



# Assessment of generic competences of entrepreneurial behavior

## Evaluación de las competencias genéricas del comportamiento emprendedor

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### Abstract

*Entrepreneurship as a social phenomenon has interested psychology for its study, one of its approaches is the entrepreneurial behavior from the competences, among them the generic / transversal ones. However, an area of opportunity in the literature is the assessment of competences for their fundamental characteristics of observable and demonstrable behaviors through experience. The objective of this study was to design and test the psychometric properties of an instrument for measuring generic entrepreneurial competences. The study was cross-sectional and instrumental with a non-random sample of 142 participants. The instrument was based on a model of three categories of generic competences (personal, interpersonal, functional), as well as on the logic of a behavioral interview and behavioral scale; It was made up of 14 items with four performance gradients where the participant had to respond based on his experience. The Exploratory Factor Analysis yielded a theoretically congruent three-dimensional structure that explains 53.8% of the accumulated variance. The coefficients Alpha de Cronbach ( $\alpha$ ) y Omega de McDonald ( $\omega$ ) showed adequate internal consistency higher than .80. No configuration, metric or structural invariance was detected between people who have or have not opened businesses. It is concluded that the instrument has the appropriate psychometric properties to continue testing in business entrepreneurs among other entrepreneurship contexts from the behavioral perspective oriented towards competencies.*

### Resumen

El emprendimiento como fenómeno social ha interesado a la psicología para su estudio, uno de sus enfoques es el comportamiento emprendedor abordado desde las competencias, entre estas las genéricas/transversales. Sin embargo, un área de oportunidad en la literatura es la evaluación de competencias por sus características fundamentales de comportamientos observables y demostrables a través de la experiencia. El objetivo de este estudio fue diseñar y probar las propiedades psicométricas de un instrumento de medición de competencias genéricas del comportamiento emprendedor. El estudio fue transversal e instrumental con una muestra no aleatoria de 142 participantes. El instrumento se basó en un modelo de tres categorías de competencias genéricas (personal, interpersonal, funcional), así como en la lógica de una entrevista conductual y escala conductual; se compuso de 14 reactivos con cuatro gradientes de desempeño en donde el participante debía responder con base en su experiencia. El Análisis Factorial Exploratorio arrojó una estructura de tres dimensiones congruentes teóricamente que explican el 53.8 % de la varianza acumulada. Los coeficientes Alpha de Cronbach ( $\alpha$ ) y Omega de McDonald ( $\omega$ ) mostraron consistencia interna adecuada superior a .80. No se detectó invarianza configural, métrica o estructural entre personas que han abierto o no negocios. Se concluye que el instrumento cuenta con las propiedades psicométricas adecuadas para seguirse probando en emprendedores de negocios entre otros contextos de emprendimiento desde la perspectiva comportamental orientada hacia las competencias.

### Keywords | palabras clave

*Entrepreneurship, entrepreneur, entrepreneurial behaviour, competencies, generic competences, assessment, validity, reliability.*  
Emprendimiento, emprendedor, comportamiento emprendedor, competencias, competencias genéricas, evaluación, validez, confiabilidad.

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## 1. Introduction

Entrepreneurship is considered an economic, social, and psychological phenomenon through which development opportunities are created not only for the entrepreneur but for their social environment by strengthening the economy, stimulating sustainable development, and generating decent and productive work in their environment as a result of their entrepreneurial action (International Labor Organization, 2014). This means that both the public and private sectors are interested in promoting entrepreneurship among citizens of different nations through public policies or institutional efforts such as entrepreneurial education to encourage people to do it (Mejía-Ordoñez et al., 2017). Similarly, this vision of entrepreneurship drives academic research activity around the phenomenon as a way of contributing to its understanding and development for society.

In this sense, the study of entrepreneurship has been carried out from an interdisciplinary perspective, which is consistent with the nature of the phenomenon itself, since it involves economic, political, social, and individual factors. In the latter, psychology has investigated entrepreneurship from different aspects, such as the approach of the cognitive components when studying the entrepreneurial attitude, intention, and orientation as direct interaction with the opportunities of their environment (Tornikoski & Maalaoui, 2019), and the approach of the entrepreneurial trait profiles that predispose to the entrepreneurial action and are activated when the situation warrants them (Kerr et al., 2018). On the other hand, the approach oriented to entrepreneurial behavior assumes that, through the formal or informal learning experience, the entrepreneur incorporates in his behavioral repertoire the series of abilities, skills, knowledge, and aptitudes that will allow him/her to effectively respond to the entrepreneurial tasks when required (Bird & Schjoedt, 2009; Gruber & MacMillan, 2017; Teague & Gartner, 2017).

