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Inventory of Distorted Thoughts about Women and the Use of Violence-Revised (IPDMUV-R): Psychometric properties

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Título: Inventario de Pensamientos Distorsionados sobre la Mujer y el Uso de la Violencia - Revisado (IPDMUV-R): propiedades psicométricas.
Resumen: Los hombres violentos contra la pareja muestran numerosos sesgos cognitivos relacionados con los roles de género y la legitimación de la violencia. Los objetivos de esta investigación fueron analizar las propiedades psicométricas del *Inventario de Pensamientos Distorsionados sobre la Mujer y el Uso de la Violencia-Revisado* (IPDMUV-R), depurar sus ítems y comparar la capacidad de predicción de esta versión revisada con otras medidas de su red nomológica. La muestra constó de 463 hombres -241 maltratadores y 222 hombres de la población normativa-, con una edad media de 41.22 años (*DT*=11.34). Los resultados mostraron índices de ajuste aceptables para una estructura unidimensional del IPDMUV-R (nueva versión de 21 ítems), con un alfa de .74 (superior a la versión inicial de 29 ítems). La puntuación total del IPDMUV-R mostró correlaciones estadísticamente significativas con autoinformes que miden deseabilidad social y sexismo ambivalente. Al analizar los puntos de corte para diferenciar entre agresores y grupo normativo, se observó una mayor capacidad discriminativa del IPDMUV-R en comparación con el IPDMUV y las dimensiones de sexismo hostil y benévolo. En conclusión, se presenta un instrumento con adecuadas propiedades psicométricas que permite detectar sesgos cognitivos en hombres maltratadores y que es de utilidad para el ámbito clínico.
Palabras clave: Sesgos cognitivos; propiedades psicométricas; validación; fiabilidad; maltratadores; IPDMUV-R.

Abstract: Men who batter are often affected by cognitive distortions related to gender roles and the legitimization of violence as a valid way to solve conflicts. The objectives of this research were: to analyze the psychometric properties of the Inventory of Distorted Thoughts about Women and the Use of Violence-Revised (IPDMUV-R), to delete non-updated items and to compare the predictive ability of the revised version (IPDMUV-R) with other measures of the nomological network. The sample consisted of 463 men (241 batterer men and 222 men of the normative population), with a mean age of 41.22 years (*SD*=11.34). The results showed acceptable fit indices for a unidimensional structure of IPDMUV-R (new version of 21 items) with an alpha of .74 (higher than the original version of 29 items). The score of IPDMUV-R showed statistically significant correlations with self-reports which measure social desirability and ambivalent sexism. When analyzing the cutoff points to differentiate between batterer men and the normative group, the IPDMUV-R had a higher discriminative ability compared to IPDMUV and hostile and benevolent sexism dimensions. To conclude, an instrument with adequate psychometric properties to detect cognitive biases in violent men against the partner is presented. This instrument is useful for clinical purposes.
Key words: Cognitive bias; psychometric properties; validation; reliability; batterer men; IPDMUV-R.

Introduction

Male intimate partner aggressors are generally affected by numerous cognitive biases related to distorted beliefs regarding gender roles, the inferiority of women and ideas regarding the legitimization of violence as a manner of resolving conflicts (Fernández-Montalvo and Echeburúa, 1997).

Sexism, in particular, comprises several components (Díaz-Aguado, 2006): 1) a cognitive component, which comprises confusing social or psychological differences between men and women with sex-related biological differences and based on the false belief that the former automatically and inevitably result from the latter; 2) an affective component, which refers to sexist manners in which identity is built and that explains the relation between male identity and the violence exercised by men in addition to women's tendency to feel guilty and/or depressed; and 3) a behavioral component, which relates to the tendency to implement sexism by discrimination and violence.

Detecting specific cognitive biases helps guide therapeutic programs with male batterers (Echeburúa and Fernández-Montalvo, 2007, 2009) and establishes preventive strategies among adolescents and young adults in the educational context (Díaz-Aguado and Martín, 2011; Fox, Hale and Gadd, 2014).

The Inventory of Distorted Thoughts about Women and the Use of Violence (Inventario de Pensamientos Distorsionados sobre la Mujer y el Uso de la Violencia - IPDMUV) was designed by Echeburúa and Fernández-Montalvo (1998) to be a unidimensional assessment of the cognitive biases of male batterers against their intimate partners. The IPDMUV is an assessment tool with 29 dichotomous items (13 on gender roles and women's inferiority and 16 on the legitimizing of violence to solve problems) widely used in clinical and research contexts. Because many studies have used the IPDMUV to detect therapeutic changes in programs with batterers (Echeburúa and Fernández-Montalvo, 2009; Echeburúa, Sarasua, Zubizarreta and Corral, 2009; Boira, López, Tomás-Aragonés and Gaspar, 2013; Loinaz, 2014, among others), it appears appropriate to proceed to a proper validation of this instrument.

Two studies have validated this instrument in Spanish samples to date. In their study, Ferrer, Bosch, Ramis, Torres and Navarro (2006) used the IPDMUV with a modification in the response system (4-point Likert-type scale) on 1395 university students. Four items were deleted from the original scale (8, 19, 27, 28 and 29) because their correlation with the total score was lower than .30. The remaining items were grouped into 4 areas (belief in women's inferiority with re-

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spect to men, stigmatization of female victims of abuse, acceptance of violence as a valid manner in which to solve problems, and minimization of the issue regarding violence against women and aggressor exoneration), with an overall reliability of the scale at .85 (Cronbach's Alpha). The primary limitation of this study is that the sample exclusively comprised university students with a mean age of 23 years, and nearly two-thirds were women (64.4%). Therefore, the results are not strictly generalizable when using the scale in treatment programs for abusers, who are exclusively older men and use or have used violence against a partner.

