Assessing aggressiveness quickly and efficiently: the Spanish adaptation of Aggression Questionnaire-Refined version

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Abstract

The assessment of aggressiveness and the prediction of aggression has become a relevant research and applied topic in Psychiatry and Psychology. There have been many attempts in order to get a fast and reliable tool to measure aggression. Buss and Durkee started the pathway, and recently Bryant and Smith developed a tool with an enormous potential, a fast-applicable, reliable and valid test. We herein report a Spanish adaptation of this test and we show that aggressiveness can be measured rapidly, and in a simple, valid and reliable way across different populations. We focus on the discriminant capacity of this test to detect aggressive individuals.

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1. Introduction

Aggression and aggressiveness are psychological topics of particular relevance in forensic and clinical contexts. To predict if somebody will behave aggressively is important within the clinical environment [29,16,27,17]. But it is not only important for the patient himself; in some cases it can be useful for the staff as well [31] to predict the behaviour of the patients within the institutions. At the prison or the court, often the judgement of a specialist is required in order to assess the premeditated nature of an offence [3] or the presence or absence of psychopathological disorders in the offender, i.e. psychopathy [5]. In many cases, the violence risk assessment does not include self-report measures of aggression. Basically this is because in these contexts, the nature of the assessed individual often restricts the use of this type of measures, due to various factors (reading limitations, time restrictions, etc.), so the existence of a short and easily-applicable self-reported measure would help those professionals who work in the fields mentioned above.

In order to achieve a good self-report measure of aggression, many researchers have developed their own questionnaires. In 1957, Buss and Durkee [10] developed the Buss–Durkee Hostility Inventory, a world-wide questionnaire which is still used. This test has become one of the required tools in any research on aggression, in spite of its psychometric limitations. Based on the BDHI, Buss and Perry [11] redefined it to improve its psychometrical properties, and the result was the Aggression Questionnaire (AQ), which measures four aspects of aggression: Physical Aggression and Verbal Aggression, which involve hurting or harming others, represent the instrumental or motor component of behaviour; Hostility, which consists of feelings of ill-will and injustice, represents the cognitive component of behaviour; and Anger, which involves physiological arousal and preparation for aggression, represents the emotional or affective component of behaviour. Incidentally, this questionnaire has been used to investigate topics such as suicidal ideation [23] and eating disorders [24], just to cite some examples, even in violence risk assessment, explor-
ing the relationships between this questionnaire and the PCL-R [28].

In 2001, Bryant and Smith [9] had taken again about this topic and they developed a shorter form of the AQ. This shorter form comprises 12 item-stems from Buss and Perry’s AQ [11], less than a half of the original 29-items test. This improvement has made possible to have a short and reliable test available in order to use it in critical contexts such as those mentioned above, in which the application conditions are often challenging. In addition, the few number of items of this test makes possible to include them within a larger battery of items.

Within the Spanish-speaking context, to our knowledge, few studies have been conducted using AQ [1,15] and, any using its refined form [9]. Recently, Vigil-Colet et al. [36,25] developed a reduced form comparing the AQ factor structure across different samples, and selecting the items with a high congruence among samples, so they obtained a 20-items long AQ. Nevertheless, their aim was not to search specifically for the shortest form of AQ; rather, their aim was to find a set of items with a simple factor structure that was stable across cultural differences, that is, reasonably free from cultural differences. Thus, there is a lack of an even more rapidly applicable and reliable tool in the Spanish-speaking context, a tool not only valid but also useful for the professional, in the sense that it provides information about prognosis, treatments and social correlates [18]. So, our aim was to adapt the shortest form of the AQ to the Spanish-speaking context and fill this gap. Doing so, we would facilitate and promote research with Spanish-speaking participants as well.

2. Material and methods

2.1. Participants

In order to adapt the short form of the AQ [9] to Spanish, three subsamples were considered:

First, a huge group of 1047 volunteers. The mean age was 34.34 (S.D. = 14.30), ranging from 16 to 75. With respect to their educational levels, a 39.50% of the sample achieved a graduate level, a 16.50% has a secondary school level, a 15.80% has an elementary school level, a 14% has no studies, and finally in a 14.2% of this subsample these data were not available. Regarding their job status, a 25% of the samples were students, a 42.5% has a regular job, a 6.7% of the subsample was unemployed, and a 19.3% has an elementary school level, and a 20.7% has no studies. All of them were inmates. This subsample was composed by a 19.3% of women and an 80.7% of men. The participants of this subsample were informed that part of the data from their global assessment would be used for research purposes. Those who did not agree were not included in the analysis.

