trainers are willing to do their job, and according to their own perception, they have sufficient knowledge and skills to successfully train other people. However, they perceive themselves as limited in terms of the support provided by the context both at the levels of the communities where they work and of the institutions in charge of managing these interventions, which is in agreement with previous findings about the personnel in charge of training in dealing with emergencies (McCabe et al., 2010).

In this line, Horn et al. (2019) discovered that, since PFA training also takes place during high-risk and uncertainty situations, good institutional and governmental organization are important to achieve the expected results; this is a point to consider when seeking to improve the training process.

In this regard, stakeholders could undertake various actions to improve this situation, for example: evaluate and seek improvements in communication between institutions and trainers, taking advantage of the ease of access and use of new communication technologies to streamline communication between the parties, as well as conducting out information campaigns; increase the quantity and quality of support materials and protocols that trainers use and deliver, linking the creation of these to a feedback system that facilitates constant updating; seek methods to increase the material or symbolic incentives that are delivered to trainers for their work; or, carry out evaluations that allow people to feedback the current legislation and organizational structure in order to making modifications that facilitate the implementation of the intervention (Michie & West, 2013).

The main limitation of the study is related to the possibility of achieving an acceptable sample size to cover the objectives, as the current size of the population is relatively small (827 people at the time of the study), so the sample size was small (n = 101). In addition, the length of the instrument (94 items) and the time required to complete it (approximately 45 min) may further hinder achieving a large sample size. An appropriate direction for future research would involve replicating the study with a larger group.

However, it is considered that the instrument obtained from this study could contribute to overcoming this limitation in future research, facilitating the studies in the field, as well as the follow-up and assessment of problems associated with PFA training. This would allow future research to delve deeper into the emerging needs in these processes, as well as the barriers and facilitators inherent to the context where the instrument was adapted.

In this sense, PFA training programs in Chile should consider the need to improve implementation supports for these trainings, and propose specific implementation strategies for key determinants. Organizations in charge of their implementation could offer tools for trainers to achieve more commitment from local authorities (e.g. through coordination meetings or particular channels for disseminating activities), and to teach

them better and more creative ways to use the resources available and involve other professionals from the same implementing agencies.

In conclusion, for both Chile and the region, DIBQ and DIBQ-18 can be useful for assessing the state of multiple processes associated with PFA implementation, starting with their design, covering professional training and even the same application of treatments and their effects on mental health. Aside from where the focus lies, these results suggest that it is fundamental to devote efforts to having highly trained and motivated professionals, as well as preparing the contexts for the provision of PFA. The consideration of all these dimensions will allow for the implementation of better training programs that impact the response capacity of PFA teams.

Data availability statement

The data that support the findings of this study are available from the corresponding author, ANONYMIZED, upon reasonable request.

Disclosure statement

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References

Acar Guvendir, M., & Özer Özkan, Y. (2022). Item removal strategies conducted in exploratory factor analysis: A comparative study. *International Journal of Assessment Tools in Education*, *9*(1), 165–180. https://doi.org/10.21449/ijate.827950

Akoury-Dirani, L., Sahakian, T. S., Hassan, F. Y., Hajjar, R. V., & Asmar, K. E. (2015). Psychological first aid training for Lebanese field workers in the emergency context of the Syrian refugees in Lebanon. *Psychological Trauma: Theory, Research, Practice, and Policy*, *7* (6), 533–538. https://doi.org/10.1037/tra0000028

Atkins, L., Francis, J., Islam, R., O'Connor, D., Patey, A., Ivers, N., Foy, R., Duncan, E. M., Colquhoun, H., Grimshaw, J. M., Lawton, R., & Michie, S. (2017). A guide to using the Theoretical Domains Framework of behaviour change to investigate implementation problems. *Implementation Science*, *12*(1), https://doi.org/10.1186/s13012-017-0605-9

Barrales Díaz, C. (2019). Atención psicológica en situaciones de emergencias y desastres. *Horizonte Sanitario*, *18*(1). https://doi.org/10.19136/hs.a18n1.2581. http://www.scielo.org.mx/scielo.php?script = sci_arttext&pid = S2007-74592019000100005&lng = es&tlng = es