A new validation, conducted on 180 intimate partner aggressors in prison, was recently conducted (Loinaz, 2014). This study utilized a Likert-type response format. In addition, some items were deleted, either because of their low factorials loads, their low contribution to scale consistency (7, 8, 19 and 28), or their confusing phrasing (27). The study also proposed a factorial solution similar to the solution of the study by Ferrer et al. (2006). Overall scale reliability was .76 (Cronbach's alpha). This study presents a number of limitations: The sample solely comprised imprisoned aggressors, which constitutes a small (prisoners who have committed more serious offenses), non-representative portion of all intimate partner aggressors; there is no control group of men in the general population, which hampers determining what is specific to male aggressors; social desirability has not been monitored; and convergent validity has not been established by including other assessment instruments in the field.

Therefore, the current study has the following objectives: a) to analyze the factorial structure of the IPDMUV (the original version, which comprises 29 binary items); b) to revise and update the wording of some items of the IPDMUV that are inappropriate or have become irrelevant after more than 15 years since the publication of the original version to provide the revised scale (IPDMUV-R) with appropriate psychometric properties; c) to contrast the predictive capacity of the IPDMUV with other measures of its nomological network; and (d) to provide preliminary criteria for interpreting the scale scores according to the cognitive biases the inventory measures in two samples of men (intimate partner aggressors and a normative group with similar sociodemographic characteristics).

Method

Participants

A total of 463 men, aged between 17 and 69 years (M = 41.22 and SD = 1134), participated in this research study. Of the participants, 241 were aggressors who were sent or went voluntarily to a psychological treatment program for men who practice violence against their partners. The program was in the Center of Psychological Assistance for Family and Sexual Violence of the Provincial Council of Alava (Basque Country, Spain) [Centro de Asistencia Psicológica para la Violencia familiar y Sexual de la Diputación Foral de Álava] and lasted from January 2013 to January 2015 (52.1% of the sample, M = 41.80 and SD = 10.52). The remaining 222 participants were men in the normative population (47.9%, M = 40.60 and SD = 12.17) who were recruited during these same dates.

Instruments

- *Inventory of Distorted Thoughts about Women and the Use of Violence* (IPDMUV; Echeburúa and Fernández-Montalvo, 1998). This instrument comprises 29 binary items that help identify irrational beliefs in aggressors related to gender roles and the alleged inferiority of women to men (13 items). This instrument also helps to identify the use of violence as an acceptable manner with which to solve conflicts (16 items). Test scores may range between 0 and 29 points. A higher score indicates a greater number of cognitive distortions regarding women and the use of violence.
- *Ambivalent Sexism Inventory* (ASI; Glick and Fiske, 1996; Spanish version by Expósito, Moya and Glick, 1998). This instrument comprises 22 items that assess two dimensions: *hostile sexism* (11 items, ranging from 0 to 55 points), which is characterized by prejudiced attitudes and discriminatory behavior based on the alleged inferiority of women to men, and *benevolent sexism* (11 items, ranging from 0 to 55 points), characterized by an apparently non-prejudiced attitude that describes women as frail and requiring care and protection. Each item was answered on a Likert-type scale ranging from 0 ("completely disagree") to 5 ("completely agree"). Higher scores indicate a greater amount of sexism. The ASI showed good psychometric properties in the Spanish version, with a Cronbach's alpha for the total score at .90 and at .89 and .86 for the hostile and benevolent sexism subscales, respectively (Expósito et al., 1998). The Spanish version of the ISA, which is characterized by transcultural invariance, has recently shown good psychometric properties in a sample of 520 Catalonian university students (León-Ramírez and Ferrando, 2014).
- *Social Desirability Scale* (SDS; Crowne and Marlowe 1960; Spanish version by Ferrando and Chico, 2000). The SDS comprises 33 items that evaluate the tendency to voluntarily distort one's image to "pretend" or "look good." The C form of the scale (Reynolds, 1982), which comprises 13 items with a True/False (1 = true; 0 = false) response format and presents acceptable reliability levels ($r_{KR\text{-}20}$ = .76), was used in this research study. C form scores range from 0 to 13 points. In this version, Items 1, 2, 3, 4, 6, 8, 11 and 12 are inversely scored. Higher scores indicate a greater social desirability.

Procedure

The intimate-partner-aggressor group completed all assessment tests during two sessions prior to the onset of psychological treatment. Simultaneously, a normative group of men who do not use violence against their partners and with socio-demographic variables (geographic area, age, socioec-

onomic level and academic level) matching those of the group of aggressors was sought. All participants signed an informed consent form before completing the tests.

Only those aggressors who responded to all of the items in the IPDMUV were included in the study. In addition, 51 of the 241 aggressors responded to the ASI and SDS to analyze the convergent validity of the IPDMUV and check the influence of social desirability. Similarly, those men in the normative group who answered all of the items on the IPDMUV, ASI and SDS were included in the study.

