BRIEF-P: Validation Study in Children in Early Childhood With Neurodevelopmental Disorders

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Abstract

The Behaviour Rating Inventory of Executive Function-Preschool Version (BRIEF-P) is a hand-storable instrument that permits evaluation of the executive functions in children between the ages of 2 years and 5 years 11 months by parents, teachers, or other usual child caregivers, thus facilitating early intervention. It is a standardized questionnaire that is derived from the school version. It has been translated into different languages and adapted to different cultures and recently it has been translated into Spanish. It is answered using a Likert-type frequency scale. It is composed of 63 items that measure various aspects of executive functioning: five clinical scales, three broad indexes, one composite score or Global Executive Composite, and validity scales. The objective of this study was to analyze the psychometric properties related to the validity and reliability of BRIEF-P in children with neuropsychological, psychological, and developmental disorders that begin to manifest during early years. Non-experimental or ex post facto research was the method used. The participants were 107 parents and 98 teachers, evaluating 205 children. We analyzed several psychometric properties, related to reliability and validity, and compared the results with normative and clinical samples in the versions (parents and teachers). It is confirmed that BRIEF-P is a valid and reliable instrument with which to evaluate executive functions in children having neurodevelopmental disorders. We believe that BRIEF-P can be an especially useful and advisable instrument to be applied by educational psychologists and children's clinicians in a population. BRIEF-P is discriminative and sensitive to executive deficits in the clinical population.

Keywords

BRIEF-P, executive functions, neurodevelopmental disorders, reliability, validity

Highlights

- · Parents and teachers are reliable sources for assessing the development of executive functions of children in early childhood education who have neurodevelopmental disorders.
- It is confirmed that Behaviour Rating Inventory of Executive Function-Preschool Version (BRIEF-P) is a valid and reliable instrument with which to evaluate executive functions in children having neurodevelopmental disorders.
- Differences are obtained depending on whether chil-• dren have neurodevelopmental disorders or typical development when evaluated by parents and teachers.

Introduction

The application of Behaviour Rating Inventory of Executive Function-Preschool Version (BRIEF-P) has been chosen because it has been recently validated and adapted to English in the Spanish population. This is justified in its novelty, in comparison with other studies in other contexts where the originally version has been applied (Liogier d'Ardhuy et al., 2015; Sherman & Brooks, 2010; Yarnell et al., 2015).

BRIEF-P is an instrument to evaluate executive functions in children between the ages of 2 years to 5 years 11 months, and it is applied by parents, teachers, or other habitual child caregivers (informants).

It is used to evaluate executive functions in children with different neurodevelopmental disorders: (a) underweight (Anderson, McNamara, Andridge, & Keim, 2015), (b) Neurofibromatosis Type 1 (Lorenzo, Barton, Arnold, &

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Age 2-3 years 4-5 years	Teachers	(n = 98)	Parents	(n = 107)
Age	Frequency	Percentage	Frequency	Percentage
2-3 years	33	33.7	36	33.6
4-5 years	65	66.3	71	66.4
Total	98	100.0	107	100.0

Table I. Description of the Evaluated Children in Terms of Age (Frequency and Percentage).

Note. BRIEF-P = Behaviour Rating Inventory of Executive Function-Preschool Version.

North, 2013), (c) specific language disorder (Vugs, Hendriks, Cuperus, & Verhoeven, 2014), (d) Attention Deficit Hyperactivity Disorder (ADHD; Holt, Beer, Kronenberger, Pisoni, & Lalonde, 2012; Skogan et al., 2015; Veleiro, Peralbo, & Artigas, 2012), (e) Down Syndrome (Liogier d'Ardhuy et al., 2015), (f) hearing impairment (Holt et al., 2012), and (g) glutinic acid type (Beauchamp, Bonch, & Anderson, 2009).

The application requires 10 to 15 min. It is answered using a Likert-type frequency scale with three response options: *never, sometimes*, and *frequently*. It is composed of 63 items under five clinical scales (Inhibition, Emotional Control, Flexibility, Working Memory, and Plan/Organize), three clinical indexes (Inhibitory Self-Control, Flexibility, and Emergent Metacognition), Global Executive Composite, and two validity scales (Negativity and Inconsistency).

There are scales according to informant (parents and teachers) with respect to the development contexts (family or school), by sex and age groups (*T*-scores). *T*-scores greater than or equal to 65 reflect higher levels of problems or difficulties.