With this principle, entrepreneurial action can be understood as a situational happening whose demand falls on: 1) the opportunities of the environment to promote the transmission and development of theoretical-practical knowledge, and 2) the ease offered by the environment to develop entrepreneurship.

In the case of business entrepreneurship, the first condition is, for example, understood as access to formal or informal learning of the individual regarding the opening of businesses (Yanchatuña et al., 2018) while the second condition in the same case, can be exemplified with the political-social conditions of the environment that facilitate creating a business (Matíz & Mogollón-Cuevas, 2008; Messina & Hochsztain, 2015).

The situational component is considered to be a condition external to the entrepreneur, over which he/she lacks direct control. On the other hand, the component that the entrepreneur can use for his entrepreneurial activity falls on his/her internal resources. From the entrepreneurial behavior, having these resources implies that the individual will have the ability to identify and take advantage of the possibilities of their environment, invest their efforts in mobilizing their opportunities, and in achieving their goal. These internal resources are learned, acquired through experience, tested, and constantly modified, in addition to being observed and validated by others (Bird & Schjoedt, 2009).

This conception of entrepreneurship understood as a behavior arises when it is observed that the attributes of the entrepreneur expressed by the economy and later studied by psychology from personality traits, do not respond to the phenomenon with consistency, so this approach suggests that entrepreneurship is a process and not a

question of attributes, in which the attributes of the person have an auxiliary but not leading role in the entrepreneurship process (Gartner, 1988), in this way it is understood that entrepreneurship is a process by which The entrepreneur executes a series of actions and does what is necessary so that the things that are proposed effectively happen (Ortiz-Valdés, 2020), this set of actions is called entrepreneurial behavior.

The study from this aspect has focused on distinguishing the concrete actions that an entrepreneur must execute to achieve their objective, for this, the activities of the people who are in such process are explored, which has resulted in a series of activities such as serious thoughts of starting the company, investing your own money for the new company, starting to save money for the company, starting to develop the business model (Gartner & Carter, 2010; Teague & Gartner, 2017), as well as searching for insertion opportunities; recognition of business opportunities when they arise; knowing the market, the industry, as well as potential clients; extend and expand social support networks, caring for their quality (Baron, 2007).

In addition to identifying activities within the entrepreneurship process, this behavior-centered approach has explored the series of competencies that are expressed in entrepreneurial action, since competencies are far from being isolated and concrete tasks or activities, but rather qualities that allow the individual to respond effectively in a situation (Mitchelmore & Rowley, 2010). In this sense, it is said that someone is competent for this or that thing when, as a result of the experience, they possess a series of behaviors that, to a greater extent, allow them to act appropriately in a situation (Ribes, 2006).

From this perspective, several researchers have focused on elucidating the series of competencies that are required for the entrepreneurship process. For example, Hodzic (2016), through a quantitative and qualitative analysis of interviews, identified a list of 20 competencies for entrepreneurship, among which were: having a vision and sharing it with others, identification of market opportunities, product development or services appropriate to the chosen market niche, negotiation skills, leadership skills, decision-making, understanding, analysis, and problem-solving, oral and written communication skills, teamwork, among others. Another example of establishing competencies for entrepreneurship is the work of Morris et al. (2013) who sought consensus among different entrepreneurship experts through the Delphi technique. In this case, the result was a model of thirteen competencies among which were: recognition of market opportunities, evaluation of opportunities, risk management or mitigation, the transmission of convincing vision, tenacity or perseverance, creative problem solving or imagination, among others.

However, it is observed that these competencies proposals in their definition and constitution limit entrepreneurship only to the creation of profit-making companies, leaving aside other expressions of entrepreneurship (Gruber & MacMillan, 2017) such as social, organizational, academic, among others (Gámez-Gutiérrez, 2013; Pertuz, et al., 2021; Salinas & Osorio, 2012). For these reasons, we took another approach to entrepreneurial behavior for this study which consists of generic competencies, which have the quality of being transversal in different fields of action and that are necessary to solve problems or demands in various contexts (Villa & Poblete, 2007). These competencies arise from the categorization proposed by the Tuning project in which two types of competencies are distinguished, the technical or specific competencies that are typical of a profession and the generic or transversal competencies that are indistinctly presented from the first (González & Wagenaar, 2006; Martín-Varés, 2006).