Statistical and psychometric analysis

IPDMUV dimensionality (29-item version) was studied using the FACTOR (Lorenzo-Seva and Ferrando, 2006) and LISREL (Jöreskog and Sörbom, 1996) programs; Exploratory Factorial Analysis (EFA) was conducted, and factorial loads, residuals and modification indexes were studied. In addition to these statistical results, theoretical criteria were considered during the item review process. The revised version of this inventory comprised 21 items (see Appendix). Subsequently, the *dimensionality of the final version* (IPDMUV-R) was studied using Confirmatory Factorial Analysis (CFA); given the nature of the data, tetrachoric correlations and the unweighted least squares (ULS) estimation method were used (Yang-Wallentin, Jöreskog, and Luo, 2010; Morata and Holgado, 2013). Additionally, the *discriminative capacity of selected items* was studied by comparing the two groups (aggressors and the normative group) using χ^2 (statistical significance) and Hedges' *g* (effect size) statistics. Then, the *basic psychometric properties* (mean, standard deviation, asymmetry, Kurtosis and Cronbach's alpha) of the IPDMUV (the original and the 21-item revised version), the ASI and the SDS were analyzed for both samples, aggressors and the normative group. The concurrent validity of the IPDMUV-R with the ASI and the SDS was studied by calculating Pearson's Correlation Coefficient. Finally, cut-off points were studied to differentiate between aggressors and non-aggressors (normative group) using the analysis of the ROC curve (Receiver-Operating Characteristics) of the IPDMUV (original and revised version), and the IPDMUV-R was compared using the rest of the instruments. Discriminant analysis was also applied to evaluate the discriminative capacity of the variables assessed—cognitive distortions (IPDMUV-R), sexism (ASI) and social desirability (SDS)—in the group of aggressors and in the control group. The statistical programs FACTOR 10.3.01, SPSS 19 and LISREL 8.71 were used.

Results

Dimensional and structural analysis of the Inventory of Distorted Thoughts about Women and the Use of Violence

An EFA was conducted using the FACTOR program to complete a preliminary study on the dimensionality of the IPDMUV. The results suggested the existence of a factor associated with distorted beliefs regarding women and the use of violence. From this information and given that the theoretical model was known, a model defined by a single dimension, related to the cognitive biases described above and comprising the 29 items from the original inventory, was tested using CFA. However, the post fit indexes for this 29-item, one-dimensional model were not acceptable: χ^2 (*df* = 377*; p* = .0001) = 11349.68; RMSEA (Root Mean Square Error of Approximation) = .25 (the 90% confidence interval ranged between .25 and .25); SRMR (Standardized Root Mean Square Residual) = .15; GFI (Global Fit Index) = .82; AGFI (Adjusted Goodness of Fit Index) = .80; CFI (Comparative Fit Index) = 1.00; NFI (Normed Fit Index) = 1.00; and NNFI (Non-Normed Fit Index) = 1.00. These results suggest the necessity to revise and analyze the items of this instrument.

To do so, the 29 integrating elements were analyzed from two perspectives: statistical (analyzing their factorial loads, residuals and modification indexes using the FACTOR and LISREL programs) and theoretical (reviewing the items' content and adequacy). After revising the 29 items, eight of those items (12, 14, 17, 19, 21, 26, 27 and 28) were discarded.

Specifically, the EFA showed that the eight deleted items lacked or had extremely low commonality (Item 26 = .055) with respect to the latent variable. The eight items also showed extremely low factorial loads (approximately .02), except for Item 26, which had a factorial load of 0.142. Moreover, when analyzing the completely standardized CFA solution, Items 19 and 27 showed an inverse relation to the latent variable. When revising their content (*Most men who assault their partners think that their behavior is justified* [19] and *When your neighbors are fighting, you have a responsibility to intervene* [27]), it became evident that rather than evaluating cognitive distortions, the wording evaluated knowledge regarding aggressors' beliefs with respect to their violent behavior (Item 19) or the expected civic behavior that may be conditioned by circumstances (Item 27).

Similarly, after analyzing the contents of the other items to be deleted, it was noted that Item 12 (*If a woman has money, there is no reason for her to endure a violent relationship)* is a complex question with multiple interpretations and that Item 28 refers primarily to a legal issue rather than a distorted thought (*It is always a criminal offense for a man to hit a woman.*). In addition, Item 14 (*If a kid hits your child, your child must react in the same way*), Item 17 (*Sometimes it is necessary to slap people*) and Item 21 (*Sometimes it is necessary to spank [a child]*) share specific content and are not clearly related to the latent variable. The analysis of modification indexes showed that Item 21 had a high correlation pattern with the errors of Items 14 and 17. Furthermore, the percentage of affirmative responses on these three items was higher in the normative group than in aggressors, identifying significant differences in Items 14 and 17, with a phi coefficient of .115 and .106, respectively. Finally, after analyzing the residuals and the modification

indexes, it was noted that Item 26 (*Women also often hurt their partners*) had an extremely high correlation pattern with element errors (5, 9, 10, 11, 12 and 21).

Dimensional and structural analysis of the new version of the IPDMUV (IPDMUV-R) and item discriminative capacity

After revising the IPDMUV, the new instrument (IPDMUV-R) comprised 21 items (1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 11, 13, 15, 16, 18, 20, 22, 23, 24, 25 and 29). Acceptable fit indexes resulted from the analysis of the one-dimensional structure of the IPDMUV-R using CFA: χ^2 (*df* = 189*; p* = .0001) = 573.66; RMSEA = .066 (with a confidence interval of 90%, which ranged between .060 and .073); SRMR = .062; GFI = .94; AGFI = .93; IFC = 1.00; NFI = 1.00; and NNFI = 1.00.

Moreover, most items of the 21 included in the IPDMUV-R distinguished between aggressors and the normative population (a higher percentage of affirmative responses on each item indicated a greater likelihood of belonging to the aggressor group). Item 20 was the item with the greatest discriminative capacity (large magnitude), followed by Items 4 and 11 (average magnitude) and Items 3, 6, 7, 8, 9, 10, 13, 15, 16, 22, 23 and 29 (with small or nearly average magnitudes). Finally, six items that did not discriminate statistically between aggressors and the normative population were identified (Items 1, 2, 5, 18, 24 and 25). However, these items were retained to maintain the psychological consistency of the instrument and because of their relevance from the perspective of clinical intervention (see Tables 1 and 2).