It is a standardized questionnaire that has recently been translated, adapted, and arranged in our particular context by Bausela and Luque were adapters the BRIEF-P in 2016 (Gioia, Espy, & Isquith, 2016).

Present Study

This study is aimed at analyzing the psychometric properties (reliability and validity) of BRIEF-P in a sample of children with neurodevelopmental disorders who have been evaluated by parents and teachers. Also, this study compares the development of executive functions in children in early childhood—those who present neurodevelopmental disorders that are evaluated by their parents and teachers—with a normative and clinical population.

Method

Design

Non-experimental methodology, ex post facto, descriptive, cross-sectional development study.

Participants

Participants were 107 parents and 98 teachers, evaluating 205 children, including those with various neurodevelopmental disorders, who participated in the adaptation and validation process for the BRIEF-P test in Spanish population (Gioia et al., 2016): ADHD, prematurity, language disorders, autism, language, epilepsy, Attention deficit disorder (ADD), mixed clinical group (maturational delay, neurofibromatosis, specific learning disorders, hypoxia, etc.). Neurodevelopmental disorders have been selected which, according to the body of literature, are accompanied by deficits in executive functions (Tirapu, García, Ríos, & Ardila, 2011).

Table 1 presents the distribution of children, according to their age, as evaluated by the informants: (a) 66.3% (n = 65) of the children evaluated by the teachers are 4 to 5 years of age and (b) 66.4% (n = 71) of the children evaluated by the parents are 4 to 5 years of age.

Procedure

BRIEF-P was completed by parents, guardians, and teachers of children from 2 years to 5 years 11 months, who had knowledge of the child for a minimum period of 6 months. The study was conducted between 2013 and 2016.

Analysis of Data

For the analysis of reliability, internal consistency has been studied, based on Cronbach's alpha. For the analysis of construct validity, the internal structure has been analyzed using confirmatory factorial analysis. To compare the development of executive functions between different samples (normative and clinical), the Student's *t* test was applied for independent samples pertaining to the parent and teacher versions.

Results

Descriptive

There are differences depending on the informants, so when the respondents are (a) teachers, the highest scores correspond to Working Memory (M = 32.45, DT = 8.92) and Emergent Metacognition Index (M = 50.34, DT = 13.92);

	-								
Clinical scales/Indices	Range	Minimum	Maximum	Sum	Median	Typical Deviation	Variance	Asymmetry	Kurtosis
Teachers ($n = 98$)									
Clinical scales									
Inhibition	30	16	46	2.98	30.48	8.21	67.40	18	-1.09
Flexibility	19	10	29	1.53	15.66	5.24	27.44	.97	0.08
Emotional Control	18	10	28	1.60	16.33	5.31	28.20	.53	-0.80
Working Memory	32	17	49	3.18	32.45	8.92	79.57	02	-0.89
Planning and Organization	19	10	29	1.75	17.89	5.47	29.96	.32	-0.90
Indices									
Inhibitory Autocontrol	47	26	73	4.58	46.81	12.35	152.59	.04	-1.02
Flexibility	36	20	56	3.13	31.99	9.55	91.18	.73	-0.38
Emergent Metacognition	51	27	78	4.93	50.34	13.91	193.67	.10	-0.88
Global Executive Function	105	66	171	11.05	112.81	25.88	669.72	.08	-0.68
Parents ($n = 107$)									
Clinical scales									
Inhibition	29	17	46	3.28	30.74	7.25	52.55	.05	-0.57
Flexibility	18	10	28	1.62	15.15	4.07	16.62	.76	0.00
Emotional Control	18	10	28	1.84	17.23	4.21	17.74	.32	-0.30
Working Memory	34	17	51	3.37	31.51	7.70	59.33	.16	-0.5 I
Planning and Organization	19	10	29	1.92	17.96	4.36	18.98	.26	-0.38
Indices									
Inhibitory Autocontrol	44	27	71	5.13	47.97	10.26	105.27	.03	-0.42
Flexibility	34	20	54	3.46	32.38	6.95	48.37	.36	-0.21
Emergent Metacognition	51	27	78	5.29	49.48	11.51	132.45	.18	-0.50
Global Executive Function	111	66	177	12.05	112.60	21.60	466.90	.05	-0.22

Table 2. Descriptive Statistics (Scales and Clinical Indexes of BRIEF-P; Parents and Teachers).

