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Creation and validation of the Distorted Thoughts on Gender Violence Aggressors Inventory

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Abstract

Background: Myths and erroneous beliefs around gender violence jeopardise the progress made in recent decades. In trying to counteract them, it is important to be able to measure the extent to which these distorted thoughts are accepted by victims, aggressors, qualified professionals, and the general population. The main goal of this study was the construction and validation of a self-report instrument to evaluate the distorted thoughts on perpetrators of gender violence.

Method: The study involved 855 participants, 479 female and 376 male, *M*age = 38.6, *SD* = 16. After the psychometric analysis of the initial pool of items (*N* = 100), 35 were adjusted to the parameters of asymmetry, kurtosis, standard deviation, collinearity, and content validity.

Results. The study of dimensionality yielded a one-dimensional model with 35 items. The confirmatory factor analysis showed adequate indices of goodness of fit (χ^2 = 208.321) and Mean Square Error of Approximation (RMSEA = .052), optimal indices of Comparative Fit (CFI = .989) and corrected goodness of fit (AGFI = .987). The instrument was called the "Distorted Thoughts on Gender Violence Aggressors Inventory" (DTGVAI) and reached an internal consistency of ω = .705. Convergent validity showed a positive relationship between distorted thoughts about aggressors and a) thoughts about violence and victims, and b) ambivalent sexism. Men, older people, and the actively religious showed more distorted thoughts.

Conclusion. In conclusion, the DTGVAI is a valid and reliable instrument for assessing myths about the abuser and serves as a starting point for efforts to neutralise these beliefs.

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1. Introduction

Many risk factors and a variety of circumstances surround the phenomenon of gender violence. However, even today, neither these factors nor the extent to which they influence the occurrence of violence against women are exactly known (Bermúdez & Meléndez-Domínguez, 2020; Gracia et al., 2019; Gracia-Leiva et al., 2019; Puente-Martínez et al., 2016; Wemrell et al., 2019). Among the risk factors, myths or distorted beliefs associated with gender violence are especially important because they generate confusion and support the collective ideology's belief that the problem is less serious than it is. In consequence, ignorance of the possible characteristics of aggressors threatens to jeopardise the progress made in recent decades (Bosch-Fiol & Ferrer-Pérez, 2012; Fenton & Jones, 2017; Marey-Castro & Del-Pozo-Triviño, 2020).

Several studies have analysed the distorted beliefs around this type of violence. They have focused on a range of factors, including tolerant attitudes towards violence against women and the perception of equality (Boira et al., 2013; Fox et al., 2014; Martín-Fernández et al., 2018; Ubillos et al., 2017), myths of romantic love (Bisquert-Bover et al., 2019; Caro & Monreal, 2017; Nebot-García et al., 2018; Rodríguez-Castro et al., 2013), ambivalent sexism and micromachisms (Arnoso et al., 2017; García-Campaña et al., 2018; Herrero et al., 2017; Noriega et al., 2020), stereotyped ideas about battered women (Bosch-Fiol & Ferrer-Pérez, 2012; Diéguez et al., 2020; Ferrer-Pérez et al., 2016; Sprague et al., 2013; Yamawaki et al., 2012), and distorted thoughts about abusers (Bosch-Fiol & Ferrer-Pérez, 2012; Diéguez et al., 2020; Ferrer-Pérez et al., 2016; Sanmartín et al., 2010). These studies make it possible to establish the repertoire of sexist beliefs and myths—about violence, perpetrators and victims—whose existence helps sustain the instrumental violence exerted on women.

The problem is exacerbated by the fact that these cognitive biases characterise all the agents involved in gender violence: the victims, the aggressors and the professionals (e.g., García-Díaz et al., 2020; Noriega et al., 2020). In Spain, the Government Delegation for Gender Violence (GDGV) reported that we are still far from eradicating this type of distorted thinking. Data on university students have revealed that only 25% have done a course related to gender violence (GDGV, 2012). In the health field, 62.2% of the doctors recognise the need to improve their skills in conducting clinical interviews in cases of gender violence. Additionally, a large majority (94.5%) stated that the little training they do receive hinders their ability to identify, diagnose and act appropriately in these cases (GDGV, 2015a). Although adolescents and young people believe there is a severe problem of gender inequality, they have great difficulty in making the

link between controlling behaviour and gender violence. Many of them also think that most aggressors are foreigners (38%) or mentally ill (40%) (GDGV, 2015b).

Other recent studies indicate that health professionals have difficulties in identifying cases of gender violence and that their ambivalent sexist attitudes (hostile and benevolent) are related to their having less involvement in these types of cases. However, this situation improves as the number of hours of training increases, mainly due to reduced levels of benevolent sexism (Noriega et al., 2020). García-Díaz et al. (2020) found that among a sample of healthcare undergraduates, 62.8% of the total sample and 75.9% of psychology students tolerated violence in a partner. Other studies concluded that, despite taking subjects that address gender violence, university students in the fields of health and law continue to show erroneous attitudes and perceptions on this problem (Diéguez et al., 2020). In addition, future teachers, who represent one of the most influential sectors in preventing gender inequalities, show acceptance of some myths related to romantic love, gender roles and violence against women (Bonilla-Algovia & Rivas-Rivero, 2018, 2019). In another study with participants of different ages (from 17 to 80 years old), of whom almost half were university students, 66% had false beliefs about those who suffer or commit this type of violence and 38% considered -erroneously- that there is an instrumentalization of the reports (that is, false reports) in order to get some benefits (Ferrer-Pérez et al., 2016).