Study and comparison of the basic psychometric properties of the IPDMUV, IPDMUV-R, ASI and SDS

Although both versions of the IPDMUV (29 items and 21 items) helped discriminate in a statistically significant manner between the aggressors group and the normative group, a greater effect size was observed in the 21-item version (Hedges' *g* = .72) compared to the version with 29 items (*g* = .45). Similarly, the scale of benevolent sexism and the average score also differed in a statistically significant manner and with average magnitude between the aggressors group and the normative group (see Table 3). Conversely, the hostile sexism scale did not differ in statistical significance between these two groups. Finally, the average score on the social desirability scale helped differentiate statistically between the aggressors group and the normative group. The aggressors group scored higher in this dimension than the normative group, with an average magnitude (*g* = .55).

Analysis of concurrent validity of the IPDMUV-R

The correlations between the IPDMUV-R, the ambivalent sexism dimensions of the scale and the social desirability scale were studied in a subsample of the aggressors group (*n* = 51) and the normative group (*n* = 222). Statistically significant correlations were identified between the IPDMUV-R and the ambivalent sexism dimensions in both groups, being higher in the aggressors group (hostile sexism [*r* = .54], benevolent sexism [*r* = .59] and average score in sexism [*r* = .62]) than in the normative group (hostile sexism [*r* = .37], benevolent sexism [*r* = .26] and average score in sexism [*r* = .37]). By contrast, no statistically significant correlations were identified between the total score in the IPDMUV-R and the Social Desirability Scale, both in the subsample of aggressors (*r* = .10; *p* = .490) and in the normative sample (*r* = -.10; *p* = .150).

Table 1. Completely standardized solution for the IPDMUV (29 items) and IPDMUV-R (new version with 21 items).

	Completely Standardized Solution	
Item	IPDMUV	IPDMUV-R
1	.62	.31
2	.87	.40
3	.85	.46
4	.69	.49
5	.79	.37
6	.57	.39
7	.38	.31
8	.37	.24
9	.69	.41
10	.68	.49
11	.58	.44
12	.00	-
13	.40	.30
14	.14	-
15	.66	.41
16	.46	.35
17	.27	-
18	.37	.24
19	-.20	-
20	.42	.32
21	.36	-
22	.56	.41
23	.66	.46
24	.57	.41
25	.39	.29
26	.48	-
27	-.22	-
28	.27	-
29	.57	.34

Note. IPDMUV = Inventario de Pensamientos Distorsionados sobre la Mujer y el Uso de Violencia.

Table 2. Discriminative capacity of the items of the IPDMUV-R (frequency, percentages, chi-square and effect size).

	Total		Batterers group		Normative group				
Item	*N*	%	*n*	%	*n*	%	χ^2	Sign.	Φ
1	9	1.9	7	2.9	2	.9	2.43	.119	.073
2	6	1.3	5	2.1	1	.5	2.38	.123	.072
3	11	2.4	10	4.1	1	.5	6.82	.009	.121
4	44	9.5	40	16.6	4	1.8	29.41	.000	.252
5	7	1.5	5	2.1	2	.9	1.07	.301	.048
6	34	7.3	28	11.6	6	2.7	13.5	.000	.171
7	218	47.1	127	52.7	91	41	6.36	.012	.117
8	75	16.2	47	19.5	28	12.6	4.04	.044	.093
9	15	3.2	15	6.2	0	0	14.28	.000	.176
10	157	33.9	97	40.2	60	27	9.01	.003	.140
11	66	14.3	55	22.8	11	5	30.18	.000	.255
13	164	35.4	102	42.3	62	27.9	10.47	.001	.150
15	33	7.1	23	9.5	10	4.5	4.43	.035	.098
16	157	33.9	94	39	63	28.4	5.82	.016	.112
18	90	19.4	41	17	49	22.1	1.89	.169	-.064
20	160	34.6	135	56	25	11.3	102.35	.000	.470
22	132	28.5	86	35.7	46	20.7	12.69	.000	.166
23	54	11.7	43	17.8	11	5	18.63	.000	.201
24	74	16	46	19.1	28	12.6	3.61	.058	.088
25	172	37.1	92	38.2	80	36	.23	.634	.022
29	219	47.3	133	55.2	86	38.7	12.54	.000	.165

Nota. IPDMUV-R = Inventario de Pensamientos Distorsionados sobre la Mujer y el Uso de Violencia - Revisado. [Inventory of Distorted Thoughts about Women and the Use of Violence – Revised]; Sign. = Significance; Φ = Phi Coefficient (effect size).

Analysis of the ROC curve of IPDMUV and IPDMUV-R

Cut-off points were studied to differentiate between aggressors (n = 241) and the normative group (n = 222) using the analysis of the ROC curve of the IPDMUV. When comparing both versions (the IPDMUV with 29 items and the IPDMUV-R with 21 items), the IPDMUV-R had greater discriminative capacity. Specifically, the IPDMUV-R has a greater area under the curve (.699, p = .000, with a 95% confidence interval ranging from .652 to .747) than the IPDMUV with 29 items (.627, p = .000, with a 95% confidence interval ranging from .577 to .678). Figure 1 shows the superimposed ROC curves for the two versions of this instrument. Finally, Table 4 outlines the various descriptive indexes to define cut-off points. Thus, with a cut-off point set at 5, the IPDMUV-R correctly classified 58% of the aggressors and 15% of participants in the normative population. That is to say, the IPDMUV-R would classify 174 participants correctly (141 true positive and 33 true negative), whereas there would be 100 false negatives and 189 false positives. By contrast, with a cut-off point set at eight, the IPDMUV-R correctly classified 85% of the aggressors but only 3% of the participants in the normative population. In brief, giving priority to sensitivity, setting the cut-off point at eight would be appropriate because in this context, it is important to detect potential aggressors to intervene in their cognitive distortions.

