Validation of the Violent Ideations Scale (VIS) in Spain

Abstract

Research has shown that violent ideations (VIs) may play a key role in aggression and violence. However, there is no tool to measure this construct adapted to the Spanish language so far. The current study aims to translate and evaluate the psychometric properties of the Violent Ideation Scale (VIS, Murray et al., 2018) in European Spanish. This study counts with a convenience sample of 752 native Spaniards or Spanish speakers residing in Spain, between 18- and 75-years old, 53% identified as female and 47% identified as male. The dimensionality, gender measurement invariance, concurrent validity and reliability of scores were assessed. Initial evidence of external validity was collected. Results confirmed the unidimensionality of the instrument. Measurement invariance held across females and males and reliabilities were high. VIS-ES scores correlated with aggressive behavior during the previous month. The VIS-ES seems suitable for use in non-clinical Spanish speaking samples.

Keywords: violent ideation, aggression, violence, reliability, psychometric properties

Introduction

Violent cognitions are conceptualized as a risk factor for the development of violent behavior, as well as a leading element in the understanding of aggression and its prevention. The thoughts or fantasies of inflicting physical or psychological harm to someone have been defined as violent ideations (VIs, Murray et al., 2018). These thoughts and mental images with violent content may be more frequent than one might expect, both in clinical (Brucato et al., 2019) and non-clinical samples (Patel et al., 2013). For example, Brucato et al. (2019) found in their study with people at high-risk for psychosis, that 32.5% reported VIs. In normative samples, Murray et al. (2018) have

reported a prevalence of VIs ranging from 0.5% (homicidal, rape, and sexual assault ideations) to 37% (violent revenge).

It is not yet clear whether VIs are a cause itself of aggressive behavior or rather a reaction to or a reflection of shared causes with aggressive behavior (Murray et al., 2016). A review of the literature has revealed that relatively little research has been conducted in the area of violent fantasies and cognitions, particularly on non-sexual violent thoughts and fantasies (Gilbert & Daffern, 2017). Hence, being able to reliably measure VIs may be useful in a broad number of fields. From a clinical perspective, VIs have been recently proposed as a good predictor of conversion to threshold psychosis and violent behaviors (Brucato et al., 2018). VIs have also been linked with serious mental disorders (Brucato et al., 2018; Roché et al., 2018), and may be considered to some extent a general indicator of mental health difficulties (Murray et al., 2017). Further, addressing VIs as the cognitive component of aggressive behavior within a therapeutic intervention might also be beneficial (Nagtegaal et al., 2006), and some evidence regarding its effectiveness has already been gathered (Akerman, 2008). From a forensic point of view, VIs can be conceived as an indicator of potential risk for interpersonal violent behaviors (Murray et al., 2018), especially in psychiatric patients (Grisso et al., 2000).

In research, VIs perform an essential role in different perspectives and theories entailing the explanation of aggression and violence such as evolutionary theories of violence (Eisner, 2009) or social cognitive theories of aggression (Anderson & Huesmann, 2003), and metatheories like the general aggression model (GAM, Anderson & Bushman, 2002) or the I3 model (Finkel, 2014).

Evolutionary theories of violence stress the flexibility and (mal)adaptability of human behavior, the evolution process of human psychological mechanisms, as well as how the evolved human psychology makes it more likely that we learn certain beliefs and practices than others (Durrant & Ward, 2011). For instance, regarding homicide, evolutionary explanations conceive the thoughts of killing someone as functional to make credible threats and explore the possibility of homicide. Within this framework, the decision of any course of action would rely on assessing the costs and benefits of translating these ideations into actual behavior (Duntley & Buss, 2011).

Social cognitive theories explain some of the constructs and processes leading to aggression. These theories posit that aggression is learned and modeled through exposition and direct experience since the development of social behavior is contingent on internal self-regulation processes (Anderson & Huesmann, 2003). As such, aggression-prone individuals have more ingrained aggression-related cognitions. For example, the cognitive neoassociation model of aggression postulates that aversive experiences and aggression-related stimuli tend to activate aggressive reactions automatically. In contrast, information/cognitive processing can mediate increasing or mitigating aggressive inclinations (Berkowitz, 2012a). Here, associated thoughts, emotions, and behaviors are stored in the memory and can be generalized across situations as a script, which may differ in individuals who frequently behave violently (Berkowitz, 2012b).

GAM integrates several theories of aggression into one model. Despite some flaws (Ferguson & Dyck, 2012), it recognizes and organizes the role of multiple factors contributing to aggression: biological, cognitive, social, and developmental. GAM comprises inputs —individual and situational—, routes —present internal states— and

outcomes of appraisal and decision-making processes (Allen et al., 2018). In this model, VIs can be understood as a structure of knowledge used as a guide into memory entailing a process of rehearsal, elaboration, and integration; so, aggressive individuals usually retrieve and use these scripts informing how to behave aggressively through different situations and contexts (Gilbert et al., 2013). Thus, addressing violent thoughts may be essential to reducing violent behaviors toward the self, intimate partner, and even intergroup violence (DeWall, Anderson, et al., 2011).