In clinical and research studies examining tolerant attitudes and irrational beliefs about gender violence, one of the most used instruments is the Inventory of Distorted Thoughts about Women and the Use of Violence (in Spanish *Inventario de Pensamientos Distorsionados sobre la Mujer y el Uso de la Violencia*, IPDMUV; Echeburúa & Fernández-Montalvo, 1998). The inventory was designed to provide a one-dimensional assessment of the cognitive biases exhibited by violent men as part of a cognitive-behavioural program for the treatment of abusers. Since its publication, it has become a widely used tool to detect changes in abusers who participate in intervention programs (e.g., Boira et al., 2013; Loinaz, 2014). The instrument has also been used in other studies to assess beliefs in the general population (Ferrer et al., 2016; Loinaz, 2014). It consists of 29 dichotomous items on gender roles and women's inferiority and on the legitimation of violence to resolve conflicts. Subsequently, a shorter version of 21 items was created and validated, the IPDMUV-R (Echeburúa et al., 2016), which established cut-off points that allow discrimination between aggressors, potential aggressors, and non-aggressors. Likewise, positive correlations were obtained with ambivalent sexism.

Other instruments measure distorted beliefs about different aspects of gender violence. The Acceptance of Modern Myths about Sexual Aggression scale (AMMSA; Gerger et al., 2007), validated in Spanish by Megías et al. (2011), subtly measures current myths about sexual assault. The scale of Acceptance of Myths about Intimate Partner Violence against Women (AMIVAW; Megías et al., 2018) consists of 15 common myths about intimate partner violence. Finally, the 20-item Acceptability of Intimate Partner Violence Against Women scale (A-IPVAW; Martín-Fernández et al., 2018) explores situations related to coercion and physical and verbal violence.

Another set of self-report measures, although they do not directly measure distortion concerning gender violence, have helped us understand the existence of such biases. The Gender Role Attitudes Scale (GRAS, García-Cueto et al., 2015) is the most prominent: it has 20 items that assess sexist attitudes in three areas: family, social relations and employment. Other instruments that have proved useful are the Ambivalent Sexism Inventory (ASI; Glick & Fiske, 1996), which measures hostile and benevolent sexism (validated into Spanish by Expósito et al., 1998), the Romantic Jealousy Scale (ECR; White, 1976; validated into Spanish by Montes-Berges, 2008), and the Myths towards Love scale (Bosch et al., 2007; validated in a sample of adolescents by Rodríguez-Castro et al., 2013).

The instruments mentioned in the previous paragraph allow us to obtain information on a range of types of attitudes and to generate knowledge about the victims, the couple relationship and the circumstances of the episodes of violence. However, these measures provide less knowledge about the characteristics of the aggressors and distorted beliefs about these aggressors.

Wrong perceptions and lack of knowledge about the characteristics of the abuser (e.g., communication and affective patterns, attitudes, management of emotions, etc.) can constitute a risk factor for the occurrence of violence since they increase the difficulty of detecting cases and managing an intervention (Ghinassi et al., 2021). The existence of numerous typologies describing them is a clear indicator of the heterogeneity— the great variety of characteristics and peculiarities—among men who assault their partners (Amor et al., 2009; Domínguez et al., 2015; Dutton, 1997; Gottman et al., 1995; Holtzworth-Munroe & Meehan, 2004; Holtzworth-Munroe & Stuart, 1994; Huertas, 2020; Loinaz, 2009). Some studies found no significant differences, in some characteristics, between the perpetrators of gender violence and other male criminals (Juarros-Basterretxea et al., 2018; Loinaz et al., 2018; Sjödin et al., 2017). This, together with the evidence that there is no single profile, enforce us to take all types of aggressors into consideration (Boira, 2010; Huertas, 2020; Torres et al., 2013); it also necessitates a different approach.

This approach implies the detection of relevant variables that usually are found in different types of men who exercise violence against women. Some characteristics are associated with perpetrators of gender violence, such as double façade, the type of discourse and justification, the externalisation of guilt, controlling behaviours, manipulation, jealousy and possessive attitudes, resistance to change and the use of violence to resolve conflicts (Adams, 1988; Arias, 2018; Corsi, 1991; Dohmen, 1995; López & Moral, 2020; Sonkin & Durphy, 1982). They are also relatively easily perceived. However, not all abuser characteristics are known equally, nor they are so easily observable. Examples include low self-esteem, emotional dependence and insecurity (Arias, 2018; Corsi, 1991; Currie, 1991; Dohmen, 1995; Guerrero-Molina et al., 2017; Henning & Connor-Smith, 2011; López & Moral, 2020; Rondeau et al., 1989; Sonkin & Durphy, 1982). They are difficult to detect because they often stay below the surface. Another problem is that the known characteristics of aggressors can lead to a "totalising" (generalisable) discourse about them in society, favouring the consolidation of myths and erroneous beliefs that make it harder to prevent this type of violence.

In sum, the lack of clarity in our information about perpetrators of gender violence fosters the creation and consolidation of myths and false beliefs. Against this background of distorted images of aggressors and the ignorance of the risk factors, the difficulty of detecting signs of violence against women increases. As some authors point out (Carbajosa et al., 2013; Echeburúa et al., 2016; Lila et al., 2013), we consider that reducing violence against women involves detecting, addressing and modifying the distorted beliefs present in all spheres of our society. If they are to be counteracted effectively, it is essential to detect the degree of acceptance of the myths and false beliefs among the social agents most significantly involved in this phenomenon (victims, aggressors, qualified professionals and university students). The present work, therefore, aims to design and validate an instrument for evaluating a range of cognitive biases held about gender violence aggressors. These include sociodemographic, behavioural, cognitive, and emotional characteristics, and features related to interaction with their partner and the environment, personality and prognosis of change. The intention is that it will be useful in various contexts, in planning more effective prevention strategies and intervention programmes.