Birken, S. A., Powell, B. J., Presseau, J., Kirk, M. A., Lorencatto, F., Gould, N. J., Shea, C. M., Weiner, B. J., Francis, J. J., Yu, Y., Haines, E., & Damschroder, L. J. (2017). Combined use of the consolidated framework for implementation research (CFIR) and the theoretical domains framework (TDF): A systematic review. *Implementation Science*, *12*(1), 2. https://doi.org/10.1186/s13012-016-0534-z

Blake, H., Gupta, A., Javed, M., Wood, B., Knowles, S., Coyne, E., & Cooper, J. (2021). COVID-well study: Qualitative evaluation of supported wellbeing centres and psychological first aid for healthcare workers during the COVID-19 pandemic. *International Journal of Environmental Research and Public Health*, *18*(7), 3626. https://doi.org/10.3390/ijerph18073626

Cane, J., O'connor, D., & Michie, S. (2012). Validation of the theoretical domains framework for use in behaviour change and implementation research. *Implementation Science*, *7*(37), https://doi.org/10.1186/1748-5908-7-37

Chandra, A., Kim, J., Pieters, H. C., Tang, J., McCreary, M., Schreiber, M., & Wells, K. (2014). Implementing psychological first-aid training for medical reserve corps volunteers. *Disaster Medicine and Public Health Preparedness*, *8*(1), 95–100. https://doi.org/10.1017/dmp.2013.112

Damschroder, L. J. (2020). Clarity out of chaos: Use of theory in implementation research. *Psychiatry Research*, *283*, 112461. https://doi.org/10.1016/j.psychres.2019.06.036

deJonge, L. M. (2021). *Exercise as an alternative depression treatment: Perspectives and practices of Canadian post-secondary mental health care providers* [Thesis of Master of Science]. University of Toronto.

Evans, W. D., Gerard, R., Symington, L., Shaikh, H., & Agha, S. (2022). Implementation practice models for development in low- and middle-income countries: Systematic review of peer-reviewed literature. *BMC Public Health*, *22*(1), https://doi.org/10.1186/s12889-022-13530-0

Everly, G. S., Lee McCabe, O., Semon, N. L., Thompson, C. B., & Links, J. M. (2014). The development of a model of psychological first aid for non–mental health trained public health personnel. *Journal of Public Health Management and Practice*, *20*(Supplement 5), S24–S29. https://doi.org/10.1097/PHH.0000000000000065

Frank, H. E., Becker-Haimes, E. M., & Kendall, P. C. (2020). Therapist training in evidence-based interventions for mental health: A systematic review of training approaches and outcomes. *Clinical Psychology: Science and Practice*, *27*(3), https://doi.org/10.1111/cpsp.12330

Hambrick, E. P., Rubens, S. L., Vernberg, E. M., Jacobs, A. K., & Kanine, R. M. (2014). Towards successful dissemination of psychological first aid: A study of provider training preferences. *The Journal of Behavioral Health Services & Research*, *41*(2), 203–215. https://doi.org/10.1007/s11414-013-9362-y

Hermosilla, S., Forthal, S., Sadowska, K., Magill, E. B., Watson, P., & Pike, K. M. (2023). We need to build the evidence: A systematic review of psychological first aid on mental health and well-being. *Journal of Traumatic Stress*, *36*(1), 5–16. https://doi.org/10.1002/jts.22888

Horn, R., O'May, F., Esliker, R., Gwaikolo, W., Woensdregt, L., Ruttenberg, L., & Ager, A. (2019). The myth of the 1-day training: The effectiveness of psychosocial support capacity-building during the Ebola outbreak in West Africa. *Global Mental Health*, *6*. https://doi.org/10.1017/gmh.2019.2

Huijg, J. M., Gebhardt, W. A., Dusseldorp, E., Verheijden, M. W., van der Zouwe, N., Middelkoop, B. J. C., & Crone, M. R. (2014). Measuring determinants of implementation behavior: Psychometric properties of a questionnaire based on the theoretical domains framework. *Implementation Science*, *9*(1), https://doi.org/10.1186/1748-5908-9-33

