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Validation of a short version of the Coercion Experience Scale (CES-18): Psychometric characteristics in a Spanish sample

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ABSTRACT

The *Coercion Experience Scale (CES)* is a questionnaire that evaluates the subjective experience of coercion during psychiatric hospitalization. This study aimed to assess a short version of the *Coercion Experience Scale (CES-18)* in a Spanish Sample ($N = 114$). Two authors independently selected the items, choosing those that could also be applied to the experience of coercion after the use of forced medication. Reliability was estimated using internal consistency coefficients. Internal validity was assessed by means of a factorial analysis based on the method of extraction of main components and using orthogonal rotation VARIMAX. Convergent and discriminatory validity was evaluated by correlation between the total score of the *CES-18* with the original *CES* and a *Visual Analogue Scale*, *The Davidson Trauma Scale* and the *Client Assessment of Treatment Scale*. The *CES-18* showed adequate internal consistency (Cronbach $\alpha = 0.940$). Factor analysis resulted in a two-factor solution (*Coercion and Humiliation and Fear*) explaining 64.2% of the total variance. The correlation between the original *CES* and *CES-18* was adequate ($r = 0.968$). The scores suggested good divergent and convergent validity. The Spanish language *CES-18* demonstrated adequate psychometric proprieties in order to assess perceived coercion during psychiatric hospitalization.

1. Introduction

The use of coercive measures such as mechanical restraint, seclusion, and forced medication is still one of the most controversial issues in the management and control of agitation in emergency services and in acute psychiatric units in hospitals (Muralidharan and Fenton, 2006; Nelstrop et al., 2006). These are considered invasive procedures which compromise the personal autonomy and fundamental rights of the patient, and often entail the risk of physical and psychological side effects, for the patients as well as for the personnel who apply them (Bonner et al., 2002; Mayoral and Torres, 2005; Rakhmatullina et al., 2013). Although their use is associated with acute units and psychiatric hospitals, they are not exclusive to these institutions, being common practice in other hospital services (emergencies, neurology, psychogeriatric, etc.) (Downes et al., 2009) and in residential adult and

children's education centers (Heinze et al., 2012; Valenkamp et al., 2014).

In recent years, international organizations and representatives of mental health consumers and users have expressed the need for regulation, limitation, and, in some cases, elimination of the use of coercive measures in psychiatric treatments (Lebel and Goldstein, 2005; McSherry, 2013). Scientific and professional societies have sparked a great interest in registering and evaluating the application of security measures such as physical restraint, mechanical restraint, or seclusion (American Psychiatric Nurses Association., 2016; Knox and Holloman, 2012). In clinical contexts, there is a general consensus regarding the general principle of application of the “least restrictive intervention” (Cowman et al., 2017; Sailas and Fenton, 2000). In legal contexts, the parties involved insist on the principles of equity, security, duration, and proportionality in the execution of the aforementioned measures in

Abbreviations: CAT, Client Assessment of Treatment Scale; CES, Coercion Experience Scale; DTS, Davidson Trauma Scale; VAS, Visual Analogue Scale

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clinical practice (Gómez-Durán et al., 2014; McSherry, 2013; Roper and McSherry, 2015).

There are abundant references concerning the “epidemiology” (frequency, duration, distribution, indications, and protocols) of the use of coercive measures in psychiatric facilities (Bak and Aggernaes, 2012; Guzman-Parra et al., 2015; Lepping et al., 2016; Steinert et al., 2010). Empirical studies, although less frequent, have also been performed to evaluate the effectiveness of these measures, their adverse physical consequences, and, lately, strategies to reduce their application (Aguilera-Serrano et al., 2018; Guzman-Parra et al., 2016; LeBel et al., 2014). At present, the area with the least available empirical research concerns the psychological effects or traumas that may occur in patients and health personnel who are involved in the execution of these measures in a clinical setting.