Comparison of different predictors to distinguish aggressors from non-aggressors

The ROC curve of different predictors: The IPDMUV-R, hostile sexism and benevolent sexism on the ASI and total score for the scale of social desirability in a subgroup of aggressors (n = 51) and in the normative group (n = 222) were analyzed. The IPDMUV-R had higher discriminative capacity than all predictors, followed by benevolent sexism and social desirability. Specifically, the area under the curve of the IPDMUV-R was .741, p = .000 (with a 95% confidence interval ranging from .665 to .818). The area under the curve of benevolent sexism was .659, p = .000 (with a 95% confidence interval between .566 and .753), and the average score for sexism leaves an area under the curve of .614, p = .011 (with a 95% confidence interval between .522 and .706). Social desirability leaves an area under the curve of .644, p = .001 (with a 95% confidence interval between .558 and .730). By contrast, the predictive capacity of hostile sexism was not statistically significant, leaving an area under the curve of .542, p = .354) (with a 95% confidence interval ranging from .457 to .626).

Finally, the discriminative capacity of different predictors (IPDMUV-R, ASI-hostile, ASI-benevolent and SDS) was assessed in the aggressors group and in the control group. The discriminant function was significant (χ^2 [df = 4; p = .000] = 60.48), and a canonical correlation of .45 was obtained. It was observed that the total score on the IPDMUV-R (.75) was the variable that largely defined the discriminant function, followed by the benevolent sexism (.50) and social desirability (.42) dimensions from the matrix structure. By con-

trast, the hostile sexism dimension had little in common with the discriminating function (.10). Using these predictors, 75.8% of the cases (68.6% of the aggressors and 77.5% of the normative group) were correctly classified.

Table 3. Basic psychometric properties of the instruments (IPDMUV, ASI and SDS) by group, mean difference (Student's *t*) and effect size (Hedges' *g*)

	Total (*N* = 463)	Batterers (*n*= 241)	Normative (*n* = 222)	*t* (sign.)	*g* de Hedges		
						95% IC	
					g	Lower	Upper
IPDMUV (29-items)							
M	8.11	8.90	7.24	4.89	.45	.27	.64
SD	3.75	3.93	3.35	(.000)			
Skewness	.63	.37	.93				
Kurtosis	.35	-.10	1.56				
Cronbach's alpha	.71	.72	.68				
IPDMUV-R (21-items)							
M	4.10	5.11	3.00	7.89	.72	.54	.91
SD	3.09	3.27	2.45	(.000)			
Skewness	1.02	.74	1.36				
Kurtosis	1.03	.37	2.84				
Cronbach's alpha	.74	.73	.67				
	Total (*N* = 273)	Batterers (*n*= 51)	Normative (*n* = 222)	*t* (sign.)	*g* de Hedges		
						95% IC	
					g	Lower	Upper
ASI-Hostil							
M	17.66	18.82	17.39	.77	.12	-.19	.42
SD	11.92	11.06	12.12	(.439)			
Skewness	.30	-.05	.37				
Kurtosis	-.85	-.99	-.80				
Cronbach's alpha	.91	.87	.91				
ASI- Benevolent							
M	20.86	26.74	19.50	3.57	.64	.33	.95
SD	11.66	13.53	10.78	(.001)			
Skewness	.25	-.23	.25				
Kurtosis	-.81	-1.19	-.71				
Cronbach's alpha	.84	.88	.82				
ASI- Average							
M	19.26	22.78	18.45	2.71	.42	.11	.73
SD	10.42	11.41	10.03	(.007)			
Skewness	.22	-.24	.30				
Kurtosis	-.87	-1.05	-.73				
Cronbach's alpha	.91	.92	.90				
Social Desirability Scale							
M	6.26	7.63	5.94	3.51	.55	.24	.85
SD	3.16	3.21	3.06	(.001)			
Skewness	-.10	-.29	-.11				
Kurtosis	-.77	-.59	-.82				
Cronbach's alpha	.77	.78	.76				

Note. IPDMUV = Inventario de Pensamientos Distorsionados sobre la Mujer y el Uso de Violencia [Inventory of Distorted Thoughts about Women and the Use of Violence – Revised]; ASI = Ambivalent Sexism Inventory

Table 4. Selection of descriptive indexes to define cut-off points in the IPDMUV-R.

Cut-off points	S	E	VP	VN	FN	FP
0	2.9%	89.6%	7	199	234	23
1	11.6%	67.6%	28	150	213	72
2	25.3%	50.9%	61	113	180	109
3	39%	31.5%	94	70	147	152
4	46.9%	23.4%	113	52	128	170
5	58.5%	14.9%	141	33	100	189
6	68.5%	9.5%	165	21	76	201
7	76.8%	4.5%	185	10	56	212
8	85.5%	2.7%	206	6	35	216
9	90.5%	1.8%	218	4	23	218
10	93.8%	1.4%	226	3	15	219
11	96.7%	.9%	233	2	8	220
12	97.5%	.5%	235	1	6	221
13	97.9%	.5%	236	1	5	221
14	98.8%	.5%	238	1	3	221
15	99.2%	.0%	239	0	2	222

Note: IPDMUV = Inventario de Pensamientos Distorsionados sobre la Mujer y sobre el Uso de Violencia- Revisada [Inventory of Distorted Thoughts about Women and the Use of Violence – Revised]; *S* = sensitivity; *E* = specificity; *TP* = true positives; *TN* = true negatives; *FN* = false negatives; *FP* = false positives.

