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4 **Psychometric properties of the Reflective Functioning**

5 **Questionnaire in a Colombian population sample.**

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7 **Ricardo Camilo Rueda¹, Stefano Vinaccia Alpi¹, Yuli Jimenez¹, Brayan**

8 **Vinasco¹, Yecid Baltazar Vidal²**

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13 **1** Psychology Program, Faculty of Health Sciences, University of Sinú,

14 Montería, Colombia.

15 **2** Statistics Program, University of Córdoba, Montería, Colombia.

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Abstract

The capacity to understand the behaviour of oneself and others in terms of internal states as emotions, beliefs, and desires (Reflective function or mentalization) is a key factor in the development of Borderline Personality Disorder (BPD). The present study aimed to analyze the psychometric properties in the Spanish version of the Reflective Functioning Questionnaire (RFQ).

Methods

A sample of 232 university students and 57 patients with mental and/or personality disorder for a total of 289 participants were used for this study. The sample was assessed with a sociodemographic questionnaire and the Reflective Functioning Questionnaire (RFQ) a self-report measure of mentalization.

Results

The study confirms the two factors structure of the RFQ composed of two subscales that asses certainty (RFQ_C) and uncertainty (RFQ_U) about mental states, with satisfactory reliability and construct validity. The results show no difference between the students and the clinic sample on the certainty subscale (77.2% and 77,8%) and a significant difference in the uncertainty scale (45.7% and 91,2%), showing hypo-mineralization on the clinical sample. The inspection of sedimentation charts revealed the presence of two components with its own value >1 in both subscales that explain the 52.02% and 59.1% of the total variability respectively while one component solutions just explain 35.1% of the variance of RFQ_C and 41.5% in RFQ_U.

Conclusions

The RFQ scale shows high reliability, appropriate internal consistency between items and concordance in the factorial structure with the original version.

Introduction

The reflective functioning is the process underlying the ability to understand the behavior of oneself and others based on the attribution of emotional and cognitive states as the explanation of behavior. This capacity, also labelled mentalizing, is fundamental in social relations since it allows understanding the behavior of the other and oneself, impulse control, affective regulation and the sense of a coherent identity [1].

The reflective function has been approached theoretically and investigative by dynamic and cognitive clinical models, however, only recently has it been considered susceptible to be measured [2], [3].

The presence or absence of this skill has been studied in different mental health problems such as post-traumatic stress disorder, mood disorders, eating disorders, personality disorders, autism and other psychiatric disorders [4], [1], [5]. On the other hand, authors such as Karterud & Kongerslev, [6] and Yeomans, Clarkin & Kernberg, [7] consider that the evaluation of the mentalizing or reflective function is fundamental for a dimensional and integral evaluation of the personality and is even considered as one of the differential qualities of subjectivity insofar as it guarantees individuality and intersubjective relations.

At first, the instruments available for the assessment of the reflective functioning were semi-structured interviews such as the Adult Attachment Interview [8]. In the Spanish language an alternative schedule is available "The Method for the evaluation of Mentalizing in the Interpersonal Context" (MEMCI) [9].

Subsequently, Fonagy et al [8] developed and reported the validation of the Reflective Functioning Questionnaire (RFQ). Initially, the RFQ was constructed with 26 items coded in two subscales from which the six items that best scored in the factor analysis of

the two subscales were chosen, configuring the test of 8 items which has two subscales, Certainty about Mental States (RFQ_C) and Uncertainty about Mental States (RFQ_U).

The high scores in the subscales denote two types of impairments in mentalization respectively, in the case of Certainty is the Hypermentalization or pseudomentalization which consists of an attempt to understand the behavior of the other in terms of mental states without having any evidence that supports that presumption [10].

In the case of Uncertainty, the extreme scores denote Hypomentalization which is characterized by a concrete thought that denotes difficulties in understanding themselves and others in terms of mental states, the majority being unable to recognize this impairment [10].

The scales were initially supported by three validation and consistency studies carried out in London (United Kingdom) and Leuven (Belgium) [10], later the RFQ was also adapted and validated in its French version [11] and more recently validated in Italy [12].

So far, RFQ has been used in different studies, in Norway where the relationship between the uncertainty about mental states and substance use in mothers was investigated [13]. It was also used in England to describe mentalizing in people with eating disorders [14], as well as in Italy to study mentalization in adolescent players [15]. In the Colombian case, it was used to evaluate the reflective functioning in sexual aggressors [16].

The absence of psychometric instruments to evaluate this ability in Spanish [17] led us to evaluate the psychometric properties of the RFQ in a sample of Colombian university students and clinical patients.