One of the most important obstacles to assessing the impact or psychological consequences of coercive measures during hospitalization is the shortage of instruments that assess the subjective experience of the individuals to whom they are applied. Until now, the MacArthur Admission Experience Survey (Edwards et al., 2006) has been the most widely used instrument to assess the degree of coercion perceived by the patient. However, it only addresses the time of admission, and does not include the experience of coercion subsequently perceived during hospitalization, or any experiences related to the application of coercive measures. At present, the scale that evaluates the coercion associated with the application of coercive measures and combines the best conditions of validity and reliability with good psychometric properties is the Coercion Experience Scale (CES) (Bergk et al., 2010). It is a self-administered instrument which comprises 32 items and which measures six factors: humiliation, adverse physical effects, separation, negative environment, fear, and coercion. It also includes a Visual Analog Scale (VAS) that allows for a global perception of the coercion experienced with a single measurement between 1 and 100. However, this scale has been designed to evaluate the experience of coercion only after the use of mechanical restraint and seclusion. In Spain, seclusion is rarely used, as the hospitalization units are not adequately prepared for the application of this measure (Steinert et al., 2010), meaning that mechanical restraint and forced medication are used more frequently. Therefore, there is a need in Spain and at an international level to validate an instrument to compare the perceived coercion after the application of all types of coercive measures, including forced medication. Moreover, the CES scale has several items that can be used to evaluate different coercive measures, not exclusively restraint or seclusion. It is also important to have brief scales to assess perceived coercion, as the setting where it is applied and the patient's health status at the time of admission can make the excessive length of the instrument a barrier to its application.

In Spain, there is no validated instrument for the evaluation of the subjective impact of coercive measures during psychiatric hospitalization. In addition, in the international arena, there is a lack of instruments to evaluate the impact of coercive measures other than mechanical restraint and seclusion. The aim of our study was to perform a validation and analysis of the psychometric properties and factor structure of a short form of the CES, with a selection of items to evaluate coercive measures other than restraint and seclusion, in a sample of patients that were subject to the application of coercive measures during psychiatric hospitalization.

2. Method

2.1. Participants and setting

An intentional sample of adults ($N = 114$) involuntarily admitted to two acute psychiatric wards was evaluated. The sample was assessed with the CES between May 2015 and March 2017. The participants had experienced some type of coercive intervention during their hospital admission. The following coercive interventions were applied in the

unit: mechanical restraint, understood as the use of some mechanical device, such as a belt, which holds and immobilizes the movement of a person's body in whole or in part; seclusion, understood as the placement of a single person in a locked room; and the administration of forced medication, which includes the administration of oral or injected medication against the patient's will. For the evaluation, the first coercive measure applied during the admission was used as the reference episode.

Other inclusion criteria were age (between 18 and 65) and having sufficient capacity and autonomy to make their own decisions. Of a total of 128 participants, 14 were excluded for the following reasons: no command of the Spanish language (1), presence of active symptomatology (5), comorbidity with intellectual impairment (1), and unwillingness to participate voluntarily (7).

The selection of participants was initially performed at the acute psychiatric ward of the University Regional Hospital of Malaga, which has a capacity of 42 beds, and reported 83.3% of the sample ($N = 95$). Due to the difficulty in the recruitment process, participants from the acute psychiatric ward of the Jerez de la Frontera were included nine months later. It is a unit with the same characteristics as the first, but with the difference of having a smaller capacity (28 beds), and which reported 16.6% of the sample ($N = 19$).

2.2. Instruments

2.2.1. Coercion Experience Scale (CES) (Bergk et al., 2010)

This scale is a self-administered questionnaire that measures, in its original version, a set of six factors: humiliation, adverse physical effects, separation, negative environment, fear, and coercion. It is a 35-item scale (three items were excluded in the original validation process when showing factor loads lower than 0.50) in a five-point Likert-type scale (e.g., not met, rarely met, sometimes met, usually met, always met) and where participants rate and record their own evaluation and self-perception of the coercive intervention experienced. The original scale showed a high internal consistency of the individual factors, whose coefficients ranged from 0.67 to 0.93. To analyze convergent validity, the correlations between the CES and a Visual Analogue Scale were observed by establishing a high correlation ($r = 0.79$, $p < 0.001$). To analyze divergent validity, patient satisfaction was compared and measured with the Client Satisfaction Questionnaire (CSQ), by establishing a negative correlation with the CES ($r = -0.38$, $p < 0.001$).