The I3 model emphasizes the underlying self-regulatory processes. This model identifies three orthogonal processes: instigation, impellance, and inhibition, influencing the likelihood and intensity of a specific behavior such as aggression (Finkel & Hall, 2018). Instigation refers to immediate environmental stimuli that typically trigger an impulse to aggression (e.g., provocation). Impellance alludes to the effects of situational or dispositional factors (e.g., trait aggressiveness) affecting the instigator's impact, which produces a proclivity to aggression. (Dis)inhibition entails situational or dispositional factors that increase or decrease the likelihood of overriding aggressive impulses (e.g., trait self-control). Instigating and impelling risk factors interplay, determining the aggressive impulse's strength, while (dis)inhibitory factors resolve whether this impulse results in aggressive behavior or not (Finkel, 2014). Consequently, the highest likelihood of aggression appears when both instigation and impellance are strong and inhibition is weak. Therefore, VIs may operate in opposition to self-control-based inhibitions regarding aggressive impulses (Murray et al., 2016).

As seen, VIs can be related to critical aspects of aggressive behavior, both reactive and proactive, immediately prior to the action. However, measuring VIs can be challenging. VIs refer to cognitions, and cognitions cannot be measured directly but are

only accessible through behaviors or other observable indicators. In the specific case of violent ideations, they are not necessarily linked to observable behaviors, as many people may not act on those ideations or fantasies, so self-report might be the only way to gather information about these kinds of thoughts. Moreover, VIs might also be subject to social desirability bias (Piedmont, 2014). A suitable way of addressing this limitation is by using a self-report measurement (Demetriou et al., 2015). This method reports lower social desirability bias than other options interviewer-administered and is a practical economical way of gathering easily interpretable data from a great number of subjects.

Instruments for assessing aggression related cognition are sparse. There are few self-report instruments currently available to measure VIs. The Firestone Assessment of Violent Thoughts (FAVT, Doucette-Gates et al., 1999) incorporates four types of negative thoughts, namely social mistrust, thoughts of being disregarded, negative critical thoughts, and thoughts/expressions of overt aggression. Indeed, FAVT was designed to assess not only VIs but also what the authors define as the "voice". This concept represents an integrated pattern of negative thoughts and angry affect that is proposed as the basis of an individual's behavior. This instrument has been used mainly on small samples, with predominantly male or institutionalized participants, without reporting any of its psychometric properties (Howden et al., 2018).

Another instrument is the Schedule of Imagined Violence (SIV, Grisso et al., 2000), consisting of a set of eight structured questions with a range of response categories. Specifically, the questions inquire about the recency, frequency, and chronicity of self-reported violent thoughts, as well as the similarity/diversity in type of harm imagined, whether the target is focused or more generalized, whether the

seriousness of harm changes over time, and the proximity of the individual to the target of their violent thoughts. The SIV was initially developed as a part of the MacArthur Violence Risk Assessment to study the pervasiveness of self-reported violent thoughts by hospitalized patients. Good predictive and discriminant validity (Grisso et al., 2000) have been reported. However, this instrument is designed to treat each question separately, which prevents the possibility of quantifying VIs with a total score.

Another available instrument to account for VIs is the Violent Ideation Scale (VIS, Murray et al., 2018). The VIS is designed to assess VIs and contains 12 items related to ideations of physical violence, humiliation, verbal violence, and bullying, and it is scored on a 5-point Likert scale ranging from never to very often (e.g., "I thought about severely injuring someone I dislike"). The victim of the aggression may be a known person or a stranger, and the aggression might be due to perceived provocation or for no reason. In the initial validation study (Murray et al., 2018), the item pool contained a total of 14 items, with two items exploring sexual violent ideations. However, these two items were not included in the final VIS, as they were found not to relate strongly to other items, which led to a final version of the instrument with 12 items. Its original version was designed in the German language, tested in Switzerland in the scope of the Zurich study on the Social Development of Children and Youths (z-proso). Z-proso is a longitudinal cohort study that follows 1,400 youths since 2004, exploring their development of pro-and antisocial behaviors during late childhood into early adulthood. The VIS reported good psychometric properties in terms of internal structure, concurrent, discriminant, and predictive validity (Murray et al., 2018). The one-factor model was suggested by exploratory factor analysis and then tested through confirmatory factor analysis, showing reasonable fit (TLI = .92, CFI = .93, RMSEA =

.08). Concurrent correlations between VIS and previously developed measures of reactive, proactive, and verbal/relational aggression ideations varied from r = .48 (p <.001) to r = .65 (p < .001). In terms of discriminant validity, the area under the curve (AUC) value was .78, which is considered fair and very close to the .8 cut-off to be considered excellent. The specificity and sensitivity using the 15.5 cut-off point obtained (.71 and .75, respectively) also showed the power of the instrument to correctly classify over 70% of positive and negative cases. Nonetheless, test-retest and internal consistency were not calculated, which is its main limitation (Murray et al., 2018).