Jacobs, G. A., Gray, B. L., Erickson, S. E., Gonzalez, E. D., & Quevillon, R. P. (2016). Disaster Mental Health and Community-Based Psychological First Aid: Concepts and Education/Training. *Journal of Clinical Psychology*, *72*(12), 1307–1317. https://doi.org/10.1002/jclp.22316

Kalkbrenner, M. T. (2021). Alpha, omega, and h internal consistency reliability estimates: Reviewing these options and when to use them. *Counseling Outcome Research and Evaluation*, https://doi.org/10.1080/21501378.2021.1940118

León-Amenero, D., & Huarcaya-Victoria, J. (2019). Salud mental en situaciones de desastres. *Horizonte Médico (Lima)*, *19*(1), 73–80. https://doi.org/10.24265/horizmed.2019.v19n1.12

Lewis, V., Varker, T., Phelps, A., Gavel, E., & Forbes, D. (2014). Organizational implementation of psychological first aid (PFA): Training for managers and peers. *Psychological Trauma: Theory, Research, Practice, and Policy*, *6*(6), 619–623. https://doi.org/10.1037/a0032556

Li, C. H. (2016). Confirmatory factor analysis with ordinal data: Comparing robust maximum likelihood and diagonally weighted least squares. *Behavior Research Methods*, *48*(3), 936–949. https://doi.org/10.3758/s13428-015-0619-7

Lloret-Segura, S., Ferreres-Traver, A., Hernández-Baeza, A., & Tomás-Marco, I. (2014). El análisis factorial exploratorio de los ítems: Una guía práctica, revisada y actualizada. *Anales de Psicología*, *30*(3), 1151–1169. https://doi.org/10.6018/analesps.30.3.199361

McCabe, O. L., Barnett, D. J., Taylor, H. G., & Links, J. M. (2010). Ready, willing, and able: A framework for improving the public health emergency preparedness system. *Disaster Medicine and Public Health Preparedness*, *4*(2), 161–168. https://doi.org/10.1001/dmp-v4n2-hcn10003

Michie, S., Johnston, M., Abraham, C., Lawton, R., Parker, D., & Walker, A. (2005). Making psychological theory useful for implementing evidence based practice: A consensus approach. *Quality and Safety in Health Care*, *14*(1), 26–33. https://doi.org/10.1136/qshc.2004.011155

Michie, S., van Stralen, M. M., & West, R. (2011). The behaviour change wheel: A new method for characterising and designing behaviour change interventions. *Implementation Science*, *6*(1), 42. https://doi.org/10.1186/1748-5908-6-42

Michie, S., & West, R. (2013). Behaviour change theory and evidence: A presentation to Government. *Health Psychology Review*, *7*(1), 1–22. https://doi.org/10.1080/17437199.2011.649445

MINSAL, OPS, WHO, & UNICEF. (2018). *Manual de Implementación de Talleres de Formación de Facilitadores de capacitación en Primera Ayuda Psicológica*.

Montenegro, P. C., & Cabello, R. F. (2018). *Manual ABCDE para la aplicación de Primeros Auxilios Psicológicos* (1st ed.). Pontificia Universidad Católica de Chile y Centro Nacional de Investigación para la Gestión Integrada de Desastres Naturales (CIGIDEN).

Movahed, M., Khaleghi-Nekou, M., Alvani, E., & Sharif-Alhoseini, M. (2023). The impact of psychological first aid training on the providers: A systematic review. In *Disaster medicine and public health preparedness* (Vol. 17, Issue 4). Cambridge University Press. https://doi.org/10.1017/dmp.2022.27

Nilsen, P. (2015). Making sense of implementation theories, models and frameworks. *Implementation Science*, *10*(1), 53. https://doi.org/10.1186/s13012-015-0242-0

North, C. S., & Pfefferbaum, B. (2013). Mental health response to community disasters. *JAMA*, *310*(5), 507. https://doi.org/10.1001/jama.2013.107799

Paukkunen, M., Ala-Mursula, L., Öberg, B., Karppinen, J., Sjögren, T., Riska, H., Nikander, R., & Abbott, A. (2022). The Determinants of Implementation Behavior Questionnaire in multiprofessional rehabilitation context (DIBQ-mp): A mixed methods tailoring study with Finnish cross-cultural adaptation. *Research Square*, https://doi.org/10.21203/rs.3.rs-1672513/v1