2.2.2. Davidson Trauma Scale (DTS) (Davidson et al., 1997)

This instrument uses 17 items to evaluate each of the 17 symptoms of Post-Traumatic Stress Disorder collected in the DSM-IV. It assesses the frequency and severity of PTSD symptoms in subjects who have suffered a stressful event, using a five-point Likert scale. Each item has two evaluation scales, one for frequency and one for intensity. The score ranges from 0 to 136 points. The scale is validated in Spain by Bobes et al. (2000).

2.2.3. Client Assessment of Treatment Scale (CAT) (Priebe and Gruyters, 1994)

The CAT consists of seven Likert-type items with 10 levels that assess the perception of hospital care and treatment received during the patient's admission. The items are as follows: “Do you believe you are receiving the right treatment/care for you?”, “Does your therapist/case manager/key-worker understand you and is he/she engaged in your treatment?”, “Are relations with other staff members pleasant for you?”, “Do you believe you are receiving the right medication for you?”, “Do you believe the other elements of treatment/care here are right for you?”, “Do you feel respected and regarded well?”, and “Has treatment/care here been helpful for you?”. Patients rate each item on a scale of 0–10. The internal consistency is 0.90, and it has an adequate predictive and factorial validity (Richardson et al., 2011).

2.2.4. Visual Analogue Scale (VAS)

A numerically-positive scale was used from 0 to 10 to assess the intensity of the degree of coercion perceived during the application of any of the measures addressed by the study. This type of scale evaluates the intensity of individual perception over time, but it is not adequate to compare the intensity experienced by different patients or groups. It is very useful for other measures of quality of life, such as pain (Wewers and Lowe, 1990).

2.3. Procedures

For a correct translation of the CES, we followed the recommendations of the International Society for Pharmacoeconomics and Outcomes Research (ISPOR) (Wild et al., 2005). Also, in August 2015, a linguistic and conceptual adaptation of the Spanish-language version of the CES was published, using comparisons and reinforcement in the validation process (Gómez-Durán et al., 2016). This test also allowed us to demonstrate a greater adaptation and an adequate comprehensibility of the scale.

A data collection protocol developed for the study was applied, with the principal investigator (CAS) being responsible for carrying out the evaluation during hospital admission in the acute psychiatric ward in Malaga, and two collaborators (EGS and DTC) for the evaluations collected in the acute psychiatric ward of Jerez de la Frontera. The questionnaires were completed by the participants of the study at least 24 hours after the application of the coercive measure.

It was decided to select a reduced number of items to establish an abbreviated version and to estimate their validity compared to the full version of the scale, because there was a limitation in the sample recruited in comparison with the sample in the original validation of the scale, where only patients subject to mechanical restraint or seclusion were included. Items related to the application of mechanical restraint or seclusion were eliminated. Two authors (CAS and JGP) made the selection of the items (total CES, 32 items) independently, and a consensus was reached for their final selection. In case of discrepancy, a third author (FMC) was consulted. Finally, 18 items were selected to form the abbreviated scale (CES-18).

2.4. Ethical considerations

Participants voluntarily responded to the set of instruments on the subjective experience of perceived coercion, after providing informed consent. This study was reviewed and approved by the Ethics Committee of Malaga Nordeste on May 29, 2015, considering it ethically and methodologically correct. In February 2016, the committee approved the request for a proposal to modify the initial protocol, which included the new recruitment unit.