The VIS has been validated in the English language (McKenzie et al., 2021). Due to the purpose of the study, the items related to psychological aggression were excluded, resulting in a 10-item version. The English version (McKenzie et al., 2021) also provided satisfactory psychometric indicators, test-retest reliability ($r(27)$ = .769), and internal consistency (α = .925). As for concurrent validity, the English VIS items significantly correlated with the subscale and total scores of the Aggression Questionnaire (AQ), with r values ranging from .23 (verbal aggression) to .72 (physical aggression). These validations have shown that the VIS is a brief, valid and reliable measure of VIs.

The research on VIs in Spanish-speaking countries has received little attention, despite being the third most spoken language worldwide, with 591 million speakers (Instituto Cervantes, 2021). For this reason, we consider having a tool to measure VIS in Spanish very relevant. Violence is a global problem; therefore, it is essential to have measures available in multiple languages to facilitate a global understanding of this phenomenon. Research should focus on both understanding violence and aggression in

specific settings and comparing across contexts, which is impossible if measures are only available in English. To our knowledge, this is the first validated instrument to measure VIs in Spain. This study aimed to adapt, validate and test the psychometric properties of the VIS in a sample of adults from the general population. The VIS has the advantage of measuring specifically VIs (unlike the FAVT, which included VIS as part of "the voice") and allowing to obtain a total score (instead of forcing researchers to isolate items, which makes the analysis more complex). Hence, the VIS meets all the requirements in order to be a solid, parsimonious and practical instrument. The research question guiding this study is whether the VIS-ES is suitable for measuring VIS in the Spanish population. The hypotheses that guided the current study were that the one factor structure reported by previous analyses would be maintained (Murray et al., 2018; McKenzie et al., 2021), that this structure would stay invariant among women and men, and that the reliability will be acceptable, and that the VIS-ES score will correlate positively with aggressive behaviors.

Method

Measures

Violent Ideations Scale - Spanish version (VIS-ES). The questionnaire included the 14 items from the original VIS validation (Murray et al., 2018) and it was the first questionnaire the participants had to answer. We decided to test all 14 items, including the two items addressing violent sexual ideations, which were excluded from the final Swiss-German VIS. As Murray at al. (2018) noted, the original validation showed ambiguous results in relation to the rejection of these two items, thus we considered it important to analyze whether that pattern held in a different sample.

Participants were asked to respond on a five-point Likert-type scale how often they had experienced the presented VIs in the past month. The item description in Spanish and English can be found in Table 1.

TABLE 1 HERE

Aggressive behaviors perpetrated in the past month. To study whether violent ideations were related to actual aggressive behaviors, we included an *ad hoc* questionnaire to explore whether participants had committed any aggressive behaviors in the past month. To build this scale, we use six items of the Spanish version of the EBIP-Q - *European Bullying Intervention Project Questionnaire* (Ortega, et al., 2016). The Spanish EBIP-Q was validated with a sample of 792 Spanish high school students presenting good internal structure.

The original Spanish EBIP-Q scale contained 14 items of both victimization and perpetration of bullying. We chose the EBIP-Q scale because it was already validated with a Spanish sample and explored relatively low levels of intentional harm, consistent with the low risk of severe physical violence in our target group.

For this study, we adapted the scale by selecting six relevant perpetration items and slightly modified some wording for our adult sample. The respondents had to indicate how often they had engaged in those behaviors in the past month through a five-point Likert-type scale. Cronbach's alpha was .86. The six items can be found in Table 2.

TABLE 2 HERE

Procedure

The translation of the VIS items was conducted by researchers of three Spanish universities (i.e., [details omitted for anonymized peer review]). The original version

was first translated by [details omitted for anonymized peer review] and [details omitted for anonymized peer review] independently. Both versions were compared, finding no meaningful differences. The authors agreed on a final version, which was back-translated into English by [details omitted for anonymized peer review]. The final version was revised and approved by all Spanish speaking authors (Tsang et al., 2017).

The survey dissemination and data collection and took place online from April to July 2020 due to the COVID-19 pandemic. The questionnaire was administered through the LimeSurvey platform. The survey included socio-demographic questions, the VIS-ES and aggressive behaviors questionnaire and two other which were included for future analysis. These questionnaires can be found in the Supplementary Materials. Sample was selected by convenience through a link to the questionnaire that was disseminated through social media (Twitter) and academic channels (official university email lists) and could be accessed both from computers and mobile devices. Participants responded to the questionnaires in about 10 minutes.

On the first screen, the participants were informed about the aims of the study, that their answers were anonymous and confidential, their right to withdraw from the study at any point without consequences and the conditions for participating were described. They were also warned that their collaboration was voluntary and that some questions could be sensitive due to their content. Before entering the questionnaire, they had to read and agree that they fulfilled the inclusion criteria, that they understood and accepted the data protection policy, following the General Data Protection Regulation (EU) 2016/679 (GDPR). The participants were also provided with a contact email for questions on the study and the handling of their data. This study followed national and international ethical standards, including the Helsinki Declaration.