Prykhodko, I., Matsehora, Y., Kolesnichenko, O., Stasiuk, V., Bolshakova, A., & Bilyk, O. (2021). Psychological first aid for military personnel in combat operations: The ukrainian model. *Military Behavioral Health*, *9*(3), 289–296. https://doi.org/10.1080/21635781.2020.1864530

Ris, I., Schröder, K., Kongsted, A., Abbott, A., Nilsen, P., Hartvigsen, J., & Öberg, B. (2021). Adapting the determinants of implementation behavior questionnaire to evaluate implementation of a structured low back pain programme using mixed-methods. *Health Science Reports*, *4*(2), https://doi.org/10.1002/hsr2.266

Schröder, K., Öberg, B., Enthoven, P., Kongsted, A., & Abbott, A. (2020). Confidence, attitudes, beliefs and determinants of implementation behaviours among physiotherapists towards clinical management of low back pain before and after implementation of the BetterBack model of care. *BMC Health Services Research*, *20*(1), https://doi.org/10.1186/s12913-020-05197-3

Wang, L., Norman, I., Xiao, T., Li, Y., & Leamy, M. (2021). Psychological first aid training: A scoping review of its application, outcomes and implementation. *International Journal of Environmental Research and Public Health*, *18*(9), 4594. https://doi.org/10.3390/ijerph18094594

West, R., & Michie, S. (2020). A brief introduction to the COM-B Model of behaviour and the PRIME Theory of motivation. *Qeios*, https://doi.org/10.32388/ww04e6

Willmott, T. J., Pang, B., & Rundle-Thiele, S. (2021). Capability, opportunity, and motivation: An across contexts empirical examination of the COM-B model. *BMC Public Health*, *21*(1), https://doi.org/10.1186/s12889-021-11019-w

World Health Organization. (2011). *Psychological first aid : guide for field workers*.

World Health Organization, War Trauma Foundation, & World Vision International. (2013). *Psychological first aid : Facilitator's manual for orienting field workers*. World Health Organization. https://apps.who.int/iris/handle/10665/102380.

Appendix 1. DIBQ items in Spanish

Domains	Items
Knowledge	– Sé cómo [ejecutar intervención] siguiendo las recomendaciones del [protocolo].
	– Conozco claramente los objetivos de la [intervención] y mi rol en [intervención].
	– Sé cuáles son mis responsabilidades en la [intervención].
	– Sé exactamente lo que se espera de mí en la [intervención].
Skill	– Recibí formación específica en como [ejecutar intervención] siguiendo las recomendaciones del [protocolo].
	– Tengo las habilidades para [ejecutar intervención] siguiendo las recomendaciones del [protocolo].
	– Tengo experiencia [ejecutando intervención] siguiendo las recomendaciones del [protocolo].
Professional role	– La [intervención] forma parte de mis funciones institucionales.
	– [ejecutar intervención] es una actividad propia de mi profesión.
	– Mi profesión me exige tener conocimientos en [intervención].
Beliefs about capabilities	– Sé que puedo [ejecutar intervención] siguiendo las recomendaciones del [protocolo]
	– Sé que puedo [ejecutar intervención], incluso si los colegas con quienes trabajo no conocen como [ejecutar intervención].
	– Sé que puedo [ejecutar intervención], incluso cuando no dispongo del tiempo suficiente.
	– Sé que puedo [ejecutar intervención], incluso cuando quienes participan no muestran motivación.
	– Tengo control sobre la [intervención].
	– Para mí, [ejecutar intervención] siguiendo las recomendaciones del [protocolo] es muy fácil.
	– Para mí, completar el registro de [intervención] es muy fácil
	– Para mí, capacitar en la [intervención] dentro de mi institución es muy fácil.
	– Para mí, aplicar [instrumento de evaluación de la intervención] es muy fácil.
	– Para mí, prestar atención a que el participante continue la [conducta objetivo] aún cuando este fuera de [contexto de intervención] es muy fácil.**
	– Mantener informadas a las jefaturas sobre la [ejecución de la intervención] es muy fácil.
Optimism	– En momentos de incertidumbre laboral, generalmente espero que suceda lo mejor respecto a la [intervención].
	– Siempre estoy optimista respecto al futuro de la [intervención].
	– En general, espero que sucedan más cosas buenas que malas en relación con la [intervención].
Beliefs about consequences	– [ejecutar intervención] es totalmente muy útil.
	– [ejecutar intervención] es muy valioso.
	– [ejecutar intervención] es muy placentero.
	– [ejecutar intervención] es muy interesante.
	– Si sigo el [protocolo], mi [intervención] será más efectiva.
	– Si [ejecuto intervención] siguiendo el [protocolo], quienes participan lo apreciarán.
	– Si [ejecuto intervención] siguiendo el [protocolo], se reforzará la colaboración con los otros profesionales con los que realizo [intervención].**
	– Si [ejecuto intervención] siguiendo el [protocolo], sentiré satisfacción con el trabajo en la formación/facilitación.
	– Si [ejecuto intervención] siguiendo el [protocolo], quienes participan tendrán respuestas más efectivas en emergencias y desastres.
	– Cuando [ejecuto intervención] siguiendo el [protocolo], obtengo un reembolso económico adecuado. **