Note. BRIEF-P = Behaviour Rating Inventory of Executive Function-Preschool Version.

(b) parents, the highest scores correspond to Working Memory (M = 31.51, SD = 7.70) and Emergent Metacognition Index (M = 49.48, SD = 11.51). Table 2 presents descriptions of BRIEF-P clinical scales and indexes according to the informants: parents and teachers.

Psychometric Properties: Reliability and Validity

For the reliability analysis, the internal consistency has been studied, based on Cronbach's alpha. For the analysis of construct validity, the internal structure was analyzed using confirmatory factorial analysis.

Reliability of the Scales: Internal Consistency

Reliability is a psychometric property that refers to the absence of measurement errors, in other words, to the degree of consistency and stability of the scores obtained along successive measurement processes using the same instrument. Reliability has been analyzed when considering internal consistency. Reliability is a quality of test scores that indicates that they are useful because they are sufficiently consistent and free of measurement errors. Internal consistency has been calculated using Cronbach's alpha at the different scales in the different subsamples. All alpha coefficient values are greater than .8: (a) Teachers ($\alpha = .89$) and (b) Parents ($\alpha = .89$). The alpha coefficient can be rated as very good (>.90) in Flexibility of teachers and parents and Global Executive Composite for parents. The values proposed by George and Mallery (2003) suggest that an alpha coefficient value >.08 is good and >.09 is very good.

The reliability coefficients of Cronbach's alpha are shown in Table 3. All alpha coefficient values are greater than .8. The alpha coefficient can be rated as very good (>.90) in Flexibility of teachers and parents and Global Executive Composite for parents. The values proposed by George and Mallery (2003) suggest that an alpha coefficient value >.08 is good and >.09 is very good.

Typical Measurement Errors for clinical scales and indexes of BRIEF-P as a function of the respondent in *T*-scores were calculated by applying the generic formula that is available in the Spanish version of BRIEF-P (Gioia et al., 2016).

Validation: Factor Analysis

The highest correlation coefficients are obtained from between (a) Emotional Control With Inhibition (r = .57, p = .000) and (b) Plan/Organize (r = .81, p = .000) with Working Memory. The lowest coefficient corresponds to

 Table 3. Total Element Statistics (Parents and Teachers).

	Cronbach's α if the element has been deleted	Typical measurement error
Teachers $(n = 98)$		
Clinical scales		
Inhibition	.88	3.39
Flexibility	.90	3.16
Emotional Control	.89	3.26
Working Memory	.88	3.42
Planning and Organization	.89	3.26
Indices		
Inhibitory Autocontrol	.87	3.55
Flexibility	.89	3.38
Emergent Metacognition	.88	3.49
Global Executive Function	.89	3.19
Parents ($n = 107$)		
Clinical scales		
Inhibition	.88	3.45
Flexibility	.90	3.11
Emotional Control	.89	3.19
Working Memory	.88	3.46
Planning and Organization	.89	3.26
Indices		
Inhibitory Autocontrol	.87	3.56
Flexibility	.89	3.32
Emergent Metacognition	.87	3.56
Global Executive Function	.90	3.16

Note. BRIEF-P = Behaviour Rating Inventory of Executive Function– Preschool Version.

the association between Flexibility and Inhibition (r = .27, p = .005).

The highest correlation coefficients are obtained from between (a) Inhibitory and Emotional Control (r = .65, p =.000) and (b) Plan/Organize (r = .86, p = .000) with Working Memory. The lowest coefficient corresponds to the association between Flexibility and Plan/Organize (r = .29, p = .005). Table 4 presents the intercorrelations matrix of the five clinical scales for the teacher and parent version of the test.

To check if the correlation matrix is an identity matrix, that is, the intercorrelations between the variables are zero, we use Bartlett's sphericity test, which consists of an estimate of the chi-square transformation of the determinant of the correlation matrix. If the variables are not intercorrelated, then Bartlett's sphericity test must have a value (significance) higher than the limit of.05. The data matrix is valid for continuing with the factor analysis process, as in our case this analysis had a significance that was much lower than the limit of .05, it was .000.