Thus, for the purposes of this study, entrepreneurial behavior is defined as a behavioral tendency derived from a series of generic competencies aimed at modifying

the present situation of an individual to attain an achievement in a given context, such as a personal goal or objective. This implies that the applicability of entrepreneurial behavior is observed in contexts other than business, such as social, organizational, academic, among others.

However, to identify the competencies in the entrepreneur's behavioral repertoire, a competency assessment strategy must be derived that addresses the main quality of the competencies of being based on an observable and demonstrable behavioral component, in addition to the fact that they can only be inferred through the performance of the individual (Hager et al., 1994), this seems to be one of the main problems in competency-based behavior research (Bird & Schjoedt, 2009; Mitchelmore & Rowley, 2010).

For their evaluation and training, Demchuk et al. (2015) mention that a process of decomposition of the competencies into the capacities and abilities that integrate them must be carried out, identifying an indicator of mastery that describes the deployment of competence in solving problems related to the context of application, as well as specifying the practical and theoretical knowledge that the individual will require to cover the competition. The author also mentions that after the decomposition of the competence, performance grades should be assigned that range from minimal to advanced performance. Schelfhout et al. Agree on this. (2016) when mentioning that the competencies must be operationalized and presented with mastery indicators, which will function as descriptions of observable behavior that demonstrate the degree of presence of the competence. The authors also mention that Likert-type scales contradict the nature of competencies since they focus on the evaluation of attitudes rather than observable behavior, which is why they should be avoided in research on competency-based behavior.

Therefore, the objective of this study was to design, validate and make reliable a measurement instrument that would allow identifying the presence and magnitude of generic competencies for entrepreneurship, in order to test the applicability of generic competencies in the phenomenon of entrepreneurship of business and for other purposes. Specific objectives include the generation of a measurement instrument based on behavior and mastery indicators, as well as testing the psychometric properties of said instrument to measure generic entrepreneurial behavior competencies.

## **2. Materials and method**

Non-experimental, cross-sectional, and instrumental study aimed at the design and testing of the psychometric properties of an instrument to measure the generic competencies that make up entrepreneurial behavior.

### **2.1. Participants**

A non-random convenience sample of 142 participants was used. 56 % were women while 44 % were men. The age range was from 20 to 68 years ( $\bar{x}$  = 39;  $s$  = 11.67). 11% had a high school degree, while 6 % had a technical career, 50 % of the sample had a university degree level, 25 % had a master's degree, and 8 % had doctoral studies. Regarding marital status, 43 % were single, 32 % married, 2 % widowed, 7 % divorced, and 16% in consensual union. On the other hand, 47 % mentioned not having economic dependents, while 46% had between one and three economic dependents, and the remaining 7 % had four to six economic dependents.

Regarding work experience, 25 % were between one to five years, 18 % were between five to ten years, 16 % were between ten and 15 years, 13 % were 15 to 20, while 27 % had More than 20 years of experience. Regarding their social condition,

11 % expressed being a migrant (living in a place other than the one where they were born or raised) while the remaining 89 % did not. Regarding the education received, 9 % expressed having received private education throughout their lives, 50 % public, and 41 % mixed. On the other hand, 52 % of the sample expressed not having opened businesses, while 48 % expressed having established at least one business (range of businesses = 1-6).

## **2.2. Instrument**

An instrument of Generic Competencies for Entrepreneurial Behavior (CG-CE) was designed based on a previous study (Quezada, et al., 2021), the logic of a behavioral interview (Salgado, et al., 2004), and behavioral scale (Doğan & Uluman, 2017), as well as in the recommendations for the evaluation of competencies based on behavioral indicators and performance levels (Demchuk et al., 2015; Schelfhout et al., 2016).

The instrument was made up of 14 items divided into three dimensions of competencies:

- Personal (CP): 1) generate new ideas; 2) adapt to an adverse environment; 3) work proactively; 4) confidence in one's actions and decisions; 5) work in a disciplined manner.
- Interpersonal (CI): 1) Collaborate with others; 2) seek and reach agreements; 3) looking for others to work; 4) mobilize others; 5) organize work for others.
- Functional (CF): 1) time management; 2) Troubleshooting; 3) decision making; 4) project planning.