(*Continued*)

Continued.

Domains	Items
	– Cuando [ejecuto intervención] obtengo reconocimiento laboral.*
	– Cuando [ejecuto intervención], obtengo reconocimiento de quienes participan.
	– Cuando [ejecuto intervención] siguiendo el [protocolo], recibo el reconocimiento de las personas que participan.**
Intentions	– Pretendo [ejecutar intervención] en los próximos tres meses.
	– Definitivamente [ejecutaré intervención] en los próximos tres meses.
	– ¿Es fuerte su intención de llevar a cabo [intervención] siguiendo el [protocolo] en los próximos tres meses?**
	– Tengo toda la intención de [ejecutar intervención] en los próximos tres meses.*
	– A pesar de todos los obstáculos, tengo total seguridad de que [ejecutaré intervención] en los próximos tres meses.*
Goals	– ¿Con qué frecuencia trabajar en otra cosa en su agenda es una prioridad más alta que [ejecutar intervención] siguiendo el [protocolo]?**
	– La [intervención] ocupa un lugar prioritario en mi agenda de trabajo.*
	– Habitualmente tengo tareas institucionales que son más urgentes que [ejecutar intervención]
	– [ejecutar intervención] es una meta personal.*
Innovation	– Es posible adaptar la [intervención] a las características de quienes participan.
	– Es posible adaptar la [intervención] a las características de quienes forman/facilitan.
	– [ejecutar intervención] no toma mucho tiempo.
	– La [intervención] es compatible con mi quehacer laboral cotidiano.
	– [ejecutar intervención] es simple.
Socio-political context	– El gobierno entrega suficiente apoyo para la [intervención].
	– Las instituciones privadas prestan suficiente apoyo a intervenciones como [intervención].**
	– La atención primaria está suficientemente orientada a la prevención.**
	– Las autoridades regionales de mi institución entregan suficiente apoyo para la [intervención].*
	– Las autoridades locales de mi institución entregan suficiente apoyo para la [intervención].*
	– Las instituciones públicas están suficientemente sensibilizadas con la importancia de [intervención].*
	– Las instituciones privadas están suficientemente sensibilizadas con la importancia de [intervención].*
Organization	– En mi institución se disponen de todos los recursos para [ejecutar intervención].
	– Puedo contar con el apoyo de mi(s) jefatura(s), cuando se me dificulta [ejecutar intervención].
	– Mi(s) jefatura(s) está(n) dispuesta(s) a escuchar mis problemas respecto a la [intervención].
	– Mi(s) jefatura(s) apoya(n) los compromisos institucionales de la [intervención].
Patient	– Durante la [intervención], quienes participan muestran motivación.
	– Durante la [intervención], quienes participan muestra entusiasmo por cooperar en [intervención].
	– Durante la [intervención], quienes participan expresan motivación con [intervención].*
	– Quienes participan de la [intervención], muestran optimismo sobre su rol en la [intervención].*
Innovation strategies	– Mi institución, además de mí, dispone más profesionales, para cumplir con los compromisos de la [intervención].
	– Mi institución fomenta el cumplimiento de [intervención] sin necesidad de que se vea mandatada a hacerlo.
	– Mi institución dispone suficiente material para cumplir con la [intervención].
	– Mi institución dispone apoyo logístico para cumplir con [intervención].
	– Mi institución organiza reuniones de coordinación para la [intervención].
	– La [organización implementadora] paga lo suficiente a profesionales por la prestación de [intervención].**
	– Mi institución está preocupada de la mejora continua de los resultados de la [intervención].
Social influences	– La mayoría de las personas que son importantes para mí, piensan que es mi deber profesional [ejecutar intervención].
	– Mis colegas piensan que es mi deber [ejecutar intervención].
	– Las personas de mi institución que [ejecutan intervención], siguen las recomendaciones del manual [protocolo].
	– Las personas de otras instituciones que [ejecutan intervención], siguen las recomendaciones del [protocolo].

