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A New Multidimensional Questionnaire of Empathy for Early and Middle Adolescents in Spanish

Un nuevo cuestionario de empatía multidimensional en español para adolescentes tempranos y medios

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Abstract.

The aim of this study was to develop a Multidimensional Questionnaire of Empathy for Adolescents, since a model of cognitive social neuroscience, operationalizing the dimensions of emotional contagion, self-awareness, perspective-taking, emotional regulation, and empathic attitude. For the psychometric study of the instrument, 320 young adolescents in school participated, from both genders (125 male, 195 female), aged 13 to 16 ($M = 14.23$; $SD = .95$). The discriminant power of the items was evaluated, as well as the underlying structure of the instrument, its internal consistency, and different evidences of external, convergent, discriminant, and group-comparison validity. The results indicated that all the items were discriminative. The adjustment indexes of confirmatory factorial analysis allowed confirming the pentastructural structure of the scale, consisting of 15 items. The internal consistency indexes of the different dimensions were between moderate and adequate. Likewise, differences in empathy between men and women were analyzed, the results of which indicated differences in favor of women. The different collected evidences of validity were consistent with what was expected theoretically. In this way it is possible to conclude that this Multidimensional Empathy Questionnaire for Adolescents (CMEA) is a valid and reliable measure for the evaluation of empathy in adolescents.

Resumen.

El objetivo de este estudio fue desarrollar un Cuestionario Multidimensional de Empatía para Adolescentes, desde un modelo de neurociencia social cognitiva, operacionalizando las dimensiones de contagio emocional, autoconciencia, toma de perspectiva, regulación emocional y actitud empática. Para el estudio psicométrico del instrumento participaron 320 jóvenes adolescentes escolarizados, de ambos sexos (125 varones, 195 mujeres), de 13 a 16 años ($M = 14.23$; $DT = .95$). Se evaluó el poder discriminativo de los ítems, así como la estructura subyacente del instrumento, su consistencia interna y diferentes evidencias de validez externa, convergente, discriminante y de comparación de grupos. Los resultados indicaron que todos los ítems eran discriminativos. Los índices de ajuste del análisis factorial confirmatorio permitieron confirmar la estructura penta factorial de la escala, compuesta por 15 ítems. Los índices de consistencia interna de las diferentes dimensiones estuvieron entre moderados y adecuados. Asimismo, se analizaron diferencias en la empatía entre hombres y mujeres, cuyos resultados indicaron diferencias a favor de las mujeres. Las diferentes evidencias de validez recopiladas fueron consistentes con lo esperado teóricamente. De esta forma se puede concluir que este Cuestionario Multidimensional de Empatía para Adolescentes (CMEA) es una medida válida y confiable para la evaluación de la empatía en adolescentes.

Keywords.

Multidimensional Empathy; Evaluation; Psychometry; Early and Middle Adolescence.

Palabras Clave.

Empatía multidimensional; evaluación; psicometría; adolescencia temprana y media.

1. Introduction

Empathy, in a general sense, is based on recognizing other people as similar, which enables the understanding of their feelings and emotions and the adequate response to them. It is a fundamental ability for human beings, who spend their lives in complex social contexts because of their social nature (López et al., 2014).

Although numerous studies about empathy have been carried out, there is no current consensus regarding the theoretical definition of it. In general terms, one could say that there are two main theoretical streams: 1) the one based on Lipps idea (1903), in which the perception an individual has regarding the emotion in another individual activates this same emotion in the former, and 2) the one that states that empathy includes cognitive aspects, such as perspective-taking, which limits it to human beings who have the ability to mentalize (Preston & De Waal, 2002).

Lipps (1903) referred to empathy as an innate instinct. For this author, the perception of an emotion in another through its gestures –the articulation of multiple individual gestures– directly activated that same emotion in the person who perceived it, without any intervention of cognitive functions in the style of perspective-taking. The greatest benefit of models based on direct perception, which recognize emotional contagion and imitation as the basis of empathy, is that they are capable of accounting for the continuity of the phenomenon between species.

Theories that emphasize the more automatic perception of the emotions of others have found empirical support in research on mirror neurons, with the Perception/Action model (Preston & De Waal, 2002) and the Theory of Simulation (Gallese, 2001). The Perception/Action model is based on the notion of shared representations, according to which the observers experience the emotion of the observed, by sharing with them the mental representations about a certain behavior, state, or situation (Rameson & Lieberman, 2009). Empathy is seen within this model as an automatic process, not a conscious one (Rameson & Lieberman, 2009).

This conception is based in turn on the continuity between action and cognition, based on the perception/action cycles. Perception and action are functionally intertwined from birth, so that perception is a medium for action and action is a medium for perception (Decety & Jackson, 2004). This theory is connected with that of Simulation (Gallese, 2001), in which the fundamental idea is that we understand others using our own mind as a model. Through the action simulation mechanism, when we observe another individual acts, we can immediately recognize them as a goal-directed agent, that is, as similar to us, because the same neural substrate is activated when we seek to achieve that goal through our own action.

Models that emphasize the cognitive component, on the other hand, underline the differences between human empathy and similar phenomena observed in other animals. The understanding that others have of their own mental world, which differs from ours, is a critical step in the development of human beings. It generally takes place around the age of 4 (Wimmer & Perner, 1983), and it is universal in children as well as in adult humans (Premack & Woodruff, 1978).

These theories find empirical support in research showing the temporal and medial activation of the prefrontal regions during the performance of tasks that involve “mind-reading”.