2. Method

2.1 Participants

The study involved 855 participants. A non-probabilistic sampling of the intentional type and snowball was used. Of the total, 56% were female (n = 479) and 44% were male (n = 376), with a mean age of 38.6 (SD = 16.0, Min = 18, Max = 70). Regarding occupation, 21.6% were

university students, 59.9% were workers from different sectors, 8.6% were carers, 5.3% were retired and 4.6% were unemployed. The distribution of the highest level of studies completed was as follows: no studies (6.6%), primary studies (20.2%), secondary studies (9.9%), high school or vocational/occupational training (16.6%), undergraduate university studies (46.5%), postgraduate studies (0.2%). The political orientations of the participants were left: 22.6%, center: 15.4%, right: 32.6% and apolitical: 29.4%. 68.2% described themselves as believers in some religion. When asked whether they had known any case of gender violence, 31.1% said yes and 68.9% no.

2.2 Instruments

The *Distorted Thoughts on Gender Violence Aggressors Inventory* (DTGVAI) is an initial battery of 100 items. It assesses the myths or erroneous beliefs held by people about the stereotype of the abuser. The responses were along a 5 point Likert scale.

The *Inventory of Distorted Thoughts about Women and the Use of Violence-Revised* (in Spanish IPDMUV-R; Echeburúa et al., 2016) consists of 21 binary items. It allows us to identify irrational beliefs about gender roles and the supposed inferiority of women relative to men and about the use of violence as an acceptable way to resolve conflicts. The range of the test is between 0 and 21 points. The higher the score, the greater the number of cognitive distortions about women and the use of violence.

The *Ambivalent Sexism Inventory* (ASI; Glick & Fiske, 1996; Spanish validated version by Expósito et al., 1998) comprises 22 items. It evaluates two dimensions: hostile sexism (discriminatory attitudes and behaviours based on the supposed inferiority of women) and benevolent sexism (less harmful, but considers women as fragile people who need care and protection). The mode of response is on a Likert-type scale that ranges from 0 ("totally disagree") to 5 ("totally agree"). Higher scores indicate more sexism. This scale has been validated in populations from different countries (Glick et al., 2000, 2002). The Spanish version showed adequate psychometric properties ($\alpha = .90$ for the total score and $\alpha = .89$ and $\alpha = .86$ for the hostile and benevolent sexism subscales, respectively). Other studies have shown good psychometric properties of the Spanish version of the scale (Arnoso et al., 2017; León-Ramírez & Ferrando, 2014).

The *Sociodemographic variables* were gathered using ad hoc questions on the following: gender, age, profession, educational level, experience of direct experience related to gender violence, political ideology, and self-description, or not, as a believer.

2.3 Procedure

2.3.1 Inventory construction

After analysing the main contributions in this field (e.g., Adams, 1988; Amor et al., 2009; Corsi, 1991; Currie, 1991; Dohmen, 1995; Dutton, 1997; Gottman et al., 1995; Holtzworth-Munroe & Stuart, 1994; Loinaz, 2009; Sonkin & Durphy, 1982), we elaborated a theoretical model that captures the relevant characteristics associated in previous research with men who exercise violence against women, and with myths around the image of these men. The inventory that we developed includes the following categories: sociodemographic, behavioural, cognitive, personality and emotional factors, interaction with their partner and the environment and prognosis of change. An initial battery of items (N = 100) was generated by a group of experts in social psychology and, specifically, in perception, attitudes and gender violence. In its elaboration, the basic principles followed were representativeness, relevance, diversity, clarity, simplicity and understandability (Muñiz et al., 2005). We avoided the use of technicalities, double negatives and excessively verbose or ambiguous statements (Muñiz, 2018; Muñiz et al., 2005). Care was taken that the language used was inclusive, not offensive and/or discriminatory (Muñiz & Fonseca-Pedrero, 2019). In order to reduce both response bias and acquiescence bias (Cupani et al., 2019; Wetzel et al., 2016), some items were written directly (the higher the score, the more distortion) and others indirectly (the higher the score, the less distortion).

The response format chosen was a 5-point Likert scale in order to facilitate consideration and analysis of the responses as on a continuum (Lloret-Segura et al., 2014).

2.3.2 Procedure for instrument administration

To avoid order effects, the three questionnaires were presented in a counterbalanced way using the D'Amato algorithm (Ramos et al., 2004). Precise instructions were given on the correct form of administration; the time taken for the test ranged between 30 and 40 minutes. Participants responded in paper and pencil format, in groups and during classes. They completed the informed consent form, which informed them of the objectives of the study and the voluntary, anonymous nature of their participation. The first participants facilitated contact with others, of various age ranges. The final sample was, therefore, a heterogeneous group. Sociodemographic characteristics were considered in the analyses to provide evidence of the instrument's validity. Throughout the process, the confidentiality of the subsequent treatment of the information was guaranteed, and the principles of the Ethics Commission of the University of Jaén were respected.