Methods

Participants and procedures

The test was administered to 289 participants from an incidental and non-probabilistic sample. The sample was composed of 88 (30%) men and 201 (69%) women; 232 participants were non-clinical samples recruited from a university in Córdoba, Colombia, (80%) and the clinical sample has consisted of patients with psychiatric and personality disorders (19%) recruited from inpatient/outpatient services in Córdoba, Colombia. The questionnaires that were not answered in full were not considered.

The test was administered individually for both the clinical and nonclinical samples after obtaining written informed consent, where the aims of the study were explained, the researchers in charge were presented and also explain that the participation is anonymous and confidential. The nonclinical sample was assessed during September and October 2018 and the clinical sample was taken during April 2019. This study was approved in ethical aspects by Research Board of the Health Sciences Faculty of Universidad del Sinú.

Measures

A questionnaire of sociodemographic data was applied to collect the basic information of the subjects. Subsequently, the 8-item RFQ Reflective Functioning Questionnaire was applied in its Spanish version. It comprises two subscales each of 6 items (Uncertainty and Certainty about mental states), The two scales operate with a Likert scale of 7 points that evaluate the degree of agreement of the subject with the sentences presented in each item. The items of Uncertainty or RFQ_U correspond to statements such as "Often very strong feelings cloud my thinking", they are recorded to detect extreme levels of uncertainty about mental states, in the following way 0, 0, 0, 0, 1, 2, 3, so that high scores reflect hypomentalization. The items corresponding to Certainty of mental states or RFQ_C contemplate statements such as "When I get angry I say things without really knowing why I say them" which are recorded as 3, 2, 1, 0, 0, 0, 0, in such a way that a

low degree of agreement reflects Hypermentalization. Both the English and Spanish version of the instrument are available from <https://www.ucl.ac.uk/psychoanalysis/research/reflective-functioning-questionnaire-rfq>.

Results

Demographics. The average age of the sample was 22.8 years (SD= 8.6; range=15-59). The majority (84%) were single, with 13% married or in consensual union, and the remaining separated, divorced or widowed (3%). The majority were undergraduate students (82%), but a significant minority had incomplete schooling at primary (7%) or secondary level (10%). The majority were in full-time education (79%), but a minority combined education with employment (7%) and 13% had a job or were self-employed. In terms socioeconomic status, the majority were from low SES families (73%) and the remainder of the sample were from middle or high income households (27%).

The mean scores and distribution of the RFQ scores of the samples are shown in Table 1. The number of participants who scored highly on either scale was relatively small reflecting the asymmetric scoring of the items with 27% scoring highly on the Certainty and only 16% scoring higher than 2 on the Uncertainty scale.

Table 1: Means and distribution of RFQ scores on Certainty and Uncertainty scales

	Certainty		Uncertainty	
Mean (SD)		1.34 (0.64)		1.23 (0.67)
Score		Percentage		Percentage
0	65	22.5	131	45.3
1	147	50.9	112	38.8

2	73	25.3	38	13.1
3	4	1.4	8	2.8

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134 To compare clinical and non-clinical samples scores 1-3 were combined and
135 frequencies between low and higher scores were contrasted. In the comparison of non-
136 clinical and clinical samples (Table 2), no significant differences were found between the
137 two groups on the Certainty scales (chi squared=, p=0.xxx). Both samples have similar
138 scores near zero 22.8% and 21.1% respectively.

Table 2: Comparison of certainty between clinical and nonclinical participants.

	Low (0)		High (1-3)		
	Frequency	Percentage	Frequency	Percentage	Total
Certainty					
Nonclinical	53	23%	179	77%	232
Clinical	12	21%	45	79%	57
Uncertainty					
Nonclinical	126	54%	106	46%	232
Clinical	5	9%	52	91%	57

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140 There were significant differences between the levels of Uncertainty for clinical and
141 nonclinical participants; since for an average score of zero, percentages of 54.8% and
142 8.8% were obtained for non-clinical and clinical participants respectively. This implies
143 that clinical participants are more likely to present higher levels of uncertainty/opacity.

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145 **Associations with demographic features.** To assess the independence of the results
146 in both subscales from demographic features, a Chi-squared test (χ^2) was implemented.

As shown in table 3, the certainty subscale was unrelated to sociodemographic features since the independence test shows significance values higher than 0.05 confirming the hypothesis of independence between certainty and sociodemographic features.