Human beings can infer different types of mental states, from the most basic inference of intention or purpose to that of beliefs, thoughts, knowledge, assumptions, lies, trust, among others, that is, we can infer using a series of keys: what another person believes, thinks, knows, or supposes, if he pretends or if he trusts this or that thing, etc. (Frith & Frith, 2006). We start the automatic mentalization when we find ourselves in front of another we consider being an agent, using a series of keys of different modalities. We attend to the face, body movements, the direction of the gaze, the intonation or the rhythm of the voice, etc. (Frith & Frith, 2006). But a fundamental aspect of successful mentalization is perspective-taking, which means the ability to consider a situation from different points of view. Correct attribution of beliefs is based on the recognition that knowledge is founded on experience and, therefore, an individual who has not had our same experiences may not know the same as us (Wimmer et al., 1988).

More recently, some authors have proposed models that seek to integrate the affective and cognitive components of empathy. For instance, Decety and Jackson (2004) affirm that reflecting the emotion of someone else is a basic process that can take place without the intervention of awareness, while processes such as perspective-taking and self-regulation require controlled processing.

Some multidimensional models add –to the affective and cognitive aspects of empathy– those related to action, such as the one proposed by Gerdes and Segal (2009), who present a tridimensional scheme like the model by Decety and collaborators (Decety & Jackson, 2004; Decety & Lamm, 2006), but adding the empathic attitude, or the decision to perform actions directed to modifying the situation of somebody who is suffering.

On the other hand, Hoffmann (2000) states that empathy is not simply multidimensional, but at the same time represents a process of progressive development that goes from the automatic mimic (Iacoboni, 2009) to the cognitive processing that involves the ability to imagine the experiences of others. Likewise, Decety and his collaborators (Decety & Jackson, 2004; Decety & Moriguchi, 2007) not only proposed an integrative multi-

dimensional empathy model, but also found observable brain activity related to four subjectively experienced empathy components: 1) emotional contagion, or the automatic responses based on the observation of the other person; 2) self-awareness, or the ability to differentiate the experience of the other person from the self experience; 3) perspective-taking, or the cognitive process of interpreting mental and emotional states, both personal and external; and 4) the emotional regulation or the ability of a person to experience the feelings of another person without being overwhelmed by the intensity of this experience. Decety and Moriguchi (2007) hold that these basic components are partially dissociable and are mediated by specific and interacting neural systems.

Briefly, regarding *emotional contagion* as a whole, shared representations have been found between oneself and others at the cortical level for the understanding of action, the processing of pain, and the recognition of emotions. This mechanism provides the neurophysiological basis for the functioning of social cognition through the automatic activation of motor representations or emotions (Decety & Jackson, 2004). With regard to *self-awareness*, the evidence suggests that the availability of an efficient body scheme is necessary not only to recognize one's own actions but also to understand the actions of others. Decety and Jackson (2004) suggest that the inferior parietal cortex, together with the prefrontal cortex, plays a fundamental role in the sense of self when comparing the source of sensory signals. This role is crucial for empathy to maintain a distinction between oneself and the other and to track the origin of feelings. In reference to *perspective taking*, an inhibitory component is required to regulate and attenuate the perspective of the self to allow the evaluation of the perspective of the other. This is necessary because the predominant ego perspective, driven by the automatic link between perception and action, is the default mode, and this regulation allows for cognitive and affective flexibility. Such a view is consistent with the role of the prefrontal cortex in controlling top-down behavior (Miller & Cohen, 2001). On the other hand, from the Decety and Jackson (2004) model, empathy requires a certain level of *regulation of emotions* to manage and optimize the intersubjective transactions between oneself and the other. Without such regulation, the mere activation of shared representations would provoke emotional contagion or emotional distress. Ochsner et al. (2002) have found neural correlates of emotion regulation in the lateral and medial prefrontal cortex and the amygdala, and similar results were found by Lévesque et al. (2003).

Therefore, it is possible to predict a variety of structural and functional dysfunctions, depending on which aspect is being interrupted. In contrast, considering empathy from an evolutionary perspective allows the identification of moments in which these different components develop, indicating that cognitive empathy or

perspective-taking begin with the development of the medial prefrontal cortex, which continues to develop during adolescence. With age and increased maturity of the prefrontal cortex and its reciprocal connections to the limbic structures, along with the input of interpersonal experiences that are strongly modulated by various contextual and social factors, children and adolescents become sensitive to the social standards that regulate prosocial behavior and, in consequence, can become more selective in their responses to others (Decety & Svetlova, 2012).

Traditionally, adolescence has been considered as a period of transition characterized by physical and physiological changes, combined with contextual, social, and individual challenges (Blakemore & Mills, 2014; Steinberg & Morris, 2001; Zarrett & Eccles, 2006), which have important implications in the development of empathy (Allemand et al., 2015). The development of abstract thought and socio-emotional changes, as well as the increase in emotional regulation, promote empathy and prosocial tendencies (Eisenberg et al., 2006). In effect, there is plenty of evidence confirming that empathy plays a very important role in the development of prosociality and its counterpart, aggressiveness, in adolescence. Thus, it has been shown that it is especially related to attachment, prosocial and aggressive behaviors and bullying, among others (see Ang & Goh, 2010; Batanova & Loukas, 2014; Caravita et al., 2009; Espelage & Holt, 2001; Gini et al., 2007; Nickerson et al., 2008; Richaud & Mesurado, 2016; Richaud et al., 2019; Richaud de Minzi, 2013; Van Noorden et al., 2015; Wölfer et al., 2012).

Due to the importance of analyzing these processes, it is crucial to have adequate measures of empathy that allow the detection of its right development in adolescence, as well as its anomalies, which allow for timely interventions.