Participants

The condition for participating in this research was:

1. To be of age (≥ 18 years).
2. To be Spanish or to live in Spain.
3. To have a proficient understanding of the Spanish language, both written and oral.

There is a wide variety of ways of speaking Spanish. We included these inclusion criteria to ensure that all the participants understood the same "type" of Spanish, European Spanish in this case. Likewise, we targeted the community sample to build up on previous studies' using similar populations (McKenzie et al., 2021; Murray et al., 2018). Besides, the convenience sampling aimed to maximize the probability of obtaining a sample large enough to test our hypotheses given the conditions of our project.

We adopted the frequentist method and a resource constraint approach to sample size determination (Lakens, 2022). Missing values were handled using the listwise deletion method (missing data is shown in Table 3). Of all the individuals who access the questionnaire through the provided link, 86.84% completed it. We did not include 7 participants who did not meet the requirements to partake in the study. The final sample included 752 participants, of which 389 self-identified as females, 354 as males, 6 as "Other", and 3 did not answer. As for their country of origin, 95 % (n = 715) of the sample were native Spaniards, and the rest (n = 29) came from other countries but resided in Spain or did not answer (n = 8). The age of the participants ranged from 18 to 75 years old (M = 37.12, SD = 12.95). When asked about the highest educational level achieved, 73,54% of the sample had attended university (37,5% - Bachelor's Degree,

27,93% - Master's degree, 8,11% - PhD), and 15,29% had completed 12 years of school education. As for their country of origin, 662 identified as native Spanish, 56 as first-generation immigrants, 7 as second-generation immigrants and 23 as "other". As for their ethnical origin, 667 participants identified as Spanish, 55 as Latin American, 20 as European (non-Spanish), 2 as Arab, 1 as Oriental Asian, 1 as Sub-Saharan African and 4 as "other ethnicity".

Data analysis

Factor structure. Previous validation studies of VIS showed unidimensionality for the scores of the measure (McKenzie et al., 2021; Murray et al., 2018). Given that the VIS has already been validated in German and English, a confirmatory factor analysis (CFA) was performed to test the scale dimensionality with one-factor solutions with the Spanish sample. We calculated CFA for 14 and 12 items. Considering the ordered-categorical nature of the items, we used Weighted Least Square Mean and Variance Adjusted (WLSMV) estimation for the CFA. We fixed the factor loading of the first item for each latent factor to 1 to achieve scaling and identification. A good fit of the model was considered when Tucker Lewis index (TLI) and Comparative Fit Index (CFI) were >.95, Root Mean Square Error of Approximation (RMSEA) was <.08 and Standardized Root Mean Square Residual (SRMR) was < 0.8 (Beauducel & Wittmann, 2005; Hu & Bentler, 1999).

Internal Reliability Analysis and Average Variance Extracted. To assess internal reliability, we calculated Cronbach's Alpha using a polychoric correlation matrix that accounts for the data's ordinal nature (Gadermann et al., 2012). Good internal reliability was considered when Alpha > 0.8 (Lance et al., 2006; Nájera, 2019). Composite reliability (CR) was calculated based on the factor loadings in the retained CFA

solution. To account for ordinality, we reported the nonlinear SEM reliability coefficient by Green and Yang (Viladrich et al., 2017). A CR of > 0.7. indicated good internal reliability (Hair et al., 2014). We also computed the Average Variance Extracted (AVE), where levels of 0.5 were considered acceptable, whilst values above 0.7 were considered very good (Fornell & Larcker, 1981). Finally, we report the coefficient H, however there is no scientific consensus on the ideal thresholds for interpreting this coefficient (Kalkbrenner, 2021). We have considered values over > .80 as good results.

Gender measurement invariance. Given that previous studies have shown that violent cognitions might show different prevalence and patterns in females versus males (e.g., Auvinen-Lintunen, et al. 2015), we decided to evaluate if the Spanish VIS scores could be validly compared across genders, we conducted a measurement invariance analysis. When splitting the sample into male and female, some response categories were not selected by one group. The two last response categories, “often” and “very often”, were merged into one category to deal with this.

There are some considerations to be considered when testing invariance for ordinal data, as the estimator (WLSMV), analysis matrix (polychoric correlation) and parameters (factor loadings, thresholds, and residual variances) are different from the analogous analysis with continuous data (Bowen & Masa, 2015). We used a four-step approach to work with our ordinal data. First, a baseline model for both groups was identified, then a multi-group analysis was conducted to test for configural invariance. In a third step we fit the model with all factor loadings constrained to test for metric invariance. Finally, the model adding constraints to both loadings and thresholds to test for scalar invariance was fit (Bowen & Masa, 2015). Metric invariance was considered

to hold if the addition of loading constraints resulted in a decrease in fit of < 0.010 decrease for CFI, < 0.015 increase for RMSEA and < 0.030 increase for SRMR (Chen, 2007). Scalar invariance was considered to hold if the incorporation of threshold constraints resulted in a decrease of fit of less than 0.010 decrease for CFI, less than 0.015 increase for RMSEA and less than 0.010 increase in SRMR (Chen, 2007).