Table 3: Bivariate distribution between sociodemographic features and Certainty subscale with the respective Independence Test

		Certainty Level		Independence Test	
Sociodemographic Features		Low	High	Statistic	Significance
	Clinical	21,10%	78,90%	$\chi(1) = 0,314$	0,842
	Nonclinical	22,80%	77,20%		
Sex	Men	46,60%	53,40%	$\chi(1) = 0,328$	0,567
	Women	50,20%	49,80%		
Age	Young	49,20%	50,80%	$\chi(3) = 0,328$	0,567
	Young Adult	39,10%	60,90%		
	Adult	64,30%	35,70%		
	Late Adult	50,00%	50,00%		
SES	1	49,20%	50,80%	$\chi(5) = 0,930$	0,968
	2	46,90%	53,10%		
	3	53,30%	46,70%		
	4	46,20%	53,80%		
	5	33,30%	66,70%		
	6	50,00%	50,00%		

On the other hand, uncertainty levels were affected by gender, age and the patient condition (Clinical or nonclinical) since the independence test between RFQ_U and these sociodemographic features present little levels of significance ($p < .001$) (Table 4).

154 Therefore, women, young participants and clinical participants present higher levels of
 155 Uncertainty than the other participants.
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**Table 4: Bivariate distribution between sociodemographic features and
 Uncertainty subscale with the respective Independence Test**

		Uncertainty Level		Independence Test	
Sociodemographic Features		Low	High	Statistic	Significance
	Clinical	8,80%	91,20%	$\chi(1) = 76,434$	0,00
	Nonclinical	54,30%	45,70%		
Gender	Men	45,50%	54,50%	$\chi(1) = 14,914$	0,00
	Women	22,90%	77,10%		
Age	Young	22,90%	77,10%	$\chi(3) = 30,704$	0,00
	Young adult	52,20%	47,80%		
	Adult	71,40%	28,60%		
	Late Adult	62,50%	37,50%		
SES	1	36,20%	63,80%	$\chi(5) = 8,626$	0,125
	2	24,70%	75,30%		
	3	20,00%	80,00%		
	4	30,80%	69,20%		
	5	66,70%	33,30%		
	6	50,00%	50,00%		

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158 **Confirmatory Factor Analysis (CFA).** The subscale items RFQ_C and RFQ_U were
 159 subjected to a CFA using data from the sample of clinical and non-clinical participants,

and the appropriateness of the data for factor analysis was assessed. The value of Kaiser-Meyer-Olkin was 0.689 for RFQ_C and 0.753 for RFQ_U; Bartlett's sphericity test reached statistical significance ($p < 0.05$) for RFQ_C and RFQ_U; which indicates the existence of significant correlations between the items of the RFQ_C and RFQ_U scales, supporting the reduction of dimension or factorable of the data. The principal component method was used for factor extraction and varimax rotation to determine the best correlated factor with each item.

Inspection of the sedimentation graphs revealed that for both RFQ_C and RFQ_U, the presence of two components with a proper value > 1 , which explained 52.02% and 59.1% of the total variability of RFQ_C and RFQ_U; while the one-component solutions explained a total of 35.1% of the variance in the RFQ_C scores and 41.5% of the variance in the RFQ_U scores. Correlations between elements and factor loads are shown in Tables 5 and 6.

Table 5: Correlations between ítems of certainty subscale (RFQ_C) and uncertainty subscale (RFQ_U)

		RFQc1	RFQc2	RFQc3	RFQc4	RFQc5	RFQc6
RFQ_C	RFQc1	1.000					
	RFQc2	0.073	1.000				
	RFQc3	.127*	.210**	1.000			
	RFQc4	.119*	.221**	.432**	1.000		
	RFQc5	0.097	.250**	.184**	.135*	1.000	
	RFQc6	0.094	.414**	.266**	.319**	.242**	1.000
		RFQu2	RFQu4	RFQu5	RFQu6	RFQu7	RFQu8
RFQ_U	RFQu2	1.000					
	RFQu4	.309**	1.000				

	RFQu5	.169**	.311**	1.000			
	RFQu6	.503**	.346**	.323**	1.000		
	RFQu7	.141*	0.076	0.113	.159**	1.000	
	RFQu8	.215**	.313**	.352**	.220**	-0.011	1.000

Table 6: Factors loadings for RFQ subscales items.

	RFQ_C	RFQ_U
RFQ item	Factor I	Factor I
RFQc1	0.587	
RFQc2	0.721	
RFQc3	0.562	
RFQc4	0.652	
RFQc5	0.584	
RFQc6	0.783	
RFQu2		0.814
RFQu4		0.765
RFQu5		0.671
RFQu6		0.727
RFQu7		0.432
RFQu8		0.722

Table 7 show the commonalities of each item, every item presents a commonality higher than 0.3. This means that every item is well represented by its respective factor.