However, just as we do not have a unified definition of empathy, there are also different measures of empathy that answer to these different ways of understanding it. Therefore, there are different scales which measure empathy in adolescence: the Index of Empathy for Children and Adolescents (Bryant, 1982); the Empathy Questionnaire for Children and Adolescents (Pouw et al., 2013), which assess only the affective aspect of empathy; the Interpersonal Reactivity Index (Davis, 1983), which assesses four dimensions (two cognitive and two affective); the Empathy Scale (Jolliffe & Farrington, 2006), which evaluates the affective and cognitive aspects of empathy; and the Adolescent Measure of Empathy and Sympathy, which includes affective and cognitive empathy and makes a distinction between empathy and sympathy (Vossen et al., 2015).

Although all the mentioned instruments are used frequently, none of these measures follows the model of the four components, which reflects the evolutionary under-

standing of empathy based on neuroscience. So far, we do not know measures based on this model, except for the Empathy Assessment Index (EAI; Lietz et al., 2011) for social workers and the New Dimensional Questionnaire of Empathy for Children (Richaud et al., 2017).

Thus, the aim of this study is to develop a questionnaire of empathy for adolescents, operationalizing the four components proposed by Decety and collaborators (Decety & Jackson, 2004; Decety & Moriguchi, 2007), and adding a fifth component: the empathic attitude, proposed, as has been indicated earlier, by Gerdes and Segal (2009), as the behavioral aspect of empathy.

Additionally, many studies have found evidence regarding the differences in empathy between men and women, which support higher performance by women in the measures of empathy (see, among others, Broidy et al., 2003; Carlo et al., 1999; Eisenberg & Lennon, 1983; Eisenberg et al., 2001; Richaud de Minzi, 2013; Tousseint & Webb, 2005), especially in its emotional dimension (i.e., Davis, 1980; Greenberg et al., 2018; Martínez-Otero, 2011; Pastor, 2004; Proverbio, 2017). There are different hypotheses about why, in most studies on the influence of gender on empathy, women turn out to be more empathetic than men. In a systematic review of studies on this subject, it was found that of 60 documents reviewed, 63% affirm that women tend to be more empathetic, since they have a greater capacity to understand people's emotional reactions to negative experiences of others, both in terms of refers to feelings of compassion, concern, and affection. They also state that women tend to use mirror neurons more than men, which would indicate that it would be a genetic difference rather than a education one, as other authors affirm (Guzmán Bohórquez et al., 2019). In the present work it will be studied if the new questionnaire differentiate levels of empathy between boys and girls.

2. Method

The following research was carried out through a non-experimental, transversal, instrumental-type design (Ato et al., 2013; Montero & León, 2007; Servera & Cardo, 2006).

2.1 Participants

For the initial adjustment and revision of the items, ten expert judges specialized in research, positive psychology, and development psychology participated. The expert judges were summoned via e-mail. They were asked to judge whether the content of the items adequately reflected the construct that would be evaluated, and to revise the linguistic quality of the items taking the age of the target group into account. Then, the items were submitted to revision by a pilot sample of 30 adolescents between the ages of 13 and 17. Each one received a copy of the scale with the indication to read the items and express if they were understandable, and if the chosen

terms were of common use. The comprehension of the indication and the comprehension of the presented options were evaluated as well. Each interview took approximately ten minutes. The judges and the adolescents were selected by convenience, considering their expertise, in the case of judges, and a homogeneous distribution in terms of age and sex, in the case of adolescents. In view of the suggestions given by the expert judges and the pilot sample of adolescents, a few minor adjustments were made and the resulting version was administered to a non-probabilistic sample of 320 schooled adolescents in high school level (125 boys, 195 girls). The participants attended public and private secondary schools in urban areas in the province of Buenos Aires, Argentina. The age range was between 13 and 16 years old ($M = 14.23$; $SD = .95$). The inclusion criteria included that the adolescents were between 13 and 16 years old, that they had their own informed consent and their parents or guardians consented too, and that they voluntarily wanted to participate in the study. Those adolescents who did not meet the inclusion criteria were excluded.

2.2 Instruments

Different socio-demographic data were collected (age, gender, place of residence, and level of schooling) through a brief survey at the beginning of the scale. The instrument, administered for its psychometric study, was made up of 15 items with a Likert-like answer format of five options that go from never (1) to always (5). The dimensions that compose it are emotional contagion, self-awareness, perspective-taking, emotional control, and empathic attitude. The items are proportionally divided among the 5 dimensions, so that each one is operationalized for three items.

In order to evaluate different evidences of external validity, the following instruments were also administered:

2.2.1 Interpersonal Reactivity Index (IRI)

The IRI (Davis, 1983) operationalizes a multidimensional construct of empathy, including cognitive and affective aspects through four dimensions: empathic concern, perspective-taking, fantasy, and personal discomfort. Richaud de Minzi (2008) studied it in Argentinean population, with findings of adequate psychometric properties. In this work, only the dimensions of empathic concern (emotional) and perspective-taking (cognitive) were considered, with an internal consistency of Cronbachs $\alpha = .75$ for each dimension. The items are answered in a scale that goes from 1 to 5 ("it does not describe me well", "it describes me a little", "quite well", "well", and "it describes me very well") (e.g., "I worry about or I am moved by people less fortunate than me").

2.2.2 Physical and Verbal Aggressiveness Scale (AFV)

The AFV (Caprara et al., 2005) evaluates, with a Likert scale of 15 items, the behavior of hurting other people in a physical or verbal way (e.g., "I insult my peers"). This

scale has been used in Argentina with adequate psychometric properties (Lemos, 2009, 2012; Richaud de Minzi, 2015), presenting a Cronbachs *Alpha* coefficient = .77.