Evidence of external validity. We tested the correlation of the VIS by calculating Spearman's rank correlation coefficient between the total score of the VIS and the sum of the aggressive behaviors reported in the last month. Following previous theoretical accounts, the link between VIs and the actual behavior may be influenced by other relevant variables, such as the cost-benefit assessment of actually turning these thoughts into acts (Duntley & Buss, 2011) or the ability of the individuals to self-regulate (DeWall, Finkel, et al., 2011). Thus, we expect the relationship between VI and the aggressive behavior to be positive, but its magnitude remains an exploratory analysis. We considered Pearson's *r* coefficient of .30 or above to show a meaningful effect size (Funder & Ozer, 2019). We also provide a scatter plot to contextualize its interpretation.

All analyses were conducted using R Statistical Software (version 4.0.3; R Foundation for Statistical Computing, Vienna, Austria) and lavaan (v0.6-11; Rosseel, 2012), psych (v2.2.5; Revelle, 2022) Hmisc (v4.7-0; Harrell, 2022), semTools (v0.5-6 ; Jorgensen, et al., 2022) and reliable (v1.0.0; Moss, 2019) packages.

All data, scripts and supplementary materials can be accessed through the following link: https://osf.io/h3edw/?view_only=ff90562349164f53bdd0ef8c21a9eeb5 [[link anonymized for peer review]]

Results

Descriptive Statistics

Table 3 shows the item descriptive for the initial 14 Spanish VIS-ES items. In all items, but item 9 (humiliating someone weaker), all five response categories were chosen. For all the items, the most frequently selected answer was "never". However, items 2, 6 and 11 obtained higher response rates for the second to fourth categories in the scale. These three items represent ideations related to violent payback. The proportion of participants that reported at least one violent ideation in the past month ranged from 4% (item 4 – beating up a stranger for no particular reason – and item 10 – having sex with someone who is resisting-) to 32% (items 2 and 11 concerning violent payback). These rates are very similar to those observed during the Swiss German validation (Murray et al., 2018).

TABLE 3 HERE

Factor structure

In order to test the hypothesis that the one-factor structure will be replicated, two one-factor models were tested: one with 14 items and one with 12 items, excluding both violent sexual ideation items. Standardized parameter estimates for both models can be found in Table 4. The first model with 14 items showed a worse fit ($\chi2(77) = 541.102$, $p < 0.00$, TLI = .939, CFI = .948, RMSEA = .091, SRMR= .090), whilst the one-factor model with 12 items showed an acceptable fit ($\chi2(54) = 280.826$, $p < 0.00$, TLI .968, CFI = .974, RMSEA = .076, SRMR= .060). The 12-item model was retained due to the better fit, and because it was analogous in structure to the Swiss-German and English VIS versions of the questionnaire. All the items for the 12-item solution presented salient (> |.3|) factor loadings on the standardized scale. All factor loadings were > .60, but for item 9, "*humiliating someone weaker than me"* (.50).

TABLE 4 HERE

Internal Reliability Analysis and Average Variance Extracted

As expected, the Spanish VIS showed good internal reliability with a Cronbach's Alpha of .94 and a composite reliability value of .92. An Average Variance Extracted of .58 was obtained, which is considered acceptable. The coefficient H was .97.

Gender measurement invariance

To test whether the one-factor structure holds when applied to women and men, we perform a gender measurement invariance analysis. For this test, the two last response categories, "often" and "very often", from the original five-point scale were merged into one category due to low levels of responses in the latter category. Table 5 shows the response distribution of the final 12 items by gender before collapsing the categories.

TABLE 5 HERE

We fit a model (M0) with the merged categories and the whole sample again, obtaining almost identical results to the analysis with five categories. The male sample (MM) obtained a better fit than M0 and the model fit for the female sample (MF) was worse than both for the male and the total sample. Configural variance was supported with TLI .96, CFI .97, RMSEA .069 and SRMR .073. The results showed a slight increase of CFI and SRMR and a decrease of RMSEA from the configural model to the metric model. We interpreted these results as supporting metric invariance. Finally, the observed ΔCFI, ΔRMSEA and ΔSRMR supported scalar invariance across the Spanish sample's male and female groups. All model fit indices are shown in Table 6.

TABLE 6 HERE

Evidence of external validity

As stated in our hypotheses, the correlation between the VIS-ES total score and the total score of aggressive behaviors in the past month was positive and significant, ρ= .29 (α = 0.00). However, Figure 1 shows high VIS-ES scores and low scores when reporting aggressive behaviors.