Table 7: Percentage of variance extracted from each item (Commonalities)

	Initial	Extraction
RFQc1	1.000	0.412
RFQc2	1.000	0.668
RFQc3	1.000	0.612
RFQc4	1.000	0.768
RFQc5	1.000	0.713
RFQc6	1.000	0.561
RFQu2	1.000	0.656
RFQu4	1.000	0.733
RFQu5	1.000	0.779
RFQu6	1.000	0.657
RFQu7	1.000	0.463
RFQu8	1.000	0.569

The Cronbach alpha values were 0.715 for RFQ_C and 0.765 for RFQ_U which indicates good internal consistency in the items for both RFQ_C and RFQ_U.

Discussion

This study aimed to test the validity and reliability of the Spanish version of the RFQ to assess the mentalization in the Colombian population, through a confirmatory factor analysis. Likewise, the study also attempted to confirm the ability of the instrument to

differentiate the performance in the ability of the general population from the clinical population.

The CFA corroborates the two-factor model proposed in the original study and confirmed in the French and Italian versions [8], [11], [12]. The internal reliability of the two subscales RFQ_C and RFQ_U were also confirmed.

The results suggest that RFQ_C subscale is not related with sociodemographic features, not even with clinical status. This finding is similar to the conclusions of the original study where they found that RFQ_C subscale is inferior predicting caseness than RFQ_U [8]. The French and the Italian version neither find a relation between RFQ_C and sociodemographic features [11], [12].

The results show a relation between RFQ_U with gender, age and clinical status, this means that women, young participants and clinical participants tend to present hypomentalizing. These findings are different with previous studies which did not find relation between the subscales and sociodemographic features [8], [11], [12]. Further research is needed to explain and confirm this result. On the other hand, the association between RFQ_U and clinical status validates the findings of the original study and confirms the relation of mental health problems with hypomentalizing, and the ability of the subscale in predict caseness [8].

In the comparison of the performance of the two populations in the questionnaire, we found that in the Uncertainty scale (RFQ_U) there is a significant difference between the performance of the general population and the clinical population showing that the majority of clinical participants present hypomentalization, which evidences that the majority of patients with mental disorders present with some difficulty. This corroborates the findings of the original study [8].

In the case of the certainty scale (RFQ_C), no significant differences were found between the clinical and the non-clinical population since in both populations there is a majority of people with a tendency to hypermentalization, which implies greater difficulty in differentiating performance in this aspect of mentalization in the clinical population from the non-clinical population. These findings differ from those found in previous validation studies, which show that just as the Uncertainty scale, the certainty scale presents significant differences between the two populations [11], [12] it should be clarified that in the original study this scale presented a smaller difference than the Uncertainty scale, although equally significant [8]. This difference could be explained by the characteristics of the Colombian population that presents a tendency to hypermentalization, as evidenced in the National Mental Health Survey where it is described that the majority of respondents tended to consider accidental situations as intentional [18].

It is important to mention that the present study presented limitations that can be improved in the future such as expanding the clinical sample and being able to differentiate the results of the different types of mental disorders since this could help understand the ability of the test to discriminate the functioning of the mentalization in the different types of disorders. It is also important that other studies evaluate the non-clinical population in participants other than college students to see if there are other factors associated with performance in the function. It is also important to carry out similar studies in other cities of Colombia since this study is limited to the city of Montería.

In conclusion, this study represents a first step for the validation and evaluation of the reliability of the RFQ in the Colombian population, obtaining for the moment a relatively

good performance of the test in the evaluation of mentalization. This simple instrument was acceptable to both the clinical and non-clinical sample indicating that it could be useful in other clinical contexts.

Author Contributions

Conceptualization: Ricardo C. Rueda, Stefano Vinaccia Alpi.

Data curation: Ricardo Camilo Rueda, Yuli Jimenez

Formal Analysis: Yecid Baltazar Vidal

Investigation: Ricardo Camilo Rueda, Yuli Jimenez, Brayan Vinasco.

Methodology: Ricardo C. Rueda, Stefano Vinaccia Alpi,

Project Administration: Ricardo C. Rueda

Resources: Ricardo C. Rueda, Brayan Vinasco, Yecid Baltazar Vidal

Software: Yecid Baltazar Vidal

Supervision: Stefano Vinaccia Alpi

Validation: Stefano Vinaccia Alpi

Writing – Original Draft Preparation: Ricardo C. Rueda, Stefano Vinaccia Alpi

Writing – Review & Editing: Ricardo C. Rueda, Stefano Vinaccia Alpi, Yuli Jimenez, Brayan Vinasco.

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