In each item, a situation that could have been presented to the participant and four possible outcomes were presented as a stimulus, taking up the performance gradients of the generic competencies, the participant had to choose between the outcome that was closest to their experience.

## **2.3. Procedure**

The CG-CE instrument was digitized using Google Forms, also integrating an informed consent and sociodemographic data section. The instrument was distributed by digital means through social networks to the general public and by email to institutional links with entrepreneurship departments in order to maintain the social distancing measures decreed by the Government of Mexico derived from the Covid-19 pandemic. The approximate response time was 20 minutes, and the data collection lasted three months.

## **2.4. Data analysis**

The collected data were processed and analyzed with the IBM SPSS version 25 and Amos 24 programs. First, an Exploratory Factor Analysis (EFA) was carried out to determine the internal structure of the instrument and its congruence with the proposed theoretical proposal (Hair et al., 1999; Lloret-Segura et al., 2014; Pituch & Steven, 2015), then the Cronbach's Alpha coefficient was calculated in addition to the McDonald's Omega coefficient per factor and for the general instrument in order to provide evidence on the internal consistency of the items (Ventura-León & Caycho-Rodríguez, 2017). Finally, the invariance of the factorial structure was analyzed with Multigroup Structural Equation

Modeling (Byrne, 2008; Van de Schoot et al., 2012). The invariance analysis was performed comparing people with and without open businesses.

### 2.5. Ethical considerations

For the participation of business entrepreneurs, informed consent was used, which expressed the objective of the study, the limit of their participation, the voluntary nature of participation, as well as the confidentiality and privacy for the data provided. Similarly, the consent expressed the identity of those responsible for the research, their affiliation data, as well as the strictly academic and research purpose of the questionnaire.

## 3. Results

A preliminary analysis of the data was carried out, the initial sample consisted of 148 cases, of which six lost cases were identified due to errors in the measurement process with Google Forms, which we decided to eliminate because they were considered lost due to random phenomena, not related to the study variables (Bland, 2015; Hair et al., 1999). Subsequently, the viability of the EFA was analyzed to determine if the data allowed the interpretation of the analysis, for this, the correlation matrix was used at first, with which it was identified that the CP3 reagent "Work Proactively" correlated only with one reagent of its theoretical dimension and it did not do so with the rest of the items, which violates the assumptions of the conformation of factors and it was decided not to include the item in the analysis (Pituch & Stevens, 2015), the rest of the items presented low to medium significant correlations, so we proceeded with the exercise (See table 1).

**Table 1. Correlation matrix 14 items CQ-CE**

	P1	P2	P3	P4	P5	I1	I2	I3	I4	I5	F1	F2	F3	F4
P1														
P2	0.148													
P3	0.148	0.150												
P4	.173*	0.079	.330**											
P5	.458**	0.130	<b>0.020</b>	0.112										
I1	.195*	.238**	<b>0.002</b>	0.152	.187*									
I2	.214*	.199*	.168*	.207*	.191*	.233**								
I3	.215*	.189*	<b>-0.067</b>	0.080	.263**	.454**	.306**							
I4	.247**	.184*	<b>-0.026</b>	.215*	.245**	.481**	.259**	.404**						
I5	.307**	0.154	<b>0.155</b>	.185*	0.150	.424**	.358**	.334**	.641**					
F1	.217**	.270**	<b>0.082</b>	0.024	0.160	.242**	.255**	.368**	.258**	.254**				
F2	.261**	.302**	<b>0.146</b>	.186*	.223**	.334**	.201*	.314**	.298**	.338**	.399**			
F3	.300**	.207*	<b>0.163</b>	.305**	.290**	.247**	.169*	.312**	.265**	.307**	.280**	.347**		
F4	.204*	.243**	<b>-0.043</b>	0.065	.190*	.199*	.301**	.263**	.181*	.295**	.514**	.443**	.403**	1

Note: \*  $p < 0,05$ ; \*  $p < 0,01$

Subsequently, with the solution of 13 reagents, the adequacy of the data to the EFA was analyzed using the KMO test, resulting in a satisfactory adaptation (KMO = 0.813) and the significant Bartlett sphericity test ( $\chi^2(78) = 457.432, p < 0.05$ ) with

which the EFA was approved (Pituch & Stevens, 2015; Lloret-Segura et al., 2014; Hair et al., 1999).