FIGURE 1 HERE

Discussion

VIs are present and prevalent in the general population and have been found to predict different problem behaviors such as threshold psychosis and violence (Brucato et al., 2018) and mental disorders (Brucato et al., 2018; Roché et al., 2018). Nevertheless, the number of studies on VIs is scant, and their relations to different aspects of mental health and interpersonal relationships still need to be explored. This is only possible if reliable and valid measurement instruments are available.

Similarly, there are few available instruments to measure VIs. The Spanish version of VIS showed good psychometric properties, answering our main research question. As in its original Swiss-German version (Murray et al., 2018), VIS has 12 items focused on different types of VIs. A confirmatory factor analysis showed a good fit of the Spanish data to its proposed one-factor structure, confirming our first hypothesis. Moreover, the current study showed that the VIS can provide scores that are valid and reliable markers of VIs in Spain and that can be used for both males and females. These findings provided a robust instrument that can be used to measure VIs in different settings, including research and practice.

Interestingly, in this Spanish sample, the more frequently endorsed items were those that included provocation or trigger by the victim (e.g., using violence to get back at someone who harmed me). In contrast, in the original version, the items more

frequently endorsed were related to verbal violence, which is usually considered less severe (e.g., "I thought of humiliating someone I despise"). The triggers for VIs might be different in one culture or another, so future research aimed to go deeper into these divergences might provide new insights in this regard. Authors such as Cohen and Nisbett (1994) already studied how some cultures might participate in collective representations that justify violent behaviors based on a "culture of honor" and self-protection. Measurement invariance analyses of the VIS across country contexts may also yield insights into how VIs are understood and expressed across different cultures.

In terms of internal structure, the goodness-of-fit indexes obtained were slightly better than the reported in the original study (Murray et al., 2018) and slightly worse than the English validation (McKenzie et al., 2021). The consistent one-factor solution found across samples suggests unidimensionality, although this should be further replicated in future studies. The fact that items referring to sexual VIs had to be removed both in the Swiss-German and the Spanish validations calls for further analyses to understand if this type of ideations should be included in this construct or try to capture them by measuring them independently. In our study, the fit of the model was worse when including the two items related to sexual VIs, so researchers and practitioners aiming to measure this type of construct should bear in mind that VIS-ES cannot capture this type of violent thoughts. In a recently published extended version of the instrument, the VIS-X (Urruela et al., 2022), the authors added further violent sexual ideation items to the original VIS (e.g., "stripping someone naked against their will"), which led to two differentiated sub-scales: one encompassing general violent ideations (with the 12 original items) and one including sexual violent ideations (with 4 items). Thus, it is important to bear in mind that VIS-ES only measures general violent

ideations and future research shall confirm if a translated and adapted version of the VIS-X to the Spanish population provides similar psychometric properties.

Regarding our hypothesis regarding the reliability of the scale, we found excellent internal and very good composite reliability. This was comparable with previous studies (for example, McKenzie et al., 2021), and suggests that this measure could be confidently used in research. This is also evidence that the VIs are strongly correlated among each other, even when they may describe different types of aggression (e.g. physical or verbal). Previous instruments which distinguished among each type of aggression (e.g., Grisso et al., 2000) may be useful only when researchers aim to capture a specific type of VIs, whereas it seems that VIS-ES may reliably capture general VIs.

As expected, we found a positive relationship between VIs and aggressive behavior, which is consistent with previous studies (Brucato et al., 2018). However, the magnitude of the ρ coefficient could provide evidence that VIs explains only to a limited extent the variance of aggressive behavior. Variables that can complement the explanation of aggressive behavior, as proposed in previous work (DeWall, Finkel, et al., 2011; Duntley & Buss, 2011), may be tested in future research considering the VIs influence.

Finally, previous studies (Urruela et al., 2022) have reported the need for evidence-based tools applicable to forensic settings. Although the VIS-ES is still to be tested in Spanish forensic populations, we hope that this tool will enhance the objectivity, transparency, and efficiency of violence risk assessment processes in the future. VIS-ES may provide relevant information to ease the decision making of forensic professionals when handling the future risk of aggressive behaviors.

Limitations and future directions

First, we used a convenience sampling selected through social networking sites and academic contacts, so many of the participants were university students and their contacts. It is also important to note that this study was conducted during the COVID-19 pandemic, a situation that might have impacted the occurrence of VIs. Another aspect to consider is that the instrument used to measure aggressive behavior in the past month was based on self-report, created ad-hoc and without testing its psychometric properties beyond its reliability (based on Cronbach's alpha). Although self-report questionnaires outperform interviews in terms of social desirability bias, this way of collecting data is still associated to socially desirable responding. Besides, due to the need to keep the survey brief, only limited sociodemographic info was collected and important aspects such as socio-economic status, sexual orientation or disability status could not be gathered.