2.3.3 Data analysis plan

First, the analysis of the psychometric properties of the items (N = 100) was carried out. The assumption of normality of the sample was verified through the analysis of the items' distribution (skewness and kurtosis), mean (M) and the standard deviation (SD). The items considered adequate were those with asymmetry and kurtosis values between ± 1 (Ferrando & Anguiano-Carrasco, 2010; Muthén & Kaplan, 1985, 1992), weighted means between 1.5 and 4.5 points and $SD \geq 1$ (Ferrando & Anguiano-Carrasco, 2010). The study of collinearity was carried out through the bivariate correlations between the items (Pérez & Medrano, 2010) and their differential functioning. Those items with a value of $r \geq .300$ were discarded (Luján-Tangarife & Cardona-Arias, 2015). Next, a correlation analysis of the items with the counterbalance order effects was performed in which the three self-report measures were presented (distorted thoughts on aggressors [DTGVAI], distorted thoughts on women and violence [IPDMUV-R] and ambivalent sexism [ASI]), resulting in the elimination of items with positive correlations, $p < .05$.

The remaining items (N = 45) were submitted to the judgment of two independent experts to determine their content validity. Inter-judge agreement was calculated using Cohen's (1960) kappa index. For this, the following two categories were created with mutually exclusive values: "redundancy" (0 = redundant; 1 = not redundant) and "understandability" (0 = not understandable; 1 = understandable). For the interpretation of the κ values, the criteria of Landis and Koch (1977) were used. Disagreements were resolved by discussion and consensus between the two investigators until there was 100% agreement.

Second, the dimensionality analysis was performed through exploratory factor analysis (EFA) and confirmatory factor analysis (CFA). For these analyses, the FACTOR programme version 10.8.04 was used (Lorenzo-Seva & Ferrando, 2013), after the Kaiser-Meyer-Olkin (KMO Coefficient) test had been performed to determine the adequacy of the sample. Due to the ordinal nature of the responses (Likert-type scale), a polychoric correlation matrix was used (Elosua & Zumbo, 2008). The sample was divided into two parts (see Anderson & Gerbing, 1988; Brown, 2006; Lloret-Segura et al., 2014), a subsample of n = 500 participants for the EFA and a subsample of n = 355 for the CFA. For the EFA, parallel analysis was used as the factor extraction method and, the Promin oblique rotation method was used to increase interpretability. Items with factorial loading >300 were considered as long as there were at least three items in each factor (Lloret-Segura et al., 2014). The CFA was applied to compare and verify the unifactorial model resulting from the EFA, using the EQS statistical package (Bentler,

2006). The maximum likelihood estimation method and the corrections of Satorra and Bentler (2001) were used. The following measures were used to evaluate the fit of the model: the Chi-Square (χ^2), Mean Square Error of Approximation (RMSEA; values ≤ 0.08 to consider a good fit), Comparative Fit Index (CFI) and the corrected goodness of fit index (AGFI; values greater than or equal to 0.90 to consider a good fit). For there to be a good fit of the model, the CFI values must be ≥ 0.95 (Byrne, 2010).

Finally, the internal consistency and external validity analyses were applied to the resulting final model (unifactorial with 35 items). The reliability index used was the Ω (Muñiz & Fonseca-Pedrero, 2019; Ventura-León & Caycho-Rodríguez, 2017), and convergence analysis was used to test external validity (Muñiz & Fonseca-Pedrero, 2019; Strauss & Smith, 2009) between the distorted thoughts on aggressors (DTGVAI), distorted thoughts on women and violence (IPDMUV-R) and ambivalent sexism (ASI). Finally, as further evidence of validity, we assessed the relationship between the inventory scores and the following parameters: sociodemographic variables of gender, age (by groups of 10 years, from 20 to 70), educational level, political orientation and being or not being a believer. Differences in scores between categorical variables on distorted thoughts on aggressors were calculated using ANOVA. Post-hoc comparisons in variables with homogeneity of variances were calculated using the Tukey test because of its versatility and ability to control for type I error. The homonymous test with similar potentialities, Games-Howell (Abdi & Williams, 2010) was used on the assumptions of inequality of variances.

3. Results

3.1 Psychometric study of the items

The analysis of the skewness and kurtosis revealed that most of the scores on the items were adjusted to normality. Following the most restrictive criterion of the range ± 1 (Ferrando & Anguiano-Carrasco, 2010; Muthén & Kaplan, 1985, 1992), 18 items did not meet the assumption (items 3, 5, 13, 15, 22, 38, 40, 45, 50, 62, 67, 75, 77, 87, 93, 94, 96, 99) (Table 1). Regarding the means and standard deviations, all items showed a weighted mean between 1.86 and 4.46 and a standard deviation between 0.87 and 1.26. The remaining items were then subjected to the criterion of $SD < 1$, eliminating 20 items (23, 26, 29, 30, 37, 39, 46-48, 51, 57-58, 64, 71, 73, 82, 84, 88, 92, 97) (Table 1).

The bivariate correlation analysis between the remaining items (Pérez & Medrano, 2010) led to the elimination of nine items (2, 8, 18, 28, 41, 43, 52, 81, 98) with correlation ≥ .300, preventing collinearity biases (Luján-Tangarife & Cardona-Arias, 2015) (Table 1). Lastly, a correlation was

made between each of the items and each of the possible orders of presentation in the questionnaire. The analyses yielded eight items that showed significant correlations (p <.05), and these were eliminated (items 7, 16, 17, 20, 60, 61, 66, 72).