The primary analysis of the EFA was carried out with the solution of 13 reagents to determine the number of dimensions that made up the instrument, extraction by principal components with an orthogonal varimax rotation was used, since low to moderate relationships were observed in the correlation matrix (DeVellis, 2003; Hair et al., 1999). Four factors were obtained that explained 59% of the explained variance. However, this was dispensed with when analyzing the communalities of the items after extraction (Table 2), in which it was detected that the CI2 reagent “Search for and reach agreements” did not present an acceptable value in relation to the factors (Pituch & Stevens, 2015). Similarly, the four-factor structure it offered was not theoretically consistent with the proposed design.

For these reasons, the item was eliminated and the second solution was chosen since it consists of three theoretically congruent dimensions with 12 sufficient items to evaluate each dimension (Table 3), while also presenting factor saturations greater than .32 (DeVellis, 2003; Lloret-Segura et al., 2014). Similarly, this solution was used for the satisfactorily explained variance greater than 0.50, as well as for the latent root analysis when observing the sedimentation graph (Hair et al., 1999) (Figure 1).

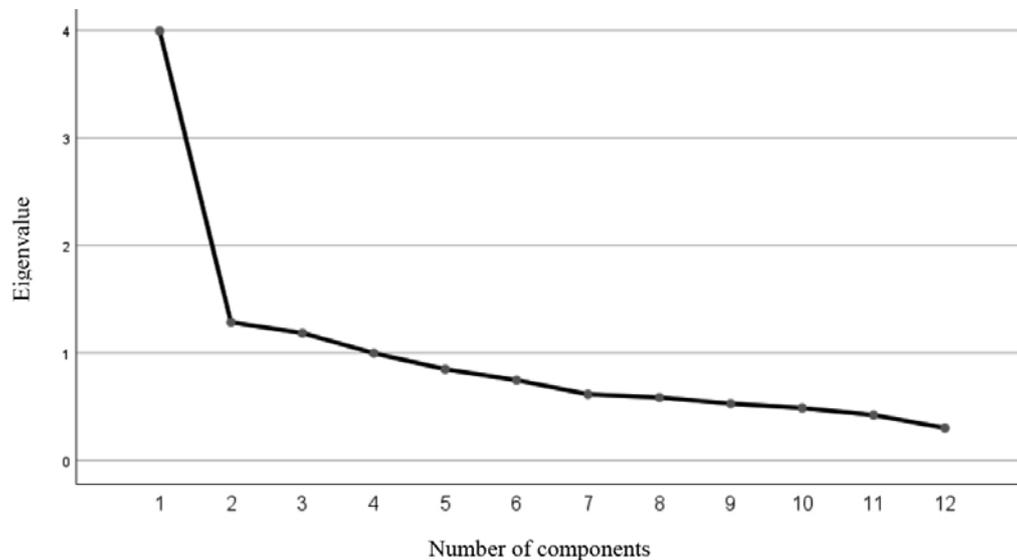
**Table 2. Communalities solution 13 reagents**

Reagent	Initial	Extraction
P1 Generation of new Ideas	1.000	0.672
P2 Adaptation to an adverse environment	1.000	0.303
P4 Confidence in capabilities	1.000	0.841
P5 Disciplined work	1.000	0.761
I1 Collaborate with others	1.000	0.580
<b>I2 Search for and reach agreements</b>	<b>1.000</b>	<b>0.288</b>
I3 Seeking others to work	1.000	0.525
I4 Mobilize others	1.000	0.717
I5 Organize work for others	1.000	0.645
F1 Time management	1.000	0.633
F2 Troubleshooting	1.000	0.510
F3 Decision making	1.000	0.544
F4 Project planning	1.000	0.667

Note: Extraction method: principal component analysis.