Second, he VIS-ES does not include any items related to sexual violent thoughts. A recently published extended version of this scale, the VIS-X (Urruela et al., 2022), confirmed that sexual and non-sexual violent thoughts belonged to two different dimensions. Since the VIS-X was developed in parallel to the VIS-ES, we were not able to test the differences across versions. Consequently, future research may test if these findings are reproducible in the Spanish context.

Third, it was necessary to collapse categories to conduct a gender invariance analysis because the number of participants reporting certain VIs were too few in the female group to allow the relevant models to be estimated. In fact, collapsing categories can falsely improve the invariance of the scale, therefore, future work in samples

evidencing greater variation in item response option endorsement will be helpful (Rutkowski et al., 2019).

Ideally, future studies should confirm our findings using representative samples of the general population or clinical samples, as well as test the adaptation to other Spanish-speaking countries or make cross-cultural comparisons. They could also test the power of VIs to explain aggressive/violent behavior as measured with other instruments and in combination with other salient variables. Furthermore, it would be interesting to study how VIs can contribute to prospective interventions. Finally, we hope VIS could be applied to other cultural contexts in order to gather enough evidence to perform a cross-cultural investigation, which could shed light on the differences in item endorsement found in the current study.

Conclusions

Even with these limitations, the VIS-ES is a reliable and valid tool to measure violent ideation in community Spanish-speaking samples, both in females and males. Our analyses add evidence to the unidimensionality of VIs and suggest that these thoughts are related to engaging in aggressive behavior in the previous month. We expect that this brief tool will allow gaining new insight into its use and the role of VIs in research, clinical and forensic contexts.

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Table 1. *14 initial Violent Ideation Scale items in Spanish and English*

	Item in Spanish	**Item in English**
1	... matar a alguien que conozco.	… killing someone I know.
2	... emplear violencia para vengarme de alguien que me ha hecho daño.	… using violence to get back at someone who harmed me.
3	... herir gravemente a alguien que me desagrada.	… severely injuring someone I dislike.
4	... darle una paliza a un extraño sin ninguna razón en particular.	… beating up a stranger for no particular reason.
5	... matar a alguien que ha insultado a mi familia o amigos.	… killing someone who insulted my family or friends.
6	... humillar a alguien que desprecio.	… humiliating someone I despise.
7	... desnudar a alguien en contra de su voluntad.	… stripping someone naked against their will.
8	... matar a una persona cercana que me ha humillado u ofendido.	… killing a person close to me who humiliated or offended me
9	... humillar a alguien más débil que yo.	… humiliating someone weaker than me.
10	... tener relaciones sexuales con alguien mientras se resiste.	… having sex with someone as they try to fight me off.
11	... emplear violencia para vengarme de alguien que ha hecho daño a una persona cercana a mí.	… using violence to get back at someone who harmed a person close to me.
12	... darle una paliza a alguien que encuentro totalmente repulsivo.	… beating up someone I find totally repulsive.
13	... causarle a alguien un dolor intenso.	… causing someone intense pain.
14	... darle una paliza a alguien porque me ha enfadado mucho.	… beating someone to a pulp because they made me really angry.

Table 2. *7 Aggression items in Spanish and English*

	Item in Spanish	Item in English
1	He golpeado, pateado o empujado a alguien.	I have hit, kicked or pushed someone.
2	He insultado a alguien.	I have insulted someone.
3	He amenazado a alguien.	I have threatened someone.
4	He difundido rumores sobre alguien	I have spread rumors about someone.
5	He robado o roto las cosas de otra persona	I have stolen or broken someone else's things.
6	He excluido o ignorado a otras personas.	I have excluded or ignored others.

Table 3. *Descriptive Statistics and Category Response Distributions for the Spanish Violent Ideations Scale*

Item	n	Never	Rarely	Sometimes	Often	V. Often	Mean	SD
1	752	566 (75,26)	128 (17,02)	41 (5,45)	14 (1,86)	3 (0,39)	1.35	.71
2	749	350 (46,72)	241 (32,17)	121 (16,15)	31 (4,13)	6 (0,80)	1.80	.91
3	752	525 (69,81)	154 (20,47)	53 (7,04)	15 (1,99)	5 (0,06)	1.43	.77
4	751	638 (92,94)	35 (4,66)	13 (1,73)	4 (0,53)	1 (0,13)	1.10	.42
5	751	607 (80,71)	95 (12,63)	33 (4,38)	14 (1,86)	2 (0,26)	1.28	.66
6	746	325 (43,56)	252 (31,09)	146 (19,57)	35 (4,69)	8 (1,07)	1.89	.95
7	752	693 (92,15)	42 (5,59)	12 (1,59)	2 (0,26)	3 (0,39)	1.11	.44
8	752	647 (86,03)	77 (10,23)	17 (2,26)	9 (1,19)	2 (0,26)	1.19	.55
9	751	610 (81,22)	124 (16,51)	17 (2,26)	-	-	1.21	.46
10	749	696 (92,92)	34 (4,53)	14 (1,86)	3 (0,40)	2 (0,26)	1.11	.43
11	750	373 (49,73)	240 (32,00)	97 (12,93)	34 (4,53)	6 (0,80)	1.75	.90
12	751	582 (77,49)	108 (14,38)	46 (6,12)	10 (1,33)	5 (0,66)	1.33	.71
13	743	549 (73,88)	153 (20,59)	31 (4,17)	8 (1,07)	2 (0,26)	1.33	.63
14	749	502 (67,02)	176 (23,49)	56 (7,47)	10 (1,33)	5 (0,66)	1.45	.75

Note. Valid percentages are presented in parenthesis.