Table 1. Descriptive and distribution statistics for the Distorted Thoughts on Gender Violence Agressors Inventory (DTGVAI)

Nº item	*M*	*SD*	Kurtosis	Asymmetry	Items correlation
1	3,55	1,22	-0,781	-0,491	$p > .05$
2*	2,33	1,07	-0,221	0,613	$r = .355$, $p = .001$
3	1,94	1,21	0,341	**1,205**	-
4	2,47	1,14	-0,659	0,350	$p > .05$
5	4,46	**0,89**	**4,514**	**-2,091**	-
6	3,59	1,13	-0,109	-0,680	$p > .05$
7	3,88	1,04	0,366	-0,860	$p > .05$
8	2,50	1,12	-0,736	0,301	$r = .359$, $p = .001$
9	3,35	1,06	-0,233	-0,492	$p > .05$
10	3,45	1,01	-0,157	-0,315	$p > .05$
11	2,48	1,16	-0,650	0,452	$p > .05$
12	2,75	1,13	-0,799	0,171	$p > .05$
13	4,10	1,02	**1,722**	**-1,403**	-
14	2,83	1,09	-0,430	0,092	$p > .05$
15	4,05	**0,93**	**1,005**	**-1,024**	-
16	3,56	1,07	-0,436	-0,450	$p > .05$
17	3,82	1,07	0,146	-0,862	$p > .05$
18	3,57	1,16	-0,526	-0,569	$r = .331$, $p = .001$
19	2,77	1,15	-0,641	0,248	$p > .05$
20	3,35	1,00	-0,190	-0,510	$p > .05$
21	3,54	1,04	-0,247	-0,518	$p > .05$
22	4,10	**0,89**	**1,737**	**-1,189**	-
23	2,29	**0,96**	0,094	0,509	-
24	3,33	1,17	-0,724	-0,350	$p > .05$
25	2,59	1,12	-0,725	0,290	$p > .05$
26	2,74	**0,93**	-0,054	-0,025	-
27	2,35	1,10	-0,383	0,564	$p > .05$
28	3,56	1,05	-0,020	-0,708	$r = .427$, $p = .001$
29	3,87	**0,99**	0,779	-0,976	-
30	4,05	**0,95**	0,662	-0,987	-

31	2,99	1,14	-0,778	0,081	$p > .05$
32	3,74	1,01	0,179	-0,707	$p > .05$
33	2,91	1,09	-0,672	0,012	$p > .05$
34	2,72	1,17	-0,860	0,167	$p > .05$
35	2,55	1,07	-0,509	0,334	$p > .05$
36	3,43	1,07	-0,309	-0,492	$p > .05$
37	3,56	**0,88**	0,351	-0,478	-
38	3,96	1,04	**1,186**	**-1,230**	-
39	3,99	**0,97**	0,491	-0,934	-
40	3,94	1,00	**1,044**	**-1,117**	-
41	2,54	1,03	-0,588	0,198	$r = .340, p = .001$
42	2,51	1,03	-0,485	0,197	$p > .05$
43	3,89	1,06	0,302	-0,932	$r = .340, p = .001$
44	3,11	1,01	-0,479	0,024	$p > .05$
45	3,89	**0,91**	**1,032**	-0,927	-
46	3,57	**0,95**	0,041	-0,479	-
47	3,59	**0,98**	-0,156	-0,537	-
48	2,56	**0,96**	-0,085	0,177	-
49	2,90	1,19	-0,711	0,233	
50	3,93	**0,94**	0,993	**-1,003**	-
51	3,45	**0,94**	-0,125	-0,283	-
52	3,18	1,11	-0,715	-0,257	$r = .309, p = .001$
53	2,92	1,08	-0,656	0,090	$p > .05$
54	3,57	1,06	-0,498	-0,487	$p > .05$
55	3,17	1,10	-0,751	-0,121	$p > .05$
56	2,66	1,06	-0,798	0,114	$p > .05$
57	3,86	**0,92**	0,961	-0,917	-
58	3,70	**0,97**	-0,004	-0,543	-
59	3,25	1,06	-0,494	-0,215	$p > .05$
60	3,49	1,08	-0,150	-0,667	$p > .05$
61	2,41	1,01	-0,495	0,326	$p > .05$
62	1,86	1,09	0,872	**1,270**	-
63	3,67	1,04	-0,086	-0,661	$p > .05$
64	3,94	**0,98**	0,550	-0,932	-
65	2,21	1,11	-0,206	0,752	$p > .05$
66	3,55	1,02	-0,086	-0,553	$p > .05$
67	1,88	1,01	0,763	**1,114**	-

68	2,53	1,26	-0,759	0,487	$p > .05$
69	2,66	1,06	-0,635	0,178	$p > .05$
70	3,64	1,04	0,015	-0,712	$p > .05$
71	3,31	**0,99**	-0,335	-0,187	-
72	2,46	1,13	-0,299	0,598	$p > .05$
73	3,57	**0,96**	-0,134	-0,514	-
74	3,09	1,11	-0,733	-0,184	$p > .05$
75	4,01	**0,96**	**1,041**	**-1,068**	-
76	2,22	1,07	0,102	0,831	$p > .05$
77	4,02	**0,94**	**1,488**	**-1,157**	-
78	3,25	1,02	-0,310	-0,267	$p > .05$
79	2,41	1,00	-0,315	0,474	$p > .05$
80	2,52	1,03	-0,559	0,353	$p > .05$
81	2,93	1,07	-0,589	0,131	$r = .324$, $p = .001$
82	3,69	**0,96**	0,548	-0,814	-
83	2,71	1,18	-0,866	0,240	$p > .05$
84	3,70	**0,95**	0,098	-0,606	-
85	2,55	1,09	-0,459	0,472	$p > .05$
86	2,75	1,04	-0,595	0,132	$p > .05$
87	1,90	1,00	0,841	**1,138**	-
88	3,12	**0,94**	0,083	-0,341	-
89	2,17	1,00	0,261	0,797	$p > .05$
90	2,88	1,13	-0,784	0,032	$p > .05$
91	3,15	1,07	-0,643	-0,109	$p > .05$
92	3,26	**0,93**	-0,103	-0,310	-
93	3,99	1,00	0,933	**-1,106**	-
94	4,02	**0,86**	**1,550**	**-1,021**	-
95	2,57	1,14	-0,663	0,327	$p > .05$
96	4,16	**0,99**	0,995	**-1,227**	-
97	3,20	**0,98**	-0,091	-0,199	-
98	2,76	1,13	-0,844	0,153	$r = .316$, $p = .001$
99	3,87	**0,87**	**1,101**	-0,896	-
100	2,31	1,23	-0,591	0,663	$p > .05$

* Note: items in bold have been removed.