**Table 3. Second solution AFE 12 reagents**

KMO		0.813	
Bartlett's sphericity	$\chi^2$	420.560	
	gl	66	
	Sig.	0.001	
Component	Sums of loads squared of the rotation		
	Total	% of variance	% accumulated
1	2.332	19.436	19.436
2	2.323	19.359	38.795
3	1.809	15.079	53.873
Reagent	Rotated Component Matrix		
	1	2	3
I4	0.828		
I5	0.756		
I1	0.738		
I3	0.551		
F4		0.792	
F1		0.774	
F2		0.615	
P2		0.518	
P1			0.739
P5			0.732
F3			0.531
P4			0.525

**Figure 1. Second solution sedimentation graph**

Note: Latent root analysis of the second factorial solution: 12 items 3 factors.

On the other hand, the internal consistency coefficients Cronbach's Alpha ( $\alpha$ ) and McDonald's Omega ( $\omega$ ) were calculated for the general instrument and for each dimension (Table 4). Based on the analysis, the adequate internal consistency of the instrument and its dimensions are integrated into the evidence of psychometric relevance of the CG-CE (Ventura-León & Caycho-Rodríguez, 2017).

**Table 4. CG-CE internal consistency coefficients and competency dimensions**

	Dimension 1 Interpersonal Competencies	Dimensión 2 Competencias Funcionales	Dimensión 3 Competencias Personales	CG-CE
$\alpha$	0.750	0.672	0.616	0.805
$\omega$	0.813	0.774	0.730	0.911

Subsequently, an analysis of invariance of the factorial structure was carried out between the participants who had opened some type of business and among those who had not, for this a Multigroup Structural Equation Modeling was carried out (Byrne, 2008), determining that the CG-CE instrument does not present configural, metric or structural invariance (Milfont & Fischer, 2010; Van de Schoot et al., 2012), which means that people who have opened businesses/companies and those who have not present differences in the latent variables instrument and respond differently to reagents (Table 5).

**Table 5. CG-CE multigroup invariance test**

	$X^2$	$df$	$p$	CFI	TLI	RMSEA	AIC
Base	43.4	48	0.66	1.0	1.01	0.000	127.429
Model 1	148.145	96	0.001	0.885	0.842	0.062	316.145
Model 2	171.966	105	0.005	0.852	0.814	0.067	321.966
Model 3	172.23	106	0.007	0.854	0.818	0.067	320.230

Note: Invariance between people with businesses and without businesses opened.

#### 4. Conclusions and discussion

The objective of this study was to design, validate and make reliable a measurement instrument to evaluate generic competencies associated with entrepreneurship. The competency model on which the instrument was based was structured and revised in a previous study in which evidence was provided on its content validity (Quezada et al., 2021). Likewise, the design of the instrument was based on the recommendations of Demchuk et al. (2015) as well as Schelfhout et al. (2016) for the writing of performance indicators and performance levels. The authors mention that in the evaluation of competencies, the observation of performance at distinguishable levels must be taken into account. For this reason, it was decided to base the instrument on the logic of a behavioral scale (Doğan & Uluman, 2017) to distinguish these performance levels, as well as on a behavioral interview (Salgado et al., 2004) since this technique implies that the participant responds based on what he has actually executed beyond his attitudes or opinions.

This is relevant when observing that the proposals for the evaluation of generic competencies have been prepared based on the perception that one has of execution

or on the attitude towards said competence instead of the performance actually presented in the experience (Luppi et al., 2019; Hodzic, 2016). Similarly, the design and distribution of the instrument responded to the isolation conditions for health security derived from the Covid-19 pandemic, in which direct observation of the performance of the participants was not possible as suggested for the assessment of competencies (Villa & Poblete, 2007).

The first analysis performed on the instrument was an Exploratory Factor Analysis which allowed us to observe the dimensions of the instrument. In this exercise, the CP3 item “Work Proactively” was first discarded, which was contained in the personal level of competencies. This competence was extracted from the literature in relation to psychological characteristics such as “proactivity”, “motivation” and “need to achieve” (Batanero & Rebollo, 2017; Bilbao & Vélez, 2015; González & Wagenaar, 2003; Mitchelmore & Rowley, 2013; Villa & Poblete, 2007). Its discard was due to the non-relationship it had with the rest of the items, except for item CP4 “Confidence in one’s own actions and decisions” and with CI2 “Search for and reach agreements”. This response phenomenon may be due to the redundancy of the item with those mentioned, rather than a conceptual relationship between the assumptions that evaluate the items, which should to be avoided (Pituch & Stevens, 2015; Lloret-Segura et al., 2014).