And third, the last one, a subsample of 140 offenders throughout three prisons of the penitentiary system of the Autonomous Catalan Government. The mean age was 36.06 (S.D. = 10.17), ranging from 21 to 68. With respect to their educational level, a 6.4% of the sample achieved a graduate level; a 19.3% has a secondary school level, a 53.6% has an elementary school level, and a 20.7% has no studies. All of them were inmates. This subsample was composed by a 19.3% of women and an 80.7% of men. The participants of this subsample were informed that part of the data from their global assessment would be used for research purposes. Those who did not agree were not included in the analysis.

In all three samples, the assessment was conducted under conditions of strictly anonymity, and the respondents were asked to be the more sincere they can. In addition, this study is part of a global study approved by the Ethics Committee of the University of Barcelona.

There was no missing data due to no-response to items. Even so, some of the respondents were removed from the sample due to their influence on multivariate normality and anomalies in their responses, such as outlier cases in total scores.

2.2. Instrument

For this study, it was used the refined version of the AQ [9], which consists of 12 Likert-type items rated on a 6-point scale. The AQ is organised into four scales: Physical Aggression or PA (three items), Verbal Aggression or VA (three items), Anger or ANG (three items) and Hostility or HO (three items). Our version consisted of 12 Likert-type items rated on a 6-point scale ranging from “Never” to “Always”. The authors restored the scale’s mid-point which was eliminated in the English version by Bryant and Smith [9]. This modification was done taking into account the following criteria: (a) the traditional Likert-type response format (five response alternatives with a neutral point [20,21]) seems to be more adequate in the context of cross-cultural comparisons [30]; (b) empirical support exists in favour to the traditional Likert-type format, in front of a forced-choice format [35]; (c) the reliability of a personality measurement instrument does not vary significantly when is reduced only one response category [19]; and (d) because the original version of AQ [11] has a 5-point scale.

The adaptation of the refined version of AQ was done using the back-translation method, which is a judgmental procedure for investigating the conceptual equivalence (i.e. symmetry) of the original and translated versions, necessary for valid cross-cultural comparisons [4]. Thereby, a bilingual translator translated the American Questionnaire into Spanish. Secondly, another bilingual translator translated back the Spanish AQ into English. Finally, the original source and the back-translated...
items were compared for non-equivalence of meaning by an expert, and any discrepancies were noted. This iterative process of translation and back-translation was continued until no semantic differences were noticed between both questionnaire forms [6].

Impulsivity was assessed using the Spanish translation of Luengo et al. [22] of Barratt’s Impulsiveness Scale (BIS-10: [2]). The BIS-10 has been widely used among clinicians and researchers and it consists of three subscales: Motor Impulsiveness (Im, 11 items), Cognitive Impulsiveness (Ic, 11 items) and Non-planning Impulsiveness (Inp, 12 items). It has a total score as well, which indicates a global measure of impulsiveness. Respondents may answer by means of a Likert-like scale of four options from “never” to “always”, but without the mean item. BIS-10 was chosen to assess the concurrent validity due to the close relationship that exists between impulsiveness and aggressiveness (see Barratt and Slaughter [3] for a review).

2.3. Procedure

Firstly, the test was administered to university students within the classroom time. Then, the subjects were given instructions to collect the remaining data, by using the “snowballing approach” in which students passed on the test to their relatives and friends. They were asked to recruit two or three subjects from both sexes, and were trained on how to administer the questionnaire. In the second group, the test was administered included in the formal process of candidates’ selection at the Police School of Catalonia. The test was included within a battery of tests used to assess the individuals in their process to become a policeman. Finally, the third group was collected throughout three prisons of Catalonia, as mentioned above. The test was administered individually by the prison’s psychologists to inmates. To calculate test–retest reliability, the test was administered to the control sample twice, with a 4 months minimum interval.

2.4. Overview of analyses

Our analyses are aimed to five purposes: first, item analysis of the scales, including differential item functioning (DIF) detection; second, a multivariate MANOVA conducted to estimate differences between sex and population, which is also an indicator of construct validity as well; third, internal consistency of the four factors, evaluated by the alpha coefficient; four, correlations among scales to assess construct validity (see below); finally, a confirmatory factor analysis to replicate the structure of the original version.