(*Continued*)

Continued.

Domains	Items
	– Puedo contar con el apoyo logístico/organizacional de [profesionales/institución que ejecutan intervención] cuando las cosas se ponen difíciles [ejecutando la intervención].
	– Puedo contar con el apoyo técnico de [profesionales/institución que ejecutan intervención] cuando las cosas se ponen difíciles [ejecutando intervención].*
	– Los [profesionales que ejecutan intervención], están disponibles para escucharme cuando tengo dificultades para [ejecutar intervención].
	– Los [profesionales que ejecutan intervención] me apoyan en la [intervención].
Positive emotions	– Cuando [ejecuto intervención] me siento optimista de sus resultados.
	– Cuando [ejecuto intervención] siento comodidad.
	– Cuando [ejecuto intervención] siento tranquilidad.
	– Cuando [ejecuto intervención] siento calma (relajación).
	– Cuando [ejecuto intervención] siento entusiasmo.
	– Cuando [ejecuto intervención] siento felicidad.
Negative emotions	– Cuando [ejecuto intervención] siento nervios.
	– Cuando [ejecuto intervención] me siento pesimista de sus resultados.
	– Cuando [ejecuto intervención] siento depresión.
	– Cuando [ejecuto intervención] siento intranquilidad.
	– Cuando [ejecuto intervención] siento tristeza.
	– Cuando [ejecuto intervención] siento incomodidad.
Behavioral regulation	– Tengo claro cómo realizaré [intervención].
	– Sé cómo abordar los posibles escenarios en los que realizaré [intervención].
	– Tengo claro cuándo realizaré [intervención].
	– Se que lo que haré cuando las personas que participen en [intervención] muestren poca motivación.**
	– Se qué lo que haré para cumplir con las próximas [intervenciones] si existe poco tiempo en mi institución.
	– Tengo claro qué hacer si profesionales de mi institución no [ejecutan intervenciones] programadas.
	– [Ejecutar intervención] de acuerdo con las recomendaciones del [protocolo] es algo que hago de manera casi automática.
Nature of the behaviors	– [Ejecutar intervención] de acuerdo con las recomendaciones del [protocolo] es algo que hago sin tener que recordarlo de forma consciente.
	– [Ejecutar intervención] de acuerdo con las recomendaciones del [protocolo] es algo que hago sin pensar.
	– [Ejecutar intervención] de acuerdo con las recomendaciones del [protocolo] es algo que comienzo a hacer antes de darme cuenta de que lo estoy haciendo.
	– [Ejecutar intervención] de acuerdo con las recomendaciones del [protocolo] es algo que olvido pocas veces.
	– [Ejecutar intervención] siguiendo el [protocolo] es algo que olvido a menudo.**

Note: *items added to the questionnaire to adapt it to the PFA training intervention; ** items removed from the questionnaire for adaptation to the PFA training intervention.