2.5. Data analysis

The statistical analyses in the study were based on the analysis of the homogeneity of the items, the reliability of the questionnaire, and exploratory factorial analysis based on the principal components method. Construct validity, especially factorial validity, has been studied by a factorial analysis based on the method of extraction of the main components and using the orthogonal rotation Varimax, selecting the set of items according to their weights in each factor. In general, factor loadings are considered meaningful when they exceed 0.40 (Floyd and Widaman, 1995). Eigenvalues > 1 were used to select items for the domains (if loadings were >0.40). The concurrent and divergent validities were evaluated by calculating the correlation coefficients of the abbreviated CES-18 and the other measuring instruments (VAS, DTS, and CAT). A factorial analysis of the full scale (CES) was also carried out with the sample of the participants subjected to mechanical restraint or seclusion in order to verify the correspondence of the factorial solution with that obtained in the original validation

Table 1
Sociodemographic characteristics of the sample.

Participants	Total N = 114 (%)	Mechanical restraint n = 70 (%)	Forced medication n = 41 (%)	Seclusion n = 3 (%)
Age mean (SD)	37.894 (12.150)	38.185 (12.404)	37.170 (11.806)	41.000 (14.731)
Gender				
Male	78 (68.4)	50 (71.4)	26 (63.4)	2 (66.7)
Female	36 (31.6)	20 (28.6)	15 (36.6)	1 (33.3)
Nationality				
Spanish	101 (88.6)	60 (85.7)	38 (92.7)	3 (100)
Others	13 (11.4)	10 (14.3)	3 (7.3)	
Diagnoses*				
F10-19	9 (7.9)	7 (10.0)	2 (4.9)	
F20-29	68 (59.6)	42 (60.0)	24 (58.5)	2 (66.7)
F30-39	26 (22.8)	16 (22.9)	9 (22.0)	1 (33.3)
F40-49	2 (1.8)	1 (1.4)	1 (2.4)	
F60-69	5 (4.4)	2 (2.9)	3 (7.3)	
Others	4 (3.5)	2 (2.9)	2 (4.9)	
Educational Level				
Incomplete Primary	10 (8.8)	7 (10.0)	3 (7.3)	
Primary				
Primary	64 (56.1)	34 (48.6)	28 (68.3)	2 (66.7)
Secondary	35 (30.7)	27 (38.6)	7 (17.1)	1 (33.3)
University studies	5 (4.4)	2 (2.9)	3 (7.3)	
Employment				
Is working	4 (3.5)	4 (5.7)		
Unemployed	58 (50.9)	39 (55.7)	19 (46.3)	
Sick leave	9 (7.9)	4 (5.7)	5 (12.2)	
Retired	37 (32.5)	18 (25.7)	16 (39.0)	3 (100.0)
Student	6 (5.3)	5 (7.1)	1 (2.4)	
Family Status				
Single	79 (69.3)	47 (67.1)	29 (70.7)	3 (100.0)
Married	18 (15.8)	9 (12.9)	9 (22.0)	
Separated	16 (14.0)	13 (18.6)	3 (7.3)	
Widowed	1 (0.9)	1 (1.4)		
Smoker				
Yes	90 (78.9)	57 (81.4)	32 (78.0)	1 (33.3)
No	24 (21.1)	13 (18.6)	9 (22.0)	2 (66.7)

Note: ICD-10 codes.

(Bergk et al., 2010). To determine the relationship and concordance between the two versions of the scale (CES and CES-18), the Pearson correlation coefficient was used. Analyses were carried out using the SPSS V19 program (SPSS Inc., Chicago, IL, USA).

3. Results

Out of a total of 114 people who answered the questionnaires, 78 (68.4%) were men and 36 (31.6%) were women. All patients were involuntarily admitted to the unit. Characteristics of the sample are detailed in Table 1. The results of the descriptive analyses of the 18 items corresponding to the CES-18 questionnaire are detailed in Table 2. The mean score of the whole questionnaire was 52.1, and the standard deviation was 16.3.