The Kaiser-Meyer-Olkin (KMO) and Bartlett's Test measure of sampling adequacy of teachers was used to examine the appropriateness of factor analysis. The approximate of chi-square is 279.00 with 10 degrees of freedom, which is significant at .000 level of significance. The KMO statistic of 0.61 is also large (greater than 0.50). Hence factor analysis is considered as an appropriate technique for further analysis of the data.

The KMO and Bartlett's Test measure of sampling adequacy of parents was used to examine the appropriateness of factor analysis. The approximate of chi-square is 247.14 with 10 degrees of freedom, which is significant at .000 level of significance. The KMO statistic of 0.70 is also large (greater than 0.50). Hence factor analysis is considered as an appropriate technique for further analysis of the data.

In the factor analysis, it was considered that a scale belongs to a component above a value of 0.40. When there are two or more values above this limit, the scale considered in the component is the higher value. As shown in Table 5, the model obtained for teachers (n = 98) is made up of three factors that explain 92.95% of the variance. Subsequently, we discuss the scales that make up the three factors: (a) Component 1 explains 37.56% of the variance and includes Plan/Organize and Working Memory; (b) Component 2 explains 28.32% of the variance and includes Inhibition and Emotional Control; and (c) Component 3 explains 27.06% of the variance and includes Flexibility. The model obtained for the parents (n = 107) is configured by three factors that explain 90.83% of the variance. Furthermore, we discuss the scales that make up the three factors: (a) Component 1 explains 40.77% of the variance and includes Plan/Organize, Working Memory, and Inhibition; (b) Component 2 explains 26.37% of the variance and includes Emotional Control; and (c) Component 3 explains 20.77% of the variance and includes Flexibility.

Difference Between Groups: Parents (Clinical) Versus Teachers (Clinical)

We compared the scores of parents and teachers in the scales and clinical indexes of BRIEF-P. The results of the Student's t test for independent samples indicate that there are no statistically significant differences, depending on the respondents (see Table 6).

Difference Between Groups: Parents (Normative vs. Clinical) and Teachers (Normative vs. Clinical)

The teachers in the clinical sample scored higher with respect to the behaviors manifested by children at all scales clinical and indices of the test compared with the normative sample. Table 7 shows that there are statistically significant differences between teachers (normative vs. clinical) in all scales and clinical indexes of BRIEF-P.

The parents of the clinical sample scored higher with respect to the behaviors manifested by children at all scales

BRIEF-P (Clinical scales)	Pearson's correlation/Sig.	I. Inhibition	2. Flexibility	3. Emotional Control	4. Working Memory	5. Planning and Organziation
I. Inhibition	Pearson's correlation	I	.33**	.65**	.59**	.47**
	Sig. (bilateral)		.001	.000	.000	.000
2. Flexibility	Pearson's correlation	.27**	I	.64**	.32**	.2 9 **
	Sig. (bilateral)	.005	_	.000	.001	.004
3. Emotional Control	Pearson's correlation	.57**	. 4 1**	I	.39**	.37**
	Sig. (bilateral)	.000	.000	_	.000	.000
4. Working Memory	Pearson's correlation	.68**	.35**	.35**	I	.86**
ç, ç	Sig. (bilateral)	.000	.000	.000	_	.000
5. Planning and	Pearson's correlation	.63**	.26**	.34**	.81**	I
Organization	Sig. (bilateral)	.000	.007	.000	.000	—

Table 4. Matrix of Intercorrelations (Parent and Teacher).

Note. Teachers (n = 98), (a) Determinant = .052. Top part table teachers. Parents (n = 107), (a) Determinant = .092. Bottom part table parents. BRIEF-P = Behaviour Rating Inventory of Executive Function–Preschool Version. *p < .05. **p < .01. ***p < .01.

Table 5. Matrix of Rotated Component (Parents and Teachers).

		Teachers	(n = 98)			Parents	(n = 107)	
		Compo	onents			Comp	onents	
BRIEF-P (Clinical scales)	I	2	3	Total	I	2	3	Total
Planning and Organization	.94				.92			
Working Memory	.92				.91			
Inhibition		.90			.68			
Emotional Control		.69				.93		
Flexibility			.95			.19	.96	
% of variance explained	37.56	28.32	27.06	92.95	40.77	26.37	20.77	90.83

Source. BRIEF-P (Spanish adaptation).