2.2.3 Prosocial Behavior Scale (CP)

The CP (Caprara et al., 2005) provides a global measure of prosociality and consists of 16 items (e.g., “I try to help others”). This instrument has also been used in Argentina with satisfactory psychometric properties (Lemos, 2009, 2015; Richaud de Minzi, 2015), presenting a Cronbachs *Alpha* coefficient = .80.

2.3 Ethical procedures

Following the ethical guidelines of the American Psychological Association (2010), an informed consent was requested from the parents and/or legal guardians of the minors, as well as the informed consent of the adolescents. Only those adolescents who had been authorized and had manifested their willingness to participate took part in the study, receiving the corresponding guarantees of confidentiality of the information they provided.

2.4 Procedures followed in the development and analysis of the items and the scale

Starting from the operationalization for adults carried out by Lietz et al. (2011), who were also coming from the models of Decety and Jackson (2004), and Gerdes and Segal (2009), and the New Dimensional Questionnaire of Empathy for Children (Richaud et al., 2017), which also reflects the evolutionary understanding of empathy based on neuroscience, the items were reformulated considering that they adjusted theoretically to the starting model and that the expressions that were used were clear, simple, and of common use among Argentinean adolescents.

As was mentioned before, the items were submitted to revision by expert judges. The conceptual definition of each of the dimensions and the corresponding items were sent to each specialist, specifying the dimension that they intended to operationalize. They were asked to evaluate the syntactic and semantic adequacy of the items, the wording according to the target age group, and the theoretical coherence of the content with the corresponding dimension. Then, the adapted version that resulted from the suggestions of the judges was administered to a pilot sample of adolescents. Next, the version that was adjusted in accordance with the previous procedures was administered to the classification sample.

Given the low number of lost cases, the allocation criteria were to replace by the mode of the variable (Cichosz, 2014). A descriptive analysis of the items was carried out (mean, standard deviation, skewness and kurtosis). The discriminant capacity of the items was calculated through the corrected homogeneity index. Then, with the objective of verifying if the theoretical model that was proposed could be confirmed through the data, confirmatory psychometric analyses were carried out using the LISREL 8.8 software (Jöreskog & Sörbom, 1993).

Two models were contrasted: one of first order and one of second order.

The factors were extracted with the Maximum Likelihood method, with robust estimate. Different fit indexes were calculated (Hu & Bentler, 1999; Tanaka, 1993), χ^2/gl = chi-square over degrees of freedom; NFI (normalized fit index); NNFI (non-normalized fit index); IFI (incremental fit index); CFI (comparative fit index) and RMSEA (root mean square error of approximation); likewise, the SRMR (standardized root mean residual) was included. When the indexes of goodness are over .90, the RMSEA indexes below .08, and the SRMR indexes below .09, it is considered to be a good model fit (Hu & Bentler, 1999). Hu and Bentler (1999) suggests that the combination of the CFI indexes close to .95 and SRMR to .09 results in one of the lowest sums of type I and type II error rates.

In order to examine the reliability of the instrument, McDonalds *Omega* coefficient was calculated for the full scale and for each of its components. To assess the convergent validity of the test, an analysis of correlation between all the dimensions of the instrument and the factors perspective-taking and empathic concern from Davis IRI (1983) was carried out.

Moreover, through a multivariate analysis of variance (MANOVA), the scores of the different dimensions of empathy were measured, in order to evaluate, as theory and other empirical studies indicate, possible differences between men and women (e.g., Baca, 2016; Gorostiaga et al., 2014; Rose & Rudolph, 2006). Finally, with the objective of adding external evidences of validity, through a Pearson correlation analysis in *r*, the relation between the dimensions of empathy operationalized by the instrument and the constructs of prosocial behavior and physical and verbal aggression were studied, hoping for a positive correlation between empathy and prosocial behavior, and a negative one between empathy and physical and verbal aggression (Eisenberg et al., 2006; Garaigordobil & De Galdeano, 2006).

3. Results

In Table 1, the descriptive statistics are presented for each item. As can be observed, the asymmetry and kurtosis scores did not outweigh figures ± 2 whatsoever, as recommended by some authors (Bandalos & Finney, 2010; Muthén & Kaplan, 1985). Regarding the capacity of discrimination, assessed from the corrected homogeneity index (HI), most items showed values $>.30$ (Kline, 1999; Martínez Arias, 2005), except items 1, 4, and 9, with values $>.25$, which, although somehow lower, would be within acceptable values (Muñiz, 1993, 1998; Muñiz et al., 2005).

In Table 2 one can observe the values corresponding to the evaluated fit indexes: χ^2/gl , NFI, NNFI, IFI, CFI, AIC and RMSEA of each model. Results indicate an

Table 1

Descriptive Statistics

	<i>M</i>	<i>SD</i>	Skewness		Kurtosis		IHc
			Statistical	Standard Error	Statistical	Standard Error	
Item 1	2.76	1.080	.199	.147	-.440	.292	.275
Item 2	4.14	.979	-1.177	.147	1.144	.292	.418
Item 3	3.86	.932	-.401	.147	-.489	.292	.499
Item 4	2.95	1.122	-.032	.147	-.805	.292	.292
Item 5	3.97	.959	-.847	.147	.412	.292	.416
Item 6	4.13	.930	-.980	.147	.641	.292	.347
Item 7	4.09	.940	-1.162	.147	.908	.292	.404
Item 8	3.75	1.130	-.767	.147	-.108	.292	.361
Item 9	3.27	1.066	-.089	.147	-.520	.292	.264
Item 10	4.18	.968	-1.251	.147	1.384	.292	.476
Item 11	4.06	.972	-.794	.147	-.071	.292	.374
Item 12	4.22	.811	-.706	.147	-.325	.292	.319
Item 13	4.08	.986	-1.06	.147	1.138	.292	.373
Item 14	3.08	1.286	-.095	.147	-.940	.292	.472
Item 15	4.29	.821	-.948	.147	.139	.292	.520