3.1. Internal consistency and exploratory factor analysis CES-18

The consistency of the scale was analyzed using the reliability coefficient α of Cronbach. For the whole scale, consisting of 18 items, the Cronbach α coefficient obtained was 0.940.

The validity of the scale has been studied through an exploratory factor analysis. The Kaiser criterion showed a value of 0.894 and a Bartlett test of sphericity ($X^2 = 1667.9$, $gl = 153$, $p < 0.01$). The two factors with higher eigenvalues (>1) were retained. That explains 64.2% of the total variance. The first factor, called “Coercion and Humiliation,” grouped thirteen items, explaining 42.4% of the variance. The second factor, “Fear”, with five items, explained 21.8% of

Table 2
Item description of the CES-18.

Ítem (In Spanish)	M	SD	Distribution (%)				
			Not/A little	Moderate	Severe	Very severe	Extreme
CES3. ... adverse effects on your human dignity? (...efectos adversos sobre su dignidad como persona?)	3.60	1.24	5 (4.3)	18 (15.7)	31 (27.1)	22 (19.2)	38 (33.3)
CES6. ...coercion? (...coerción o represión?)	3.69	1.22	3 (2.6)	19 (16.6)	28 (24.5)	23 (20.1)	41 (35.9)
CES7. ... restrictions of your freedom to decide things? (...libertad para decidir cosas?)	3.76	1.31	8 (7.0)	13 (11.4)	23 (20.1)	23 (20.1)	47 (41.2)
CES10. The applied coercion was... (La coerción aplicada fue...)	3.64	1.24	4 (3.5)	21 (18.4)	25 (21.9)	25 (21.9)	39 (34.2)
CES11. The restrictions of my freedom to decide things was... (La restricción sobre su libertad de decidir cosas fue...)	3.76	1.31	7 (6.1)	16 (14.0)	20 (17.5)	24 (21.0)	47 (41.2)
CES12. I feared not getting enough air. (Me dio miedo que me faltara el aire)	1.80	1.25	69 (60.5)	19 (16.6)	13 (11.4)	4 (3.5)	9 (7.8)
CES13. I suffered pain. (Sufrí dolor)	2.40	1.18	28 (24.5)	42 (36.8)	18 (15.7)	21 (18.4)	5 (4.3)
CES14. I felt my dignity taken away. (Me sentí despojado de mi dignidad)	3.36	1.28	9 (7.8)	23 (20.1)	25 (21.9)	30 (26.3)	27 (23.6)
CES15. I was not able to sleep well. (No pude dormir bien)	2.20	1.35	49 (42.9)	24 (21.0)	20 (17.5)	10 (8.7)	11 (9.6)
CES17. I had to obey the orders of others. (Tuve que obedecer las órdenes de otros)	3.40	1.33	11 (9.6)	19 (16.6)	28 (24.5)	24 (21.0)	32 (28.0)
CES19. I was afraid I would be killed. (Tuve miedo de que me pudieran matar)	1.64	1.09	74 (64.9)	21 (18.4)	9 (7.8)	5 (4.3)	5 (4.3)
CES20. Others made decisions on me. (Otros tomaron decisiones sobre mí)	3.64	1.26	8 (7.0)	16 (14.0)	19 (16.6)	36 (31.5)	35 (30.7)
CES22. I did not know what to expect. (No sabía qué iba a ocurrir)	2.38	1.43	43 (37.7)	25 (21.9)	20 (17.5)	10 (8.7)	16 (14.0)
CES24. I could not understand why I was being treated that way. (No podía entender por qué era tratado de ese modo)	3.13	1.42	18 (15.7)	25 (21.9)	20 (17.5)	25 (21.9)	26 (22.8)
CES27. I was afraid I would die. (Tuve miedo de poder morir)	1.57	1.07	79 (69.2)	18 (15.7)	8 (7.0)	4 (3.5)	5 (4.3)
CES29. I felt dealt like an animal. (Me sentí tratado como un animal)	2.60	1.43	34 (29.8)	26 (22.8)	20 (17.5)	18 (15.7)	16 (14.3)
CES30. I feared the measure would last forever. (Me dio miedo que la medida durara para siempre)	1.92	1.28	60 (52.6)	28 (24.5)	8 (7.0)	9 (7.8)	9 (7.8)
CES31. My wishes were not taken into account. (Mis deseos no fueron tenidos en cuenta)	3.57	1.33	9 (7.8)	18 (15.7)	23 (20.1)	26 (22.8)	38 (33.3)