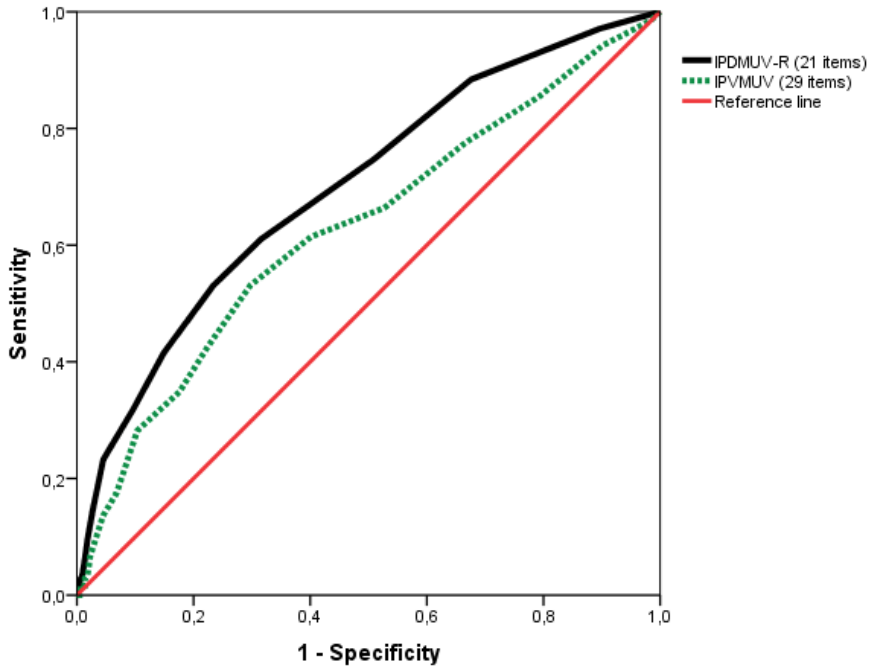

Figure 1. ROC curve for the two versions of the Inventory of Distorted Thoughts about Women and the Use of Violence. IPDMUV = version with 29 items (dashed line); IPDMV-R = version with 21 items (solid line)

Discussion

If there is a relation between sexist attitudes and violence in intimate relationships (León-Ramírez and Ferrando, 2014), detecting cognitive biases in relation to gender stereotypes and the justification of sexist violence plays an extremely important role in the areas of primary prevention and intervention among partner aggressors. In the latter case, it is a matter of adapting treatment programs to the specific characteristics of these men. This study has been conducted with a wide sample of aggressors and non-aggressors in a community, validating the IPDMUV-R in a Spanish population and analyzing the dimensionality, reliability and convergent and discriminant validity of the instrument. Similarly, cut-off points to distinguish between aggressors and non-aggressors have also been analyzed. The final result is a smaller scale with 21 items (the IPDMUV-R), in which items in the initial

version that were not related to the latent variable, were wrongly worded or had become obsolete with the passage of time (Appendix) were removed.

More specifically, the revised and updated 21-item version of the IPDMUV-R has improved psychometric properties and content validity compared with the original 29-item version. In the new version, eight items were deleted (12, 14, 17, 19, 21, 26, 27 and 28). Items 12, 19, 26, 27 and 28 were deleted because of incorrect or complex wording that translates into a low commonality or even an inverse relation to the latent variable (Items 19 and 27). Items 14, 17 and 21 were deleted because, in addition to having a low commonality with the underlying dimension, their contents refer to controversial beliefs much debated in the population (in fact, Items 14 and 17 obtained a score statistically higher in the normative group than in the group of aggressors) and whose response can be conditioned in part by social desirability. Two previous studies (Ferrer et al., 2006; Loinaz, 2014) also suggested deleting Items 19, 27 and 28.

In this study, the IPDMUV-R allows significant distinguishing between partner aggressors and non-aggressors to a greater extent than benevolent and hostile sexism in the ASI. Similarly, the study by Torres and López-Zafra (2010) also showed that according to the IPDMUV, male prisoners convicted of gender violence maintain more negative attitudes toward women, blaming them for the abuse, compared with non-prisoner males.

However, unlike previous validation studies (Ferrer et al., 2006; Loinaz, 2014), the IPDMUV-R presents a one-dimensional structure with a dichotomous response format (which impedes the central tendency response) and has, as an added value, elements to interpret subjects' scores and thus help identify people with cognitive biases related to distorted thoughts regarding women and the use of violence. Establishing the cut-off point at 8 helps distinguish aggressors (or potential aggressors) from non-aggressors. Consequently, we emphasize the importance of the decisions that may be made as a result of this instrument. The scale measures a concept of enormous social relevance, and when used to classify subjects according to their reference population, this scale shows acceptable sensitivity. In this sense, the scale can be of great help in predicting the violent behavior of people who have these cognitive distortions. Such prediction can protect victims (Echeburúa, Corral and Amor, 2002) and adapt treatment for aggressors who seek help with this problem.

This instrument, in its original version, was shown to be sensitive to therapeutic change in various studies with larger samples (Echeburúa et al., 2009; Echeburúa and Fernández-Montalvo, 2009); however, other studies obtained different findings (Boira et al., 2013; Loinaz, 2014). Discrepancies regarding this issue may be because of the wording of some items or the various samples used (in the community, with a conditional suspended sentence or in prison). Although more research is required, there are solid theoretical and empirical bases for considering that the reduction or disappearance of violence against intimate partners is associated with the modification of cognitive distortions related to women and violence (Carbajosa, Boira and Tomás-Aragonés, 2013; Echeburúa, 2013; Echeburúa, Fernández-Montalvo and Amor, 2006; Lilac, Oliver, Galiana and Gracia, 2013).