Table 2

Fit indexes of the Compared Models

Models	χ^2/gl	NF	NNF	CF	GF	IFI	AIC	SRM	RMSE
M1:15 items 1° order	1.26	.94	.98	.99	.92	.99	181.0	.06	.031
M2:15 items 2° order	1.45	.94	.98	.99	.90	.99	193.52	.07	.041

Note. χ^2/gl =Chi-square over degrees of freedom; NFI=Normed Fit Index; NNFI=Non-Normed Fit Index; CFI=Comparative Fit Index; GFI=Goodness-of-Fit Index; IFI=Incremental Fit Index; AIC=Akaike Information Criteria; SRMR=Standardized Root Mean Residual; RMSEA=Root Mean Square Error of Approximation.

Figure 1

Estimated Parameters of the First Order Model

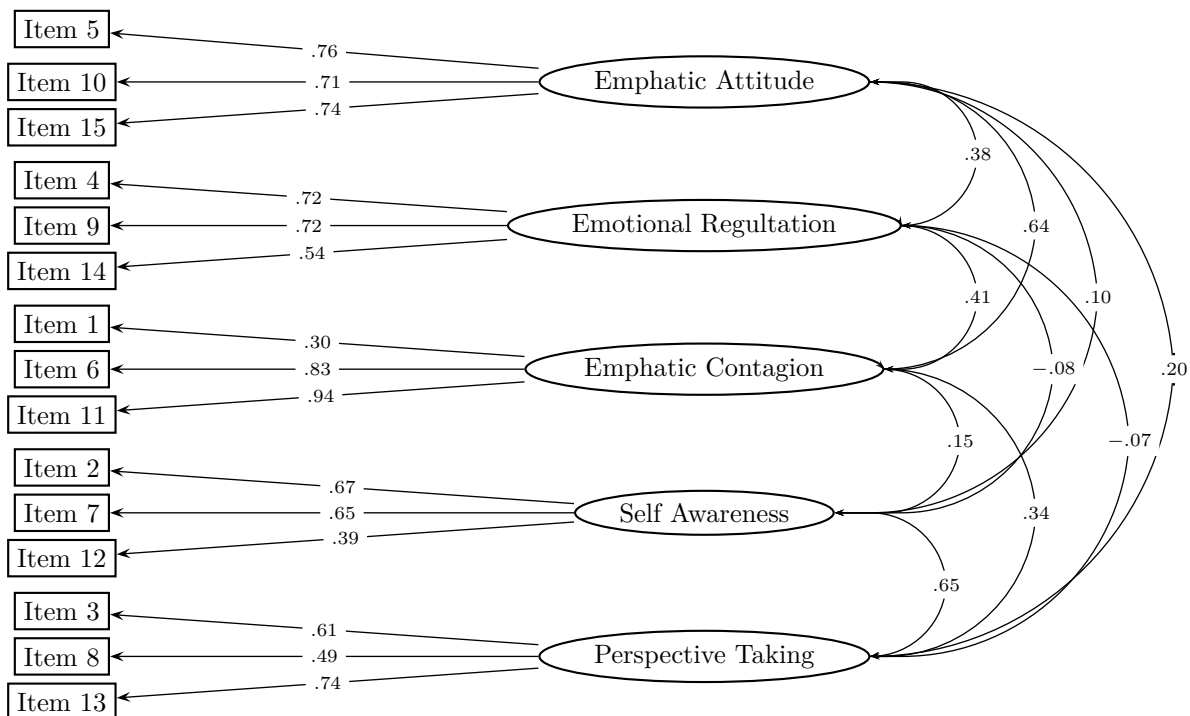
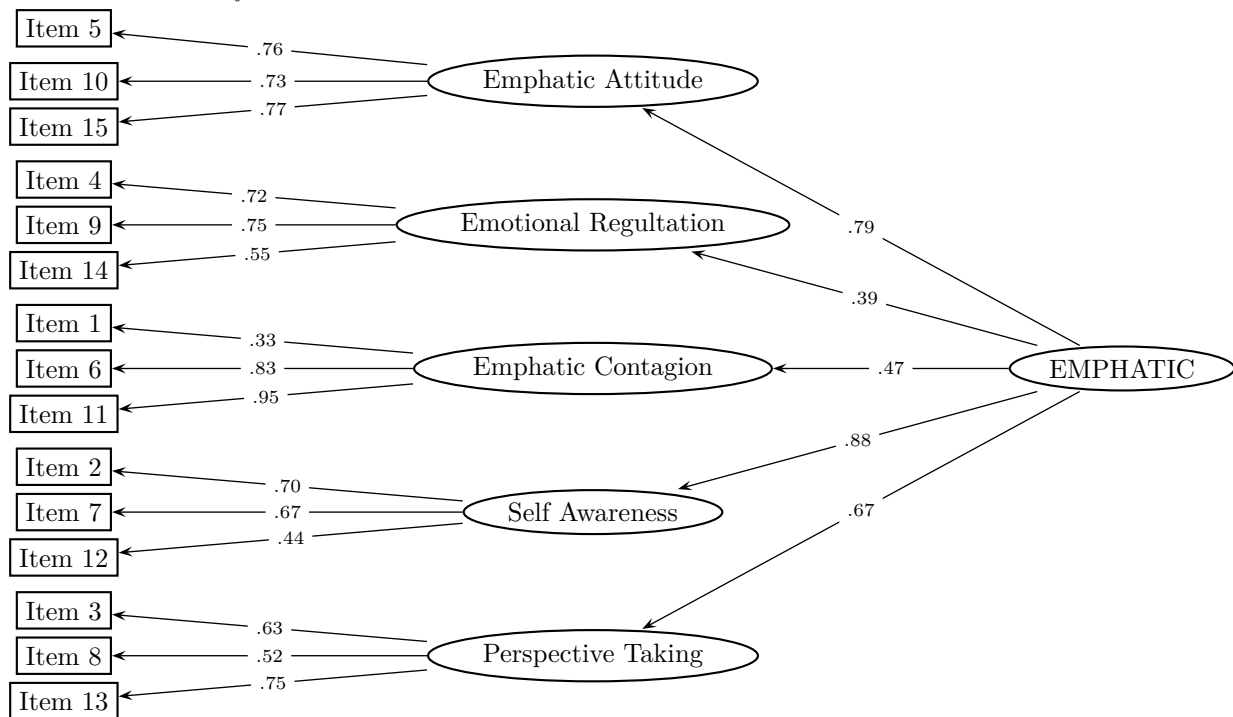