Appendix 2. Confirmatory factor analysis of the full DIBQ

Fit indices obtained for the confirmatory factor analysis with the integration of the COM-B and TDF models

Adjustment index	Model 94 ítems 3 s-order factors 18 first-order factors	Model 94 ítems 3 factors	Adjustment criteria
χ2	< .001	<.001	>.05
χ2 /gl	1.280	2.784	< 2
CFI	.879	.918	.90–1
TLI	.876	.916	.90–1
RMSEA	.053	.062	< .50 – .80

Internal consistency indices and factor loadings

Domains	Ω
Capabilities	.833
Know	.873
Skill	**.502**
Behavioral regulation	**.622**
Nature behaviors	.676
Motivations	.907
Professional Rol	**.601**
Beliefs about capabilities	.778
Optimism	**.585**
Beliefs about consequences	.857
Intentions	.960
Goals	**.500**
Positive emotions	.873
Negative emotions	.763
Oportunities	.916
Innovation	**.619**
Socio-political context	.703
Organization	.865
Patient	.831
Innovation strategies	.850
Social influences	.804

Note: Bold values of Ω < .65

Appendix 3. Exploratory factor analysis for item reduction

Factor matrix of the AFE for Capabilities

Items	Factor 1[a]
Know1	.748
Know2	**.758**
Know3	.708
Know4	.656
Skill1	.609
Skill2	.652
Skill3	**.672**

(*Continued*)

Continued.

Items	Factor 1[a]
Behavioral regulation1	.364
Behavioral regulation2	**.589**
Behavioral regulation3	.582
Behavioral regulation4	.517
Behavioral regulation5	.337
Nature behaviors1	**.419**
Nature behaviors2	.410
Nature behaviors3	.248
Nature behaviors4	.358
Nature behaviors5	.155

Note: Extraction method: maximum likelihood.
a. 1 factors extracted. 4 iterations required.
In bold: highest factor loading for each domain.

Factor matrix of the AFE for Motivations

Items	Factor 1[a]
Professional Rol 1	.464
Professional Rol 2	.324
Professional Rol 3	.561
Beliefs about capabilities 1	.609
Beliefs about capabilities 2	.421
Beliefs about capabilities 3	.500
Beliefs about capabilities 4	.402
Beliefs about capabilities 5	.466
Beliefs about capabilities 6	.659
Beliefs about capabilities 7	.351
Beliefs about capabilities 8	.530
Beliefs about capabilities 9	.279
Beliefs about capabilities 10	.342
Optimism 1	.456
Optimism 2	.683
Optimism 3	.442
Beliefs about consequences 1	.395
Beliefs about consequences 2	.661
Beliefs about consequences 3	.741
Beliefs about consequences 4	.734
Beliefs about consequences 5	.620
Beliefs about consequences 6	.632
Beliefs about consequences 7	.697
Beliefs about consequences 8	.574
Beliefs about consequences 9	.421
Beliefs about consequences 10	.567
Intentions 1	.553
Intentions 2	.516
Intentions 3	.544
Intentions 4	.541
Goals 1	.471
Goals 2	-.205
Goals 3	.652
Positive emotions 1	.764
Positive emotions 2	.631
Positive emotions 3	.687
Positive emotions 4	.559
Positive emotions 5	.785
Positive emotions 6	.700
Negative emotions 1	.293
Negative emotions 2	.334
Negative emotions 3	.307

(*Continued*)

Continued.

Items	Factor 1[a]
Negative emotions 4	.349
Negative emotions 5	.479
Negative emotions 6	.432

Note: Extraction method: maximum likelihood.
a. 1 factors extracted. 4 iterations required.
In bold: highest factor loading for each domain.

Factor matrix of the AFE for Oportunities

Items	Factor 1[a]
Innovation 1	.312
Innovation 2	.324
Innovation 3	.230
Innovation 4	**.442**
Innovation 5	.194
Socio-political context 1	.456
Socio-political context 2	.669
Socio-political context 3	**.732**
Socio-political context 4	.453
Socio-political context 5	.304
Organization 1	.702
Organization 2	**.805**
Organization 3	.752
Organization 4	.749
Patient 1	.184
Patient 2	**.297**
Patient 3	.251
Patient 4	.180
Innovation strategies 1	.514
Innovation strategies 2	.727
Innovation strategies 3	.642
Innovation strategies 4	**.745**
Innovation strategies 5	.723
Innovation strategies 6	.691
Social influences 1	.299
Social influences 2	.296
Social influences 3	.363
Social influences 4	.278
Social influences 5	**.522**
Social influences 6	.508
Social influences 7	.456
Social influences 8	.517

Note: Extraction method: maximum likelihood.
a. 1 factors extracted. 4 iterations required.
In bold: highest factor loading for each domain.