By continuing with the analysis, it was possible to identify a theoretically and statistically congruent factorial structure. This solution responds to the proposed three-dimensional structure (personal, interpersonal, and functional competencies), accommodating four questions per factor. In this solution it was observed that the item CF4 “Decision making” was grouped in the dimension of Personal Competencies, which is understandable since the literature has shown how decision making is characterized as a skill and as a process (Gustaffson, 2006).

Similarly, in the exercise, the internal consistency coefficients were also calculated to determine the reliability of the instrument. Regarding the results, it is observed that Cronbach’s Alpha ranges from .67 to .80, for its part, the Omega coefficient fluctuated between .73 to .91, which is considered acceptable. The omega coefficient made it possible to avoid fluctuations in the reliability calculation due to the number of items, response options, and the variance of the instrument, considering it the “true” reliability (Ventura-León & Caycho-Rodríguez, 2017).

Finally, an invariance analysis of the factorial structure is offered using Multigroup Structural Equations, this exercise was used in order to detect the stability of the factorial structure between entrepreneurs (with open businesses) and non-entrepreneurs (without opened businesses). In this case, the evaluation consisted of contrasting three methodological hypotheses: 1) the groups conceptualize the constructs in the same way (configural invariance); 2) the groups respond to the items in the same way (metric invariance); 3) the observed scores of the groups correspond to the latent scores of the variables (scalar invariance) (Milfont & Fischer, 2010). In this sense, it was determined that the groups that open businesses and those that do not, conceptualize the competencies differently, respond to the items differently and their observed scores do not correspond to the latent score of the variable (Milfont & Fischer, 2010; Van de Schoot et al., 2012). This condition limits the interpretations that are made of the instrument’s scores, since although its items present consistency and there is evidence that their dimensions are congruent with the theory, the inferences can only be of magnitude, but not of differences between groups since there is no certainty that the groups respond in a similar way to the factorial structure of the instrument (Van de Schoot et al., 2012).

However, one of the reasons why the instrument may be behaving in this way is the characterization of the groups used for the invariance analysis, since the criterion

was the opening of at least one business, which entails different conceptual problems: 1) the literature supports the entrepreneurial conception of people who do not yet have a business but who are in the process of establishing one (nascent entrepreneurs) (Wagner, 2006); 2) the literature also recognizes that entrepreneurship begins with an entrepreneurial intention, even if one is not directly involved in the tasks of opening a business (Asante & Affum-Osei, 2019; Rotefoss & Kolvereid, 2005); 3) the businesses that the group has opened range from 1 to 6, which implies that it cannot be determined that the same generic competencies are deployed and in the same magnitude. Therefore, the condition of sampling and characterization of the entrepreneur and the non-entrepreneur has to be refined in future studies to contribute to the insertion of the generic competencies of entrepreneurial behavior.

Likewise, the sample size used for the analyzes could also have played an important factor in the results, since based on Lloret-Segura et al. (2014) the classic recommendation of  $N/p$  (sample ten times greater than the number of items) or of five subjects per variable is not enough to guarantee the stability of the factorial solutions. In this case, the authors point out that a minimum sample of 200 subjects is recommended to assess the quality of an instrument, a condition that this study could not meet.

However, for practical purposes, the factorial, internal consistency, and invariance solution presented in this study contribute to the establishment of evidence of validity and reliability of the generic competencies model of entrepreneurial behavior, since it is recognized that validity does not correspond to an instrument as a quality, but rather to the inferences that we want to make from the results of that instrument (Sireci, 2007), which is the objective of this study.

Similarly, the results open the opportunity for the model to continue to be tested, and specifically for the instrument to continue working to determine whether it is possible to identify an entrepreneur and a non-entrepreneur based on their level of generic competencies. Likewise, the potential that the tool represents is recognized, since by being able to determine the distinction of entrepreneurial behavior in entrepreneurs and non-entrepreneurs through generic competencies, the model could be tested in samples that are not socially recognized as entrepreneurs, but that is hypothesized behave as such since it is considered that entrepreneurship is not just typical of opening companies or businesses for profit, but of any other activity that implies that the person works modifying their environment to obtain a specific achievement (Hjorth & Holt, 2016; Holley & Watson, 2017; Huyghe et al., 2016; Obschonka et al., 2019; Pertuz et al., 2021).

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