This study has some limitations. Considering that there are various types of violent men (Amor, Echeburúa and Loinaz, 2009), the sample of aggressors, although wide, comprises men who came voluntarily to a treatment program and is not representative of aggressors who, because of the social criticism toward these behaviors, minimize the problem and do not seek help. From a methodological perspective and because of the difficulties in obtaining a sample of aggressors, cross-validation was not conducted, a step recommended to create an improved version of the test with more psychometric guarantees. Finally, although the instrument can distinguish between aggressors and the normative population in an acceptable manner, its reliability was not sufficiently high.

Another suggestion for future research is comparing the instrument with different types of abusers under treatment (in the community, with conditional suspension of a sentence and in prison) by cross-validation to revise the psychometric properties of the instrument and to establish a differential diagnosis in these subgroups based on their cognitive distortions. As in previous studies (Ferrer et al., 2006; Loinaz, 2014), using a Likert-type scale to determine test reliability increments with regard to the use of dichotomous items may also be appropriate. Finally, it would be desirable to examine the low predictive capacity of the hostile sexism dimension to differentiate between aggressors and the normative population. It would be useful to determine whether this low predictive capacity is attributable to the evaluation context, to social desirability, to the influence of preventive campaigns on gender violence or to education level.

References

Amor, P. J., Echeburúa, E., & Loinaz, I. (2009). ¿Se puede establecer una clasificación tipológica de los hombres violentos contra su pareja? [Is it possible to establish a typological classification of the intimate partner batterers?]. *International Journal of Clinical and Health Psychology, 9,* 519-539.

Boira, S., López, Y., Tomás-Aragonés, L., & Gaspar, A. R. (2013). Intervención psicológica en la comunidad en hombres condenados por violencia de género [Efficacy of different treatment modalities in men convicted of intimate partner violence]. *Anales de Psicología, 29*, 19-28. doi: 10.6018/analesps.29.1.130631

Carbajosa, P., Boira, S., & Tomás-Aragonés, L. (2013). Difficulties, skills and therapy strategies in interventions with court-ordered batterers in Spain. *Aggression and Violent Behavior, 18*, 118-124. doi: 10.1016/j.avb.2012.11.005

Crowne, D. P., & Marlowe, D. (1960). A new scale of social desirability independent of psychopathology. *Journal of Consulting Psychology, 24*(4), 349-354. doi:10.1037/h0047358

Díaz-Aguado, M. J. (2006). Sexismo, violencia de género y acoso escolar. Propuestas para una prevención integral de la violencia [Sexism, gender

violence and bullying. Proposals for a comprehensive prevention of violence]. *Revista de Estudios de Juventud, 73*, 38-57.

Díaz-Aguado, M. J., & Martín, G. (2011). Convivencia y aprendizaje escolar en la adolescencia desde una perspectiva de género [School coexistence and learning in adolescence from a gender perspective]. *Psicothema*, *23*(2), 252-259.

Echeburúa, E. (2013). Adherencia al tratamiento en hombres maltratadores contra la pareja en un entorno comunitario: Realidad actual y retos de futuro [Adherence to treatment in male batterers against their intimate partners in a community setting: State of the art and future challenges]. *Psychosocial Intervention*, *22*(2), 87-93. doi:10.5093/in2013a11

Echeburúa, E., Corral, P., & Amor, P. J. (2002). Evaluación del daño psicológico en las víctimas de delitos violentos [Evaluation of psychological harm in the victims of violent crime]. *Psicothema, 14 (supl.),* 139-146.

Echeburúa, E., & Fernández-Montalvo, J. (1998). Hombres maltratadores [Male batterers]. In E. Echeburúa, y P. Corral (Eds.), *Manual de violencia familiar* (pp. 70-175). Madrid, España: Siglo XXI.

Echeburúa, E., & Fernández-Montalvo, J. (2007). Male batterers with and without psychopathy: An exploratory study in Spanish prisons. *International Journal of Offender Therapy and Comparative Criminology*, *51*(3), 254-263. doi:10.1177/0306624X06291460

Echeburúa, E., & Fernández-Montalvo, J. (2009). Evaluación de un programa de tratamiento en prisión de hombres condenados por violencia grave contra la pareja [Evaluation of a treatment program in prison for men convicted of serious violence against their partners]. *International Journal of Clinical and Health Psychology, 9*, 5-20.

Echeburúa, E., Fernández-Montalvo, J., & Amor, P. J. (2006). Psychological Treatment of Men Convicted of Gender Violence: A Pilot Study in Spanish Prisons. *International Journal of Offender Therapy and Comparative Criminology*, *50*(1), 57-70. doi:10.1177/0306624X05277662

Echeburúa, E., Sarasua, B., Zubizarreta, I., & Corral, P. (2009). Evaluación de la eficacia de un tratamiento cognitivo-conductual para hombres violentos contra la pareja en un marco comunitario: una experiencia de 10 años (1997-2007) [Assessment of the effectiveness of a cognitive-behavioral treatment for violent men against their partners in a community framework: A 10-year experience (1997-2007)]. *International Journal of Clinical and Health Psychology, 9*, 199-217.

Expósito, F., Moya, M., & Glick, P. (1998). Sexismo ambivalente: medición y correlatos [Ambivalent sexism: Assessment and correlates]. *Revista de Psicología Social, 13*(2), 159-169.