Regarding the confirmatory factor analysis, the model fitted in this study was estimated via maximum likelihood estimation without assuming normality, as implemented in MPLUS [26] using covariances as sample statistics. To assess the degree of lack of fit of the model being estimated we shall employ the root mean squared error of approximation (RMSEA) [32], as a measure of discrepancy due to the approximation per degree of freedom. A RMSEA of about 0.05 reflects a close fit of the model in relation to its degrees of freedom, whereas a value of 0.08 or less reflects a reasonable error of approximation [7,8]. In addition, Comparative Fit Index (CFI) and Tucker–Lewis Index (TLI) were also calculated. To show a good fit of the model to the data, these indexes must be between 0.9 and 1.

In order to assess the construct validity, the police students group and the offenders group were used to estimate the possible differences between groups, in theory, from a sample of less (police) to more (offenders) aggressive than the control sample (unselected sample). It was done by means of a multivariate MANOVA.

3. Results

First, item analysis was conducted in order to check the item-scales properties. Table 1 shows some descriptive statistics to get a flavour of item properties in general population, which was the sample of full-scale analysis. Almost every item exhibits positive skewness, the first two categories of the scale attracting more responses while the fifth point of the ordered scales never attracts more than a 6.5% of the responses for any item. This floor effect is common in items designed to elicit extreme responses, meaning that their behaviour correspond to items that stand for high levels on the underlying construct, and that receive, accordingly, few responses on a extreme category. Despite of being extreme, all of them show good item-test correlations both for its scale and the overall total.

One more item analysis was conducted to check if differences in total scores could be due to DIF with respect to gender or population. As suggested by Swaminathan and Rogers [33], logistic regression was used, after dichotomising item responses, recodifying values 1 through 2 as 0 and 3 through 5 as 1. Wald statistic for sex ranged from 0.452 (P = 0.50) to 5.72 (P = 0.02), for Group showed values from 0.05 (P = 0.82) to 5.46 (P = 0.02). Thus, at a 0.01 nominal level, no item showed DIF with respect to either of the variables.

Second, a MANOVA was conducted in order to determine the effect of sex and population in subscale means. As equality between covariance matrices was rejected a robust F statistic was selected for contrasting mean equality between groups of sex and population. A significant effect was found, both for sex (F = 4.03; df1 = 4, df2 = 969; P = 0.003) and group (F = 26.64; df1=8, df2 = 1944; P < 0.001). Table 2 shows the between subjects effects of the influence of each of the variables on subscales. Interactions between sex are group are not
significant \((F = 1.18, \text{df}_1 = 8, \text{df}_2 = 1940, P = 0.31)\). Fig. 1 shows the simultaneous effects of both population and sex.

Thus, as can be seen from Table 2 and Fig. 1, men differ from women on subscales PA, ANG and HOS. Fig. 1 shows that, on the average, men have a superior mean than women on subscale PA. This situation is inverted on subscales ANG and HOS, where women obtain greater means than men. To analyse the mean trends with respect to population, multiple comparisons with Bonferroni’s adjustment were conducted with a 0.05 significance level. Comparisons show that individuals from the Police School of Catalonia’s means are significantly inferior to those of the other groups. On the other hand, and with the same significance level, unselected sample means are significantly inferior to those of offenders on subscales Physi-
Table 3
Descriptives of AQ-R subscales and total score

<table>
<thead>
<tr>
<th></th>
<th>Women</th>
<th>S.D.</th>
<th>Men</th>
<th>S.D.</th>
<th>PSC</th>
<th>Unselected sample</th>
<th>Offenders</th>
<th>Total reliability (unselected sample)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Mean</td>
<td></td>
<td>Mean</td>
<td></td>
<td>Mean</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>PA</td>
<td>4.20</td>
<td>1.64</td>
<td>4.63</td>
<td>1.80</td>
<td>3.80</td>
<td>1.11</td>
<td>4.35</td>
<td>1.65</td>
</tr>
<tr>
<td>VA</td>
<td>7.78</td>
<td>2.04</td>
<td>7.58</td>
<td>2.03</td>
<td>6.42</td>
<td>1.57</td>
<td>7.80</td>
<td>2.08</td>
</tr>
<tr>
<td>ANG</td>
<td>7.21</td>
<td>2.22</td>
<td>6.14</td>
<td>2.18</td>
<td>4.37</td>
<td>1.11</td>
<td>6.81</td>
<td>2.22</td>
</tr>
<tr>
<td>HOST</td>
<td>6.50</td>
<td>2.31</td>
<td>5.65</td>
<td>2.04</td>
<td>4.01</td>
<td>1.13</td>
<td>6.01</td>
<td>2.12</td>
</tr>
<tr>
<td>TOTAL</td>
<td>25.69</td>
<td>5.51</td>
<td>24.00</td>
<td>5.93</td>
<td>18.59</td>
<td>3.57</td>
<td>24.97</td>
<td>5.54</td>
</tr>
</tbody>
</table>