3.3 Content validity

The application of Cohen's kappa index for the "redundancy" criterion yielded values of $\varkappa$ = .831, p < .001, finding 84.4% initial agreement between judges. For the "understandability" criterion, the values were $\varkappa$ = .643, p <.001, reaching 71.1% of initial agreement. The interpretation of the degree of inter-judge agreement, following the proposals of Landis and Koch (1977), could be considered almost perfect for the redundancy criterion and strong for the understandability criterion. Discrepancies were resolved by consensus until 100% agreement was reached. As a result, items rated as redundant (32, 44, 68), and less understandable and ambiguous (14, 19, 35, 49, 56, 74, 86) were eliminated.

Thirty-five items remained after the psychometric analysis of the items and the content validity through inter-rater reliability: n = 35 (Table 2).

Table 2. Items remaining after the psychometric adjustment process

Nº item	Items' writing
1(1)*	Men who assault their partners are violent by nature.
4(2)	Psychological help for the victim and treatment for the abuser are not equally necessary.
6(3)	The exercise of violence helps abusers maintain high self-esteem.
9(4i**)	Most batterers who seek treatment do so when they fear losing their partner.
10(5i)	Abusive men have a low tolerance for frustration.
11(6)	The majority of abusers come from marginal socio-family environments.
12(7)	Batterers often take responsibility for their behaviour when they are brought before a judge.
20(8i)	Some abusers can indeed feel bad about assaulting their partners, even though they do not stop doing it.
21(9i)	Often, abusers believe they are the real victims of the situation.
24(10i)	The first signs of violence in the abuser usually appear at the beginning of the couple's relationship (courtship).
25(11)	The man who mistreats his wife does not always consider her inferior to him.
27(12)	Most abusers who apologise to victims do so sincerely because they feel ashamed.
29(13i)	Most abusers think their partner is the one who needs to change.
31(14)	Abusers can never change no matter how hard they try.
33(15)	People close to the abuser usually believe what is happening, as reported by the victim.
34(16)	Not all male abusers have macho beliefs.
36(17)	When an abuser agrees to go to treatment it is because he is truly aware of his difficulties in maintaining a healthy relationship.
42(18)	Most abusers usually look for a friend to whom they can tell their problems.

53(19)	Only the most violent aggressors legitimise this type of behaviour (aggressive) as a way of resolving conflicts with their partners.
54(20i)	The abuser often firmly believes that his wife is cheating on him or is unfaithful.
55(21)	Men who are violent with their partner do not need to talk about it.
59(22)	In very few cases, the abusers argue that they have also been assaulted by their wives.
63(23i)	Most men who are violent with their partners only enter treatment when required by a court order.
65(24)	The abusers are usually older people.
69(25)	Normally, abusers tend to recognise the dependence they have on their partners.
70(26i)	Coming from a normalised socio-family environment (not marginal) does not guarantee that the man cannot perpetrate intimate partner violence in the future.
76(27)	Batterers cannot hide their behaviour and behave in the same way at home as in other places.
79(28)	Men who constantly criticise their partners are looking to cause the woman to leave them.
83(29)	The abuser does not usually behave violently (physically or psychologically) until the relationship with a woman is consolidated.
85(30)	Batterers are usually people with a mental illness.
89(31)	When a man realises that his behaviour towards his wife is violent, he usually goes to a professional (therapist) for help.
90(32i)	The abuser is usually a socially isolated man, at least emotionally.
91(33)	The vast majority of abusers have seen or suffered violence within their family environment.
95(34)	Most abusers are men with high self-esteem.
100(35)	The abuser uses extreme violence only when necessary and has no other choice to resolve conflicts.

* Note: the number in parentheses corresponds to the numbering after successive deletions of items.

** Note: the score of the items must be inverted before calculating the weighted average.

3.4 Dimensionality study

3.4.1 Exploratory factor analysis

The result of the Kaiser-Meyer-Olkin test was .866, which indicates that the data were satisfactorily adapted to the EFA (Costello & Osborne, 2005; Ferrando & Anguiano-Carrasco, 2010; Lloret-Segura et al., 2014).

Parallel analysis applied to a subsample of n = 500 showed that the appropriate number of factors was 15. The EFA was performed with the Maximum Likelihood method, with oblique rotation without fixing the number of factors and subsequently, which fixed the number at 15.

In both possibilities, the statistical programme resolved that in iteration 25, no local minimum was found. In this way, the scale was considered one-dimensional.

3.4.2 Confirmatory factor analysis

The CFA was estimated with the Maximum Likelihood method. The results show adequate values for each indicator, showing that the data has an acceptable fit to the unifactorial model previously proposed (χ^2 = 208.321, RMSEA = .052, GFI = .989 and AGFI = .987).

3.4.3 Internal consistency

The reliability analysis of the final version of 35 items indicated a satisfactory Omega Coefficient of .705 (Campo-Arias & Oviedo, 2008; Ventura-León & Caycho-Rodríguez, 2017).