Table 4. *Factor loadings for the one-factor solution with 14 and with 12 items (n = 730)*

Item	1-Factor w/14 items	1-Factor w/12 items
1	.73	.75
2	.87	.86
3	.83	.85
4	.63	.64
5	.78	.79
6	.67	.67
7	.43	
8	.86	.86
9	.51	.50
10	.47	
11	.82	.82
12	.80	.78
13	.73	.74
14	.79	.82

Note. Unstandardized and standardized coefficients were the same for both models.

Table 5. *Category response distributions of the final 12 items of the Spanish Violent Ideations Scale (VIS) for the male (M) and female (F) samples*

Item	Never		Rarely		Sometimes		Often		V. Often	
	M	**F**	**M**	**F**	**M**	**F**	**M**	**F**	**M**	**F**
1	263	269	62	65	20	21	8	6	1	1
2	144	201	124	116	66	54	18	12	2	3
3	234	286	29	75	10	22	1	4	1	2
4	313	378	45	6	14	3	6	2	7	0
5	275	323	49	46	18	15	9	5	2	0
6	151	172	106	123	72	71	19	16	3	4
7	294	346	47	30	9	8	3	5	1	0
8	290	312	58	65	6	11	0	0	0	0
9	155	214	122	116	52	43	21	13	3	2
10	264	312	54	54	26	17	5	5	4	1
11	250	292	79	73	16	14	5	3	0	2
12	216	280	93	82	34	21	6	4	3	1

Table 6. *Model Fit Indices for Gender Invariance Models (n = 722)*

Model	***χ2***	***df***	**TLI**	**CFI**	**RMSEA**	**SRMR**	**ΔCFI**	**ΔRMSEA**	**ΔSRMR**
M0	249.483	54	.969	.974	.071	.062			
MM	103.719	54	.987	.984	.052	.057			
MF	190.127	54	.954	.962	.082	.088			
M1	291.625	108	.969	.975	.069	.073			
M2	256.008	119	.979	.981	.057	.076	.006	-.012	.003
M3	292.429	130	.978	.978	.059	.074	-.003	.002	-.002

Note: M0 = Whole Sample, MM = Male Sample; FM = Female Sample, M1 = Configural Model; M2 = Metric Model; M3 = Scalar Model;

TLI = Tucker–Lewis index; CFI = comparative square residual; RMSEA = root mean square error of approximation; SRMR standardized root mean.

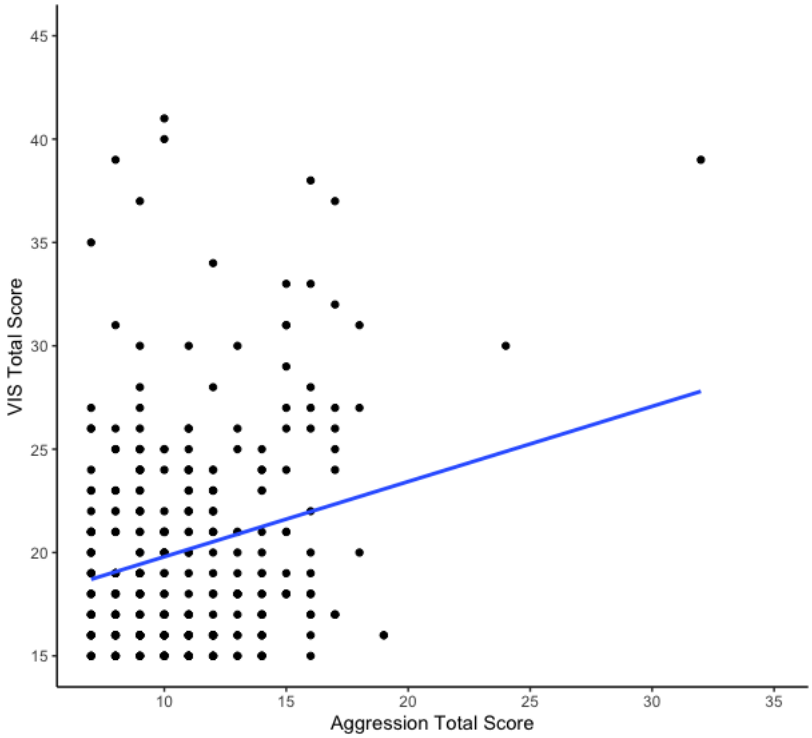

Figure 1. Scatter plot of total VIS-ES score and total aggression score.