Notes: This table shows the descriptives of AQ-R subscales for population and sex, as well as reliability indices. PSC: Police School of Catalonia; PA: AQ-R Physical Aggression; VA: AQ-R Verbal Aggression; ANG: AQ-R Anger; HOST: AQ-R Hostility; TOTAL: AQ-R Total score.

Table 4
Correlations between AQ-R and BIS-10 subscales

<table>
<thead>
<tr>
<th></th>
<th>1</th>
<th>2</th>
<th>3</th>
<th>4</th>
<th>5</th>
<th>6</th>
<th>7</th>
<th>8</th>
<th>9</th>
</tr>
</thead>
<tbody>
<tr>
<td>PA</td>
<td>1</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>VA</td>
<td>0.26</td>
<td>1</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>ANG</td>
<td>0.34</td>
<td>0.44</td>
<td>1</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>HOST</td>
<td>0.30</td>
<td>0.21</td>
<td>0.39</td>
<td>1</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>TOTAL</td>
<td>0.64</td>
<td>0.68</td>
<td>0.79</td>
<td>0.69</td>
<td>1</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>BIS-NPI</td>
<td>0.13</td>
<td>0.13</td>
<td>0.20</td>
<td>0.18</td>
<td>0.23</td>
<td>1</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>BIS-MI</td>
<td>0.29</td>
<td>0.31</td>
<td>0.47</td>
<td>0.32</td>
<td>0.50</td>
<td>0.41</td>
<td>1</td>
<td></td>
<td></td>
</tr>
<tr>
<td>BIS-CI</td>
<td>0.26</td>
<td>0.29</td>
<td>0.27</td>
<td>0.18</td>
<td>0.28</td>
<td>0.45</td>
<td>0.45</td>
<td>1</td>
<td></td>
</tr>
<tr>
<td>BIS-TOTAL</td>
<td>0.29</td>
<td>0.23</td>
<td>0.39</td>
<td>0.31</td>
<td>0.43</td>
<td>0.83</td>
<td>0.79</td>
<td>0.74</td>
<td>1</td>
</tr>
</tbody>
</table>

Notes: All correlation coefficients are significant ($P < 0.01$). AQ-R Physical Aggression; VA: AQ-R Verbal Aggression; ANG: AQ-R Anger; HOST: AQ-R Hostility; TOTAL: AQ-R Total score; BIS-NPI: BIS-10 Non-planning Impulsivity; BIS-MI: BIS-10 Motor Impulsivity; BIS-CI: BIS-10 Cognitive Impulsivity; BIS-TOTAL: BIS-10 Total score.

4. Discussion

The aim of our study was to adapt the AQ-refined version to the Spanish-speaking context. In the light of our results, this test seems to be a good tool in the assessment of aggressiveness, and therefore of violence. The correlations among subscales and with external scales of impulsivity, the reliability coefficients, and the good fitting of the four factor model provide support to the AQ-R’s construct validity.

As expected, all subscales of AQ-R correlated with all BIS-10 subscales, especially with Motor Impulsiveness. The correlations that we have obtained are quite similar to those obtained by Buss and Perry [11] in their original report, when they correlated AQ subscales with the Impulsiveness scale of EASI [12]. Some other authors have reported correlations between AQ subscales and traits related to impulsiveness. For instance, Tremblay and Ewart [34] report an inverse and moderate correlation between Physical Aggression and Conscientiousness measured by means of NEO-PI-R. So, our findings are consistent with previous literature.

If we compare this refined version to the reduced one obtained by Vigil-Colet et al. [36], we can see that the majority of items in our AQ-R are stable across cultures. Both versions only differ in three items (8, 12, and 25 in the original AQ from Buss and Perry). Two of them (8 and 12) belong to the Hostility factor, and the other to the Anger factor. These items may be related to a factor measuring suspiciousness, rather than hostility [36]. On the other hand, the rest of the items are shared between both versions.