3.4.4 External validity

The other instruments included in the study were shown to be significantly correlated (r = .242, $p \leq .001$) with the Inventory of Distorted Thoughts about Women and the Use of Violence, and (r = .355, $p \leq .001$) with the Ambivalent Sexism Inventory. The correlations of the ASI subscales with our instrument were also significant and positive (with Benevolent Sexism: r = .350, $p \leq .001$; Hostile Sexism: r = .301, $p \leq .001$). The means and standard deviations of the ambivalent sexism scale with its subscales and of the Distorted Thoughts of Women and Violence scale are shown in Table 3.

Table 3. *M* and *SD* of the Distorted Thoughts on Gender Violence Aggressor Inventory with the Inventory of Distorted Thoughts about Women and Use of Violence, and the Ambivalent Sexism Inventory with its subscales

Others scales and subscales	*M*	*SD*
Distorted thoughts about agressors	2.71	.31
Distorted thoughts about women and violence	1.80	.13
Ambivalent sexism	1.81	.89
Benevolent sexism	1.81	.97
Hostile Sexism	1.81	.98

To interpret the DTGVAI scores, the weighted average is calculated after the following items have been inverted: 4, 5, 8, 9, 10, 13, 20, 23, 26 and 32. A higher score indicates that the person has more distorted ideas about the aggressors of gender violence. The calculation of the 25th and 75th percentiles was applied in deciding what constituted low or high levels of distortion in beliefs. Thus, scores ≤ 2.50 (P_{25}) indicate the lowest levels of distortion (therefore, less biased responses) and scores ≥ 2.88 (P_{75}) indicate the highest levels.

3.4.5 Other evidence of validity

Finally, the mean difference analyses of the total DTGVAI were performed with the sociodemographic variables.

In relation to gender, women showed fewer distorted thoughts towards perpetrators of gender violence, $F(1, 854) = 27.8$, $p < .001$, $M_{woman} = 2.65$, $SD = 0.30$, $M_{man} = 2.77$, $SD = .32$. Regarding age, all groups showed significantly lower scores than the 61-70 year-old group, $F(1, 854) = 5.68$, $p < .001$, $M_{20\text{-}30} = 2.61$, $SD = 0.33$, $M_{31\text{-}40} = 2.63$, $SD = 0.31$, $M_{41\text{-}50} = 2.65$, $SD = 0.29$, $M_{51\text{-}60} = 2.64$, $SD = .32$, $M_{61\text{-}70} = 2.79$, $SD = 0.31$. The professions were grouped into primary, secondary, services, administrative, unemployed, retired and student sectors. Significant differences were found only between retired people and i) students and ii) those who worked in the service sector (e.g. educators, teachers, psychologists, health, lawyers, caregivers), $F(6, 817) = 3.63$, $p = .001$; Dif. Means I-J = -.17 and .15, $p < .001$ and $p = .001$, respectively; $M_{retired} = 2.82$, $SD = 0.33$, $M_{students} = 2.65$, $SD = 0.33$, $M_{service\text{-}sector} = 2.66$, $SD = .31$. In relation to the level of studies, responders with university level education scored significantly lower on distorted thoughts about the aggressors, $F(4, 830) = 10.4$, $p < .001$, than all the others (without studies, primary and secondary), except those with vocational/occupational qualifications, Dif. Means I-J = -.16, -.16 and -.11, $p = .002$, $p = .000$, $p = .024$, respectively; $M_{University} = 2.64$, $SD = 0.28$, $M_{without\ studies} = 2.81$, $SD = 0.35$, $M_{Primary} = 2.80$, $SD = 0.34$, $M_{Secondary} = 2.76$, $SD = 0.33$. Those with vocational/occupational qualifications, in turn, also showed significantly lower scores than all the other lower levels (MB / FP = 2.64, $SD = .30$) and similar to university students.

No significant differences were found in the distorted thoughts scores towards gender violence aggressors between participants who had a stable partner at the time of answering and those who did not $F(1, 846) = .144$, $p = .704$. However, significant differences found between those who knew a victim of gender violence and those who did not, with the former category displaying fewer distorted thoughts, $F(1, 841) = 11.1$, $p = .001$, $M_{yes} = 2.64$, $SD = .33$, $M_{no} = 2.73$, $SD = .31$.

No significant differences were found with regard to political orientation $F(3, 816) = 2.29$, $p = .07$, but they did emerge between and religious believers and non-believers, $F(1, 845) = 6.83$, $p = .01$, with the former showing more distorted thoughts than the latter, $M_{yes} = 2.72$, $SD = .30$, $M_{no} = 2.66$, $SD = .34$.

4. Discussion

The myths, beliefs or distorted thoughts around gender violence represent one of the most relevant risk factors for the occurrence and perpetuation of this type of violence. If we want to counteract these risk factors - the cognitive biases associated with a stereotyped view of the problem - we must measure their degree of acceptance among the agents involved (victims, aggressors, qualified professionals, university students and the general population). That is, instruments must be developed that accurately measure the prevalence of these erroneous beliefs and how widely they are accepted in society.

This study aimed to design and validate an instrument (DTGVAI) to assess distorted thoughts about men who commit gender violence. The analyses undertaken validated the DTGVAI, composed of 35 items distributed in a single dimension. This encompasses the characteristics derived from the main theoretical contributions in this field of research (e.g., Adams, 1988; Amor et al., 2009; Corsi, 1991; Currie, 1991; Dohmen, 1995; Dutton, 1997; Gottman et al., 1995; Holtzworth-Munroe & Stuart, 1994; Loinaz, 2009; Sonkin & Durphy, 1982). These characteristics are sociodemographic, behavioural, cognitive, and emotional in nature; they also include the perpetrator's interactions with his partner and the environment and the prognosis of change in his violent behaviour. The psychometric adjustment of the scale was optimal, with adequate validity and reliability indices.