Figure 2

Estimated Parameters of the Second Order Model



adequate fit of both models. In figures 1 and 2, the models of first and second order are graphed, indicating standardized saturations.

Although the two compared models showed adequate fit indexes, model 1 showed lower error indexes, and, in some cases, higher fit scores. On the other hand, the Akaike Information Criteria (AIC), which provides a comparative measure of the relative quality of different models (Akaike, 1987), was lower, and, therefore, better in the first-order model. Nonetheless, given the satisfactory fit of the second-order model, which would allow the calculation of a total score of empathy from the sum of the five dimensions, McDonalds Omega coefficient was calculated (Ventura-León & Caycho-Rodríguez, 2017) for the full scale and for each sub-dimension. In general, the internal consistency for the scale was very satisfactory ($\Omega=.92$). By dimensions, empathic attitude ($\Omega=.80$), emotional contagion ($\Omega=.77$), and self-control ($\Omega=.72$) showed adequate scores (Ventura-León & Caycho-Rodríguez, 2017). The internal consistency was a little lower for the dimensions of self-awareness ($\Omega=.64$) and perspective-taking ($\Omega=.67$). Although in some circumstances, values around .65 could be considered acceptable (Katz, 2006).

When evaluating the correlation between the different dimensions of empathy that the instrument under study operationalizes, and the dimensions perspective-taking and empathic concern from the IRI (Davis, 1983), results indicated, as can be observed in Table 3, a positive and significant correlation between all the dimen-

sions, which supports an adequate convergent validity.

Likewise, positive and significant correlations were observed, in line with what is expected theoretically, between all the dimensions of the new empathy questionnaire and the construct of prosocial behavior. Finally, negative correlations were observed between empathy and physical and verbal aggression; these correlations being significant for the dimensions of self-control, self-awareness, perspective-taking, and empathic behavior. These last results account for an adequate discriminant validity of the scale under study (see Table 3).

Regarding the analysis of differences between the empathy of men and women, the results indicated that the empathy profile differs according to the gender – Hotellings $F(5,258) = 3.85$; $p < .002$; $\eta^2=.07$ –. The dimensions in which significant differences were specifically observed were empathic attitude ($F(1,262)=4.82$; $p < .000$; $\eta^2=.02$), emotional contagion ($F(1,262)=10.27$; $p < .002$; $\eta^2=.04$), and self-awareness ($F(1,262)=6.15$; $p < .014$; $\eta^2=.02$). In the three dimensions, women obtained higher scores (see Table 4 and Figure 3).

4. Discussion and Conclusions

The objective of this study was to build and psychometrically analyze a new Multidimensional Questionnaire of Empathy for Adolescents (CMEA in its Spanish initials), in accordance with a model of five components, based on the four components proposed by Decety and collaborators (Decety & Jackson, 2004; Decety & Moriguchi,

Table 3

Correlation between the Dimensions of Empathy of the new Questionnaire, Perspective Taking and Empathic Concern of the IRI, Prosocial Behavior, and Physical and Verbal Aggression

	Emotional Contagion	Emotional Regulation	Self-Awareness	Perspective Taking	Empathic Attitude
IRI PT	.244**	.399**	.369**	.594**	.434**
IRI EC	.385**	.121*	.266**	.250**	.463**
PB	.351**	.124*	.321**	.200**	.651**
PVA	-.072	-.457**	-.137*	-.325**	-.203**

Note. IRI PT=Dimension Perspective-Taking of the IRI; IRI EC=Dimension Empathic Concern of the IRI; PB=Prosocial Behavior; PVA = physical and verbal aggression. ** $p < .01$, * $p < .05$.