Fernández-Montalvo, J., & Echeburúa, E. (1997). Variables psicopatológicas y distorsiones cognitivas de los maltratadores en el hogar: un análisis descriptivo [Psychopathological variables and cognitive distortions of abusers in the home: A descriptive analysis]. *Análisis y Modificación de Conducta, 23,* 151-180.

Ferrando, P. J., & Chico, E. (2000). Adaptación y análisis psicométrico de la escala de deseabilidad social de Marlowe y Crowne [A Spanish version of the Marlowe and Crowne's social desirability scale]. *Psicothema*, *12*(3), 383-389.

Ferrer, V. A., Bosch, E., Ramis, E., Torres, G., & Navarro, C. (2006). La violencia contra las mujeres en la pareja: creencias y actitudes en estudiantes universitarios/as [Domestic violence: Beliefs and attitudes in university students]. *Psicothema*, *18*(3), 359-366.

Fox, C. L., Hale, R., & Gadd, D. (2014). Domestic abuse prevention education: Listening to the views of young people. *Sex Education*, *14*(1), 28-41. doi:10.1080/14681811.2013.816949

Glick, P., & Fiske, S. T. (1996). The Ambivalent Sexism Inventory: Differentiating hostile and benevolent sexism. *Journal of Personality and Social Psychology*, *70*(3), 491-512. doi:10.1037/0022-3514.70.3.491

Jöreskog K. G., & Sörbom D. (1996). *LISREL 8: User's reference guide*. Chicago, IL: Scientific Software International.

León-Ramírez, B., & Ferrando, P. J. (2014). Assessing sexism and gender violence in a sample of Catalan university students: A validity study based on the Ambivalent Sexism Inventory and the Dating Violence Questionnaire. *Anuario de Psicología, 44,* 327-341.

Lila, M., Oliver, A., Galiana, L., & Gracia, E. (2013). Predicting success indicators of an intervention programme for convicted intimate-partner violence offenders: the Contexto Programme. *The European Journal of Psychology Applied to Legal Context, 5*, 73-95.

Loinaz, I. (2014). Distorsiones Cognitivas en Agresores de Pareja: Análisis de una Herramienta de Evaluación [Cognitive distortions among partner-violent men: Analyzing an assessment tool]. *Terapia Psicológica*, *32*(1), 5-17. doi:10.4067/S0718-48082014000100001

Lorenzo-Seva, U., & Ferrando, P. J. (2006). FACTOR: A computer program to fit the exploratory factor analysis model. *Behavior Research Methods*, *38*(1), 88-91. doi:10.3758/BF03192753

Morata, M. A., & Holgado-Tello, F. P. (2013). Construct validity of Likert scales through Confirmatory Factor Analysis: a simulation study comparing different methods of estimation based on Pearson and polychoric Correlations. *International Journal of Social Science Studies, 1*(1), 54-61.

Reynolds, W. M. (1982). Development of reliable and valid short forms of the Marlowe-Crowne social desirability scale. *Journal of Clinical Psychology, 38,* 119-125.

Torres, E., & López-Zafra, E. (2010). Diferencias en cultura del honor, inteligencia emocional y pensamientos distorsionados sobre las mujeres en reclusos y no reclusos [Differences in cultures regarding honor, emotional intelligence and distorted thoughts about women in prison inmates and non-prisoners]. *Boletín de Psicología, 100*, 71-88.

Yang-Wallentin, F., Jöreskog, K. G., & Luo, H. (2010). Confirmatory factor analysis of ordinal variables with misspecified models. *Structural Equation Modeling*, *17*(3), 392-423. doi:10.1080/10705511.2010.489003

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Appendix

Inventory of Distorted Thoughts about Women and the Use of Violence-Revised (IPDMUV-R) (Echeburúa, Amor, Sarasua, Zubizarreta, & Holgado-Tello, 2015)

Previous Item No.		T	F
1	1. Women are inferior to men.		
2	2. If a man is the one bringing money into the home, the woman must be subordinate to him.		
3	3. Men are the heads of the family, so women must obey them.		
4	4. Women must have lunch and dinner ready when men get home.		
5	5. A woman must have sex with her partner, even if the woman doesn't want to at the time.		
6	6. Women must not contradict their partners.		
7	7. Women who continue coexisting with violent men must have serious psychological problems.		
8	8. Many women consider abuse by their partners to be a token of their partners' concern for them.		
9	9. When a man hits his partner, the woman knows the reason behind it.		
10	10. If women actually wanted to, they know how to prevent further episodes of violence.		
11	11. Many women deliberately provoke their partners so their partners lose control and hit them.		
13	12. The fact that most women do not call the police when being abused proves that women want to protect their partners.		
15	13. Teachers at school are right to use physical punishment against children who are repeatedly disobedient and rebellious.		
16	14. Children do not realize that their fathers abuse their mothers unless the children witness a fight.		
18	15. One must hate a woman to abuse her.		
20	16. Most men who assault their partners feel ashamed and guilty because of the abuse.		
22	17. What happens within a family only concerns the family.		
23	18. Very few women have physical or psychological consequences resulting from ill treatment.		
24	19. On many occasions, men mistreat their partners because their partners annoy the men.		
25	20. Most people who employ some type of violence are unsuccessful people or "losers."		
29	21. People who employ violence have serious psychological problems and often do not know what they are doing.		

Notes: The following items were removed from the original version: 12) If a woman has money, there is no reason for her to endure a violent relationship; 14) If a kid hits your child, your child must react in the same way; 17) Sometimes it is necessary to slap people; 19) Most men who assault their partners think that their behavior is justified; 21) Sometimes it is necessary to spank [a child]; 26) Women often also hurt their partners; 27) When your neighbors are fighting, you have a responsibility to intervene; 28) It is always a criminal offense for a man to hit a woman.