Table 3
Distribution of factorial loads.

Ítems	Factors	
	Coercion and humiliation	Fear
CEP11	0.860	0.209
CEP7	0.837	0.247
CEP10	0.834	0.265
CEP17	0.824	
CEP6	0.802	0.272
CEP14	0.781	0.299
CEP31	0.772	-0.105
CEP20	0.763	0.194
CEP3	0.762	0.214
CEP24	0.718	0.367
CEP29	0.648	0.424
CEP13	0.557	0.301
CEP15	0.450	0.332
CEP27	0.876	0.866
CEP19		0.866
CEP30	0.328	0.714
CEP12	0.297	0.696
CEP22	0.404	0.679

Note. Bold values represent on-factor loading.

Table 4
Descriptive statistics for the subscales and the total scale and correlation matrix for concurrent and divergent validity.

Descriptive statistics	Mean	SD	Range	Cronbach α
Total CES-18 Scale	52.763	15.684	22–84	0.935
Coercion and humiliation	41.412	12.177	16–63	0.928
Fear	11.350	4.194	5–25	0.716
Correlation matrix for concurrent and divergent validity	CAT	DTS	EVA	
Total CES-18 Scale	-0.430**	0.499**	0.737**	
Coercion and humiliation	-0.433**	0.491**	0.750**	
Fear	-0.351**	0.439**	0.577**	

Note: ** $p < 0.01$ * $p < 0.05$.

the variance. In a subsequent step, the factors were rotated orthogonally through the Varimax procedure. All the factor loadings were above the criterion of 0.400. This supported the stability of the questionnaire structure in this sample. Table 3 shows the distribution of their factor

loads. Table 4 shows the descriptive analysis for the subscales and the total scale and correlations with other scales. Supplementary Table 1 shows the factorial solution of the complete CES scale, using only the sample of mechanically restrained or secluded patients. The results yielded a seven-factor solution with the factors “Coercion and Humiliation,” “Subordination,” “Fear,” “Privacy,” “Pharmacological Treatment,” “Negative Environment,” and “Persuasion.” These factors explained 73.85% of the total variance of intercorrelations.

3.2. Divergent and convergent validity of CES-18

The divergent and convergent validity was also assessed in order to complete and reinforce the validity of the construct. Therefore, the total score of the CES-18 scale was correlated with the measuring instruments VAS, DTS, and CAT. As expected, the total score of the CES-18 was correlated in a statistically significant way and in the expected direction with the VAS score ($r = 0.737$; $p < 0.01$). Likewise, it was correlated significantly with the total value of the DTS scale ($r = 0.499$; $p < 0.01$). The total CES-18 score was correlated negatively with the CAT scale ($r = -0.430$; $p < 0.01$). The correlation between the full version of the CES and the CES-18 with the full sample of 114 patients was significant ($r = 0.968$, $p < 0.01$). The correlation between the full version of the CES and the CES-18 with only the sample subjected to mechanical restraint or seclusion ($n = 73$) was equally significant ($r = 0.965$, $p < 0.01$), maintaining the magnitude of the correlation coefficients.

4. Discussion

The aim of this study was to validate the CES-18 scale in Spanish with a sample of patients subjected to mechanical restraint, seclusion, or administration of forced medication during admission to two mental health hospitalization units. In this regard, we have obtained adequate indicators of reliability, factorial validity, and construct validity of the CES-18 scale a short version of the scale developed by Bergk et al. (2010).