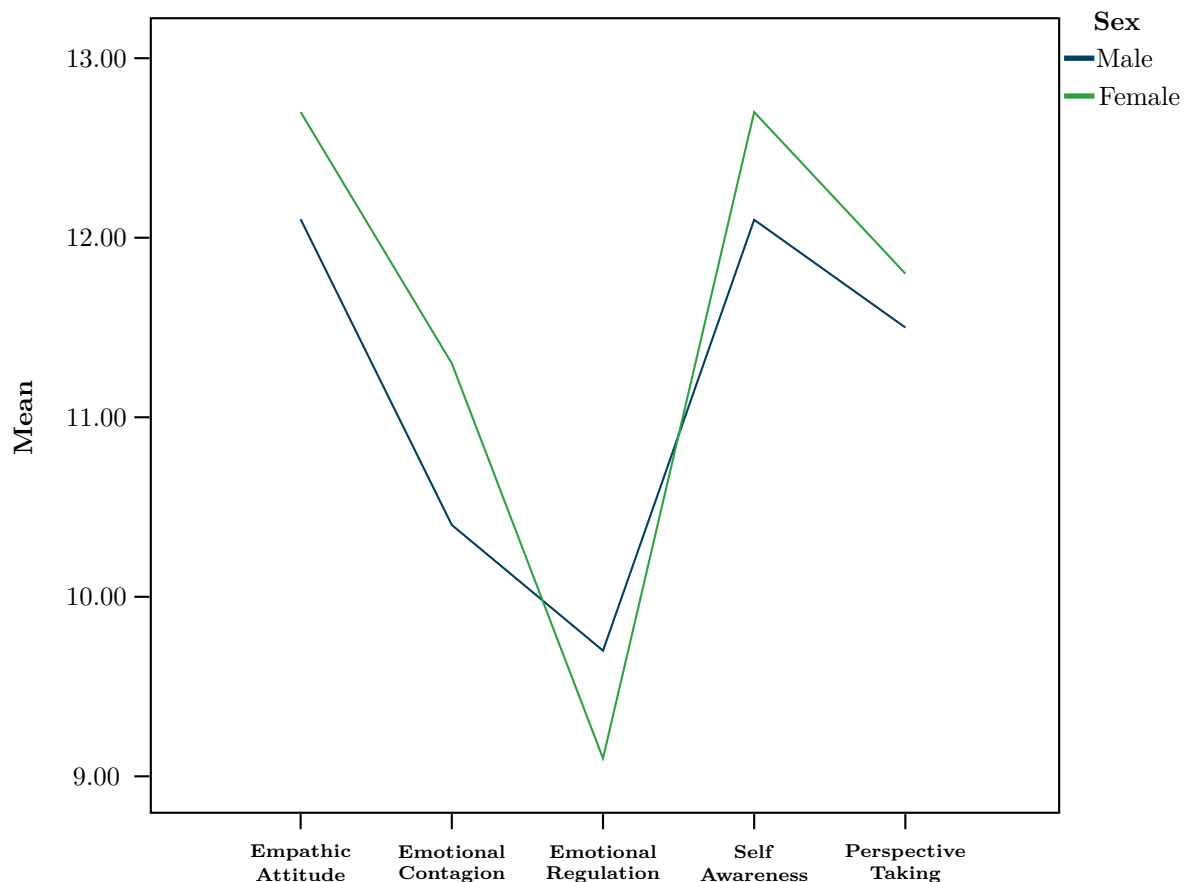
Table 4

Comparison of Empathy Based on Sex

Dimensions of empathy	Female		Male		$F(1,262)$	p
	M	SD	M	SD		
Empathic Attitude	12.74	2.13	12.13	2.18	4.82	.029
Emotional Contagion	11.27	2.28	10.36	2.14	10.27	.002
Emotional Regulation	9.10	2.53	9.66	2.88	2.63	.106
Self-Awareness	12.69	1.81	12.07	2.15	6.15	.014
Perspective Taking	11.83	2.09	11.50	2.49	1.30	.256

Figure 3

Empathy Profile According to Sex



2007) and a fifth one proposed by Gerdes and Segal (2009). The questionnaires available for adolescents, contribute with unidimensional models (affective or cognitive) or multidimensional ones (affective and cognitive), but they do not consider separate components corresponding to different developmental stages. That is why we have developed this new questionnaire, based on an evolutionary integrative model.

Regarding the internal validity of the sample, we have proven a structure of five factors, according to the theoretical model we started from, through a confirmatory factorial analysis which fit indexes were highly satisfactory. At the same time, the weighing of the items in each factor was significant in all cases. In addition, we carried out a CFA of second order, which fitting would indicate the possibility of summarizing the scores obtained from the five dimensions in just one, referred to empathy in general, although it would be a little lower than the multidimensional model.

On the other hand, regarding convergent validity, direct and significant relations were found between the dimensions of perspective-taking (cognitive factor) from the IRI and perspective-taking from the CMEA, and between empathic concern (affective factor) from the IRI and emotional contagion and empathic attitude from the CMEA, while in those regarding discriminant validity, an inverse and significant correlation was found between physical and verbal aggression (Caprara et al., 2005) and emotional control from the CMEA. These last results are consistent with other studies that have found that individuals who are more empathic show less aggressive behaviors (Balabanian & Lemos, 2018; Carlo et al., 1992; Eisenberg et al., 2006; Garaigordobil & De Galdeano, 2006; Richaud et al., 2017).

Adding another evidence of external validity, direct and significant correlations were found among all the dimensions of empathy from the CMEA and prosocial behavior, especially, as was expected, with the empathic attitude. These results are consistent with those from various studies that have observed a direct relationship between empathy and prosocial behavior (e.g., Carlo et al., 2010; Eisenberg et al., 2000; Gómez-Tabares & Narváez Marín, 2020; Gutiérrez San Martín et al., 2011; V. Lemos et al., 2015; Richaud et al., 2017; Samper, 2014).