The test of the convergent validity of the instrument showed a significant relationship with the other scales used in this study and with measures of cognitive biases associated with violence against women. As expected, distorted thoughts about perpetrators of gender violence (measured with the DTGVAI) correlate positively with cognitive biases on gender roles, the inferiority of women, and the legitimation of violence as a way of resolving conflicts (measured with the IPDMUV-R). In addition, higher degrees of distortion on the perception of abusers were associated with higher levels of both "hostile" and "benevolent" sexism (evaluated with the ASI). Previous studies show that both inventories correlate significantly both with each other and with scales that measure other erroneous beliefs. In the study of Arnoso et al. (2017), about the role of sexism as a predictor of intimate partner violence in a multicultural context, it was observed that the different measures of sexism were significantly related to each other. This positive relationship between cognitive biases and ambivalent sexism is also shown in the research of Bonilla-Algovia & Rivas-Rivero (2019), that analyzed the distorted beliefs about gender roles and intimate partner violence against women in a sampple of preservice teachers. Similar results were obtained in the study of Ubillos et al. (2017), that assessed distorted

cognitions regarding women and violence in a sample of secondary school students. In studies related to the creation and validation of scales that measure distorted thoughts, the scores obtained showed statistically significant correlations with a wide range of instruments measuring different forms of sexism. This is the case of the Inventory of Distorted Thoughts about Women and the Use of Violence-Revised (IPDMUV-R; Echeburúa et al., 2016), the Acceptability of Intimate Partner Violence Against Women scale (A-IPVAW; Martín-Fernández et al., 2018); the spanish validation of the Acceptance of Modern Myths about Sexual Aggression Scale (The Spanish AMMSA; Megías et al., 2011); and the Acceptance of Myths About Intimate Partner Violence Against Women Scale (AMIVA; Megías et al., 2018).

Finally, comparing the scores obtained by the DTGVAI with the sociodemographic variables reveals significant differences associated with gender, age, employment, educational level, knowledge of close cases of gender violence and religious belief. Some of these results are in line with previous research, which showed that erroneous beliefs about various aspects of gender violence were less present in women than in men (Arnoso et al., 2017; Bisquert-Bover et al., 2019; Bonilla-Algovia & Rivas-Rivero, 2019; Martín-Fernández et al., 2018; Megías et al., 2018; Yamawaki et al., 2012). Other studies found different pathways based on gender in the expression of diverse variables (e.g., Pace & Muzi, 2019; Raineri et al., 2022); these authors considered that the more sensitiveness of women could partially explain such differences (Raineri et al., 2022). Previous data reveal and support our finding regarding the higher amount of gender violence myths among people with religious beliefs (Berkel et al., 2004; Jankowski et al., 2018). The results available from the previous literature are not conclusive on variables other than gender and religion because they are scarce and even contradictory. Other studies (Diéguez et al., 2020; Ferrer-Pérez et al., 2016; García-Díaz et al., 2020; González et al., 2011; Sprague et al., 2013) suggest that these myths and erroneous beliefs prevail regardless of gender, age, educational level or professional qualification.

5. Limitations

This study has certain limitations. The generalisability of the results is limited both by our non-probabilistic sampling and by the use of university students and people close to them. In future studies, it would be valuable to extend the application of the DTGVAI to other groups (professionals involved, victims and aggressors). Other more recently created scales (such as those mentioned in the introduction) could be used to improve the analysis of the external validity of the instrument. We believe that both the risk factors for gender violence and the distorted beliefs associated with them are changing phenomena (e.g. micromachism, neosexism,

and neomyth) and therefore require continuous monitoring. Therefore, the instruments used to measure them need to be continually reviewed and updated.

6. Conclusions

These results, taken overall, show that the DTGVAI is a valid and reliable instrument for measuring distorted thoughts about the aggressors in cases of gender violence. This new instrument will increase understanding of the distorted beliefs around this issue. It will also, in particular, facilitate the detection of cognitive biases about the abusers in all the people involved and make for more effective prevention proposals and intervention programmes aimed at the main protagonists (victims and aggressors). In this way, students in training and the professionals involved will be able to correct these erroneous beliefs and prevent them from interfering in the performance of their duties. Victims will be helped to identify their aggressors and make decisions that allow them to escape the abusive situation. Finally, using the instrument with the aggressors themselves will be beneficial in two ways. It will facilitate analysis of whether they themselves have these distorted thoughts. And it will make them reflect on whether they recognise in themselves any of the relevant characteristics and on whether they can take responsibility for their actions.

In short, the application of the DTGVAI in different contexts could facilitate the detection and modification of the distorted thoughts which help to perpetuate gender violence and delay the achievement of a more equal society. As Professor Spatari refers (Settineri & Merlo, 2021, p. 4) *"The issue of violence is not an emergency issue but a structural issue, therefore it is necessary [...] to stimulate the culture of respect for the other, of acceptance, detaching the concept of stereotype from normality"*.

Ethical approval: The present study was approved by the Comité de Ética de Investigación Humana (CEIH) of the University of Jaén (Spain). The ethical approval number was FEB.19/5.TES.

Informed Consent Statement: Informed consent was obtained from all subjects involved in the study.

Data Availability Statement: The data that support the finding of this study are available from the corresponding author (MA) upon reasonable request.

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