Note. Extraction method: main component analysis. Rotation method: Varimax with Kaiser normalization. The rotation has converged in five iterations. BRIEF-P = Behaviour Rating Inventory of Executive Function–Preschool Version.

clinical and indices of the test compared with the normative sample. Table 8 shows that there are statistically significant differences between parents (normative vs. clinical) at all scales clinical and indexes of BRIEF-P.

Discussion

The first objective of this study relates to the analysis of the psychometric properties of BRIEF-P in a sample of children with neurodevelopmental disorders who are evaluated by parents and teachers in an unprepared manner. In relation to this objective, we highlight two aspects:

- Reliability: In the assessment of the internal consistency of the test, the results of the reliability of clinical scales and indexes in BRIEF-P are between .874 (Autocontrol Inhibitory scale in the teacher version) and .90 (Clinical Flexibility Scale in the parent version). We can conclude from the results that there is an adequate value for reliability.
- Validity: The results of the factorial analysis coincide with the results found in an American test (Veleiro et al., 2012), with three factors. Confirmatory factor analysis (CFA) repeats the same structure in both the parent questionnaire and the teacher questionnaire. The proposed factor structure, therefore, suggests that the scales of the test capture three types of difficulties.

The second objective of this study was to compare the development of executive functions in children with neurodevelopmental disorders from the perspective of parents and teachers (with clinical and normative samples). In relation to this objective, we can affirm that parents and teachers are reliable sources for assessing the development of executive functions of children in early childhood education who have neurodevelopmental disorders. In that, there are no differences in their perception, which disagrees with the results obtained by other authors and studies in a normative population (Montiel & Peña, 2001; Ortiz & Acle, 2006). Differences

Table 6. Independent-Sampl	es t Test: Par	ents (Cl	inical) Vers	us Teachers	: (Clinical).									
					Levene t equality of v	est of ⁄ariances			t test for	the equality	of means			
	Tura of			T Lezien Lezien				Degrees	is V	Difference	Standard	95% diff confidence	erence e interval	
BRIEF-P	informant	ч	R	Deviation	Ч	þ	Т	freedom	یری۔ (bilateral)	of means	difference	Lower	Upper	η²
Clinical scales														
Inhibition	Parents	107	30.74	7.25	4.00	.047	0.24	203	18.	.26	I.08	-I.87	2.39	000
	Teachers	98	30.48	8.21										
Flexibility	Parents	107	15.15	4.08	5.83	.017	-0.78	203	.43	51	0.65	-I.80	0.77	.003
	Teachers	98	15.66	5.24										
Emotional Control	Parents	107	17.23	4.21	8.23	.005	I.36	203	.17	16:	0.67	-0.41	2.22	600.
	Teachers	98	16.33	5.31										
Working Memory	Parents	107	31.51	7.70	2.32	.129	-0.80	203	.42	93	1.16	-3.22	I.35	.003
	Teachers	98	32.45	8.92										
Planning and Organization	Parents	107	17.96	4.36	7.90	.005	0.11	203	16.	.07	0.69	-I.28	I.43	000
	Teachers	98	17.89	5.47										
Indices														
Inhibitory Autocontrol	Parents	107	47.97	10.26	7.39	.007	0.74	203	.46	1.17	I.58	-I.95	4.28	.003
	Teachers	98	46.81	12.35										
Flexibility	Parents	107	32.38	6.95	10.47	100.	0.34	203	.73	.39	1.160	-1.9	2.68	100.
	Teachers	98	31.99	9.55										
Emergent Metacognition	Parents	107	49.48	11.51	4.57	.034	-0.49	203	.63	86	1.77	-4.36	2.65	100.
	Teachers	98	50.34	13.92										000
Global Executive Function	Parents	107	112.60	21.61	4.29	.040	-0.06	203	.95	21	3.32	-6.75	6.34	
	Teachers	98	112.81	25.9										

Source. BRIEF-P (Spanish adaptation). Note. BRIEF-P = Behaviour Rating Inventory of Executive Function–Preschool Version. *p < .05. **p < .01. **p < .01.