Regarding the internal consistency, our results are slightly lower than those reported by Andreu-Rodriguez et al. and García-León et al. [1,15] which is consistent with the definition of “alpha” given by Cronbach [14], in which, the higher the number the items in a scale, the higher the alpha coefficient. In the same way, compared to the internal consistencies of three samples using the English refined, our version is equivalent to the results reported by Bryant and Smith [9], so, these results suggest appropriate internal consistencies in relation to the length
of the test. With regard to the temporal stability, our results are quite appropriate taking into account that our test–retest interval was of 4 months. Other studies have reported higher test–retest reliabilities, but with shorter time intervals [15]. So, these results suggest remarkable stability over the time.

When we assessed the differences between men and women, we expected to find differences between them. Men were found to be more aggressive in Physical Aggression than women, like in the original study of Buss and Perry [11]. In contrast, women were found to be more aggressive than men with regard to Anger and Hostility, whereas in the original study men showed themselves as more aggressive in all subscales except Anger. These results suggest that the expression of cognitive and emotional components of aggressiveness might be different in the Spanish context when compared to the American context. As García-León et al. [15] suggest this could be an effect attributable to the different role of social pressure upon men and women in Spain. Thus, women would express a broad range of emotions, rather than men, who would inhibit most of them. This pattern of results is also consistent with that reported by Andreu-Rodríguez et al. [1].

On the other hand, when we explored the differences between populations, we found that police students showed themselves as systematically less aggressive than the unselected sample or offenders. It must be noticed that these students must pass an entrance examination, in which they are selected by presenting a low level of aggressiveness, among many other variables. With regard to the differences between offenders and the unselected sample volunteers, offenders showed significantly more aggressive in Physical Aggression and Hostility, which is consistent with the fact that inmates are more aggressive than the unselected sample. Actually, it is known that anger and hostility are related to impulsive aggression, and they have revealed as risk factors if violence in corrections [37].

Thus, the AQ-R seems to be a good tool to assess aggressiveness, and consequently, it can be useful in the violence risk assessment and prediction of violent behaviours in the future, at least in forensic contexts, where it shows significant correlations with the HCR-20 and PCL-R [13]. However, in order to check whether it is really a good predictor or not, further research is needed on specificity and sensitivity of this tool, using ROC curves and external criteria, such as the presence or absence of actual aggression.

5. Conclusion

To sum up, the results of the present study further support the use of the AQ-R, both in clinical and forensic contexts, and
when screening unselected groups of population. The scale’s brevity is its main strength. So, it makes our instrument a fast and reliable tool in order to assess aggressiveness, as long as it can be utilised in a broad variety of contexts, where long time spending tests fail, due to time or to subject’s abilities.

Acknowledgements

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Appendix 1

These items compose the Spanish version of AQ-R. All items are direct.

<table>
<thead>
<tr>
<th>A mi me pasa que …</th>
<th>Nunca</th>
<th>Casi nunca</th>
<th>A veces</th>
<th>Casi Siempre</th>
<th>Siempre</th>
</tr>
</thead>
<tbody>
<tr>
<td>1 … me doy cuenta que estoy en desacuerdo con los demás.</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
</tr>
<tr>
<td>2 … siento que la vida me ha tratado mal.</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
</tr>
<tr>
<td>3 … he amenazado a personas que conozco.</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
</tr>
<tr>
<td>4 … me pregunto porque me siento tan amargado/a.</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
</tr>
<tr>
<td>5 … tengo problemas para controlar mi mal genio.</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
</tr>
<tr>
<td>6 … mis amigos/as dicen que soy discutidor/ra.</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
</tr>
<tr>
<td>7 … me enfado rápidamente aunque se me pasa deprisa.</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
</tr>
<tr>
<td>8 … si me provocan mucho puedo llegar a pegar a cualquiera.</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
</tr>
<tr>
<td>9 … no puedo evitar discutir con los que no están de acuerdo conmigo.</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
</tr>
<tr>
<td>10 … creo que siempre son los otros los que consiguen las mejores oportunidades.</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
</tr>
<tr>
<td>11 … hay personas que me hacen enfadarse tanto que llegaríamos a las manos.</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
</tr>
<tr>
<td>12 … me enredo mucho sin ninguna razón aparente.</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
</tr>
</tbody>
</table>

References