Specifically, the total reliability of the instrument in its 18-item version is considered adequate. Regarding the factorial structure of the scale, it was possible to identify two factors to measure the experience of coercion that match the original version. In addition, the reduced version of the scale correlated almost perfectly with the original scale, both taking into account the total sample, and considering only

mechanically restrained or secluded patients. Regarding the comparison of the results of the complete CES, the factors did not coincide completely with the original validation. We found two new factors we have called “subordination” and “insecurity.” However, the differences may be due to the differences in the study sample, as only three patients had been secluded. Future studies of the CES should study whether these factors are maintained and determine the factorial structure of the scale.

In general terms, the correlations between the CES-18 scale and the other instruments responded to what was expected along the same line of results in comparison with other studies (Georgieva et al., 2012). The results obtained in the correlation between CES-18, VAS, and DTS are congruent, obtaining similar results to those obtained in the original validation, where the correlation between CES and DTS was positive and also, with the VAS, highlighting the intensity of suffering related with the experience of coercion. However, in the same way as can be seen in the original validation as well as the follow-up with the same sample (Steinert et al., 2013), prospective studies are needed to highlight the true relationship between the use of coercive measures on the person and the repercussion of the possible symptoms of Post-Traumatic Stress Disorder.

At a global level, the correlations observed between the CES-18 and the CAT scale indicated an inverse relationship. These results are congruent because they indirectly relate satisfaction by means of the patient's perception of the assistance received and the perception of coercion; therefore, the greater the degree of coercion perceived, the lower the score (degree of satisfaction) on the CAT. In this regard, there is evidence to indicate that satisfaction with the assistance received in mental health hospitalization units is influenced by a patient's own experience and perception of coercion and violation of personal dignity (Aguilera-Serrano et al., 2018; Bø et al., 2016; Jaeger et al., 2015; Tingleff et al., 2017).

4.1. Limitations

First, we can point out that the data have been collected through a self-administered instrument (retrospective self-report). This is the usual practice in studies that can lead to a bias in the response of the participants, exacerbating the common variance and artificially increasing the correlations between variables (Spector, 2006). Secondly, the nonexistence of longitudinal data does not allow us to establish the temporal stability of the instrument (test-retest reliability). Thirdly, the sample size of 114 patients is relatively small. The proportion between the number of patients and the items is inappropriate. However, according to the Kaiser–Meyer–Olkin criterion, the data was adequate for this EFA. In addition, the solution of the two factors represented almost 64.22% of the total variance of the intercorrelations, which is a good result considering the size of the sample. Fourthly, we consider that another limitation in relation to the sample might be the low representativeness of the informants subjected to seclusion from the other groups, a factor conditioned by the virtual absence of specific facilities for the effective implementation of this type of intervention in the units in which the study was conducted. Fifthly, there was no maximum number of hours established between the application of the coercive measure and the assessment; therefore, a recall bias may have occurred. However, in most of the participants the time between the events was less than 96 hours. Finally, given that the experience of coercion may be influenced by factors related to the context of application and the cultural environment, this factorial solution must be replicated by future studies with different samples to ensure its generalizability.

4.2. Conclusions

In comparison with the original one, the Spanish version of the CES-18 is a valid instrument with adequate psychometric characteristics to evaluate patients' subjective experiences of coercive measures. It can

also be applied after the use of forced medication, in addition to mechanical restraint and seclusion. These aspects give the CES-18 great utility in clinical practice for objectively determining the degree of coercion experienced by patients and the comparison between different coercive measures. The World Health Organization (WHO) recommends the use of the scale in its strategy for reducing the use of coercive measures in the treatment of people with mental illnesses (Funk and Drew, 2017).

Supplementary materials

Supplementary material associated with this article can be found, in the online version, at doi:10.1016/j.psychres.2018.12.126.

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