Regarding the validity of the construct in reference to the testing of differences that are in line with theoretical hypotheses, it has been verified, as seen in different studies (e.g., Broidy et al., 2003; Carlo et al., 1996; Carlo et al., 1999; Eisenberg & Lennon, 1983; Eisenberg et al., 2001; Richaud de Minzi, 2013; Toussaint & Webb, 2005), that women have obtained higher scores than men in some aspects of empathy. The observed differences have been more notorious in the affective aspects than in the cognitive ones, with significant differences in emotional contagion and empathic attitude,

but not so in perspective-taking, which is also consistent with some studies in which differences favoring women were found in the affective dimension of empathy (Eisenberg & Lennon, 1983; Martínez-Otero, 2011; Pastor, 2004; Tobari, 2003). Within the field of Neuropsychology, some studies have seen greater reactivity in women when they were faced with negative images or images related to suffering (Mado et al., 2009), suggesting higher sensitivity when facing information that conveys an emotion of positive or negative valence (Bianchin & Angrilli, 2012; Groen et al., 2012; Kemp et al., 2004).

Regarding reliability as internal consistency, satisfactory *Omega* scores have been obtained in the general scale and in the components empathic attitude, emotional contagion, and emotional control, and moderate ones in perspective-taking and self-awareness.

Overall, this empathy questionnaire for adolescents provides a measure that is different from the existing ones, since it is a multidimensional questionnaire that allows the separate analysis of the different components, both affective and cognitive, related to different evolutionary stages in the development of empathy. In this sense, it also provides greater accuracy, in case one must determine an anomalous empathic process. In fact, there are different empathy dysfunctions that seem to reflect disability of one or several components of empathy. For instance, there is evidence that antisocial individuals do not experience concern about other people. That means they would have a limited capacity to experience the emotional state of other people, and especially for sadness and fear (Blair, 1995). Their lack of empathy would be more connected to disruptive affective processing than to the inability of placing themselves in the situation of someone else (Decety & Svetlova, 2012). Another example arises from the clinical and forensic research, where there is a distinction between affective or reactive aggression, in response to a physical or verbal aggression initiated by others that is uncontrollable and emotionally charged, and the cold-blooded instrumental aggression, that is controlled and intentional, emotionless, used with a definite purpose (Dodge et al., 1997). The empathy model the CMEA is based on indicates that the first type of aggression would lack executive control, especially self-control and self-regulation, while the second type of aggression would indicate some sort of dysfunction when sharing feelings with others (emotional contagion) (Decety & Moriguchi, 2007).

To summarize, from the psychometric analyses carried out, we are able to conclude that this Multidimensional Questionnaire of Empathy for Adolescents (CMEA) is a valid and reliable measure for the assessment of empathy in adolescents. Since it comes from a model of differentiated components, it would allow to accurately detect the determinants of an anomalous empathy development, essential to a correct diagnosis and an effective intervention.

5. Limitations and future direction of research

Some limitations could be addressed in future studies. One of them is linked to the criteria of the sample that was used, since convenience sampling, because of its dependence on the availability of the participants, presents, as compared to probabilistic sampling, many disadvantages which limit the possibility of generalizing the results (Otzen & Manterola, 2017). In this sense, the inclusion of random samples, representative of different geographic regions and socio-economical strata is recommended. Moreover, given that the study sample only included ages 13 to 16 (early and mid-adolescence), it would be advisable to broaden the age range, in order to evaluate possible differences in empathy between early, middle, and late adolescence. On the other hand, the development of a longitudinal study is considered important, allowing for the evaluation, during adolescence, of the evolutionary changes of empathy at intrasubject level.

Finally, the comparison between clinical and non-clinical samples would be of interest, so as to detect potential risk factors in adolescent population and to facilitate the design of interventions in order to prevent certain common pathologies in that age range.

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Appendix A

Evaluación multidimensional de la empatía para adolescentes

Sexo:

Edad:

Grado:

Escuela:

Por favor, hacé una cruz X en la opción que muestre mejor lo que a vos te pasa. Hacé sólo una cruz para cada afirmación. No hay respuestas correctas o equivocadas. Gracias por contestar a todos los ítems.

	Nunca	Pocas veces	A veces sí, a veces no	Muchas veces	Siempre
1. Cuando veo a alguien llorar, aunque no quiera, se me llenan los ojos de lágrimas.					
2. Soy consciente de que a mí puede no dolerme un golpe y a otro sí.					
3. Aunque otro piense distinto a mí, puedo comprenderlo.					
4. Tengo ataques de bronca.					
5. Tiendo a ayudar a alguien que está en problemas.					
6. Cuando alguien se ríe a carcajadas, me da risa a mí también.					
7. Aunque yo me sienta bien me doy cuenta cuando otro se siente mal.					
8. Cuando varios se pelean, trato de entender el punto de vista de cada uno.					
9. Mantengo la calma.					
10. Cuando alguien está triste trato de consolarlo.					
11. Cuando a alguien le da un ataque de risa, me río, aunque no quiera.					
12. Me doy cuenta de que hay cosas que a mí me divierten pero que a otros les aburren.					
13. Puedo entender que otros opinen diferente que yo.					
14. Cuando me enojo puedo controlarme para que los demás no se den cuenta.					
15. Trato de ayudar en lo que puedo.					

Clave de respuestas (de Nunca a Siempre, de 1 a 5; el ítem 4 es negativo y se invierte el puntaje)

Contagio emocional: ítems 1–6–11

Autoconciencia: ítems 2–7–12

Toma de perspectiva: ítems 3–8–13

Control emocional: ítems 4–9–14

Actitud empática: ítems 5–10–15