	Levene test of equality of variances		t test for equality of means						
				Degrees			Standard	95% dit confidence	ference ce Interval
BRIEF-P	F	Sig.	t	of freedom	Sig. (bilateral)	Difference of means	error difference	Lower	Upper
Clinical scales									
Inhibition	26.05	.000	12.47	998	.000***	8.57	0.69	7.22	9.92
Flexibility	63.64	.000	8.15	998	.000***	2.97	0.36	2.25	3.68
Emotional Control	37.30	.000	7.67	998	.000***	3.19	0.42	2.37	4.01
Working Memory	29.54	.000	14.13	998	.000***	9.98	0.71	8.59	11.36
Planning and Organization	56.56	.000	11.85	998	.000***	4.74	0.40	3.96	5.53
Indices									
Inhibitory Autocontrol	29.94	.000	11.6	998	.000***	11.76	1.01	9.77	13.75
Flexibility	59.38	.000	9.09	998	.000***	6.16	0.68	4.83	7.49
Emergent Metacognition	37.95	.000	13.71	998	.000***	14.72	1.07	12.61	16.83
Global Executive Function	30.59	.000	14.40	998	.000****	29.45	2.04	25.44	33.46

Table 7. Independent-Samples t Test (Teachers: Clinical vs. Normative).

Source. BRIEF-P (Spanish adaptation).

Note. BRIEF-P = Behaviour Rating Inventory of Executive Function–Preschool Version.

p < .05. p < .01. p < .01.

Table 8. Independent-Samples t Test (Parents: Normative vs. Clinical).

	Levene test of equality of variances			t test for equality of means							
				Degrees	Sig	Difference	Standard	95% differen inte	ce confidence erval		
BRIEF-P	F	Sig.	t	freedom	(bilateral)	of means	difference	Lower	Upper		
Clinical scales											
Inhibition	11.84	.001	11.46	1.182	.000****	6.81	0.59	5.65	7.98		
Flexibility	16.13	.000	5.02	1.182	.000****	1.67	0.33	1.02	2.32		
Emotional Control	4.58	.033	7.39	1.182	.000****	2.75	0.37	2.02	3.48		
Working Memory	28.56	.000	13.99	1.182	.000****	8.16	0.58	7.02	9.31		
Planning and Organization	15.67	.000	10.3	1.182	.000****	3.58	0.35	2.89	4.26		
Indices											
Inhibitory Autocontrol	5.31	.021	10.80	1.182	.000****	9.57	0.89	7.83	11.31		
Flexibility	9.58	.002	7.43	1.182	.000****	4.43	0.6	3.26	5.59		
Emergent Metacognition	25.09	.000	13.27	1.182	.000****	11.74	0.89	10.01	13.48		
Global Executive Function	11.96	.001	12.96	1.182	.000****	22.99	1.77	19.51	26.47		

Source. BRIEF-P (Spanish adaptation).

Note. BRIEF-P = Behaviour Rating Inventory of Executive Function–Preschool Version.

p < .05. p < .01. p < .01.

are obtained depending on whether children have neurodevelopmental disorders or typical development when evaluated by parents and teachers. These results allow us to conclude that BRIEF-P is sensitive to discriminate deficits in the executive functions between a normative population and a clinical population.

We conclude by affirming that BRIEF-P is an instrument that is sensitive to the development of executive functions and the informant who interacts with the child having a neurodevelopmental disorder, and guarantees a pluralistic and diverse view depending on the development contexts (home vs. school) and the ecological validity of the scores. These results are in accordance with those obtained by other researchers (Ortiz & Acle, 2006).

One of the strengths that we estimate is that the sample which has been drawn from all of the national territory guarantees the representativeness and generalization of the results obtained in the present study.

In terms of future perspectives, we propose to analyze the concurrent validity of BRIEF-P using the initial Luria (Garon, Smith, & Bryson, 2014; Manga y Ramos, 2000) Battery with respect to the executive dimension.

Research Limitations

The multiple sizes (power of the effect) prevent us from generalizing the results in the rest of the population. It is necessary to be prudent when interpreting, for example, the factorial structure of BRIEF-P with this sample size. We also consider in the future to include the analysis of the concurrent validity of BRIEF-P with other instruments that evaluate the executive functions in the child population and consider a larger sample size.

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Declaration of Conflicting Interests

The author(s) declared the following potential conflicts of interest with respect to the research, authorship, and/or publication of this article: The signing author of this text is co-author of the adaptation of BRIEF-P in Spanish along with Tamara Luque Cuenca, receiving the first co-author of BRIEF-P as compensation for royalties.

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