**Psicothema**

# Psychometrical properties of the "How I Think" Questionnaire (HIT-Q) in adolescents

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## Abstract

**Background:** The How I Think Questionnaire (HIT-Q) was developed to measure the main categories of self-serving cognitive distortions. **Method:** The present study analyses the psychometric properties of the HIT-Q Spanish-Version. The sample consisted of 1.490 Spanish-speaking adolescents recruited from various schools in Madrid (Spain). The participants had a mean age of 15.37 years (SD = 1.67). **Results:** Confirmatory factor analyses (CFA) showed that the underlying structure of the HIT-Q was best explained by a six-factor solution (Self-Centred, Blaming Others, Minimizing/Mislabelling, Assuming the Worst, Anomalous Responses and Positive Fillers). **Conclusions:** After examination of its psychometric properties, it was concluded that the Spanish version of the HIT-Q is a reliable and valid measure of self-serving cognitive distortions in Spanish adolescents.

*Keywords:* Self-serving cognitive distortions, HIT-Q, psychometric properties, adolescents.

## Resumen

***Propiedades psicométricas de la versión española del Cuestionario "How I Think" (HIT-Q) en adolescentes.* Antecedentes:** el Cuestionario "How I Think" (HIT-Q) fue desarrollado para evaluar distorsiones cognitivas auto-sirvientes. **Método:** el presente trabajo analiza las propiedades psicométricas de la versión española del HIT-Q en una muestra de adolescentes españoles. La muestra estuvo compuesta por 1.490 participantes (M = 15,37 años, DT=1,67), procedentes de distintos centros educativos de la Comunidad de Madrid. **Resultados:** el análisis factorial confirmatorio (AFC) reveló que la estructura subyacente del HIT-Q fue explicada satisfactoriamente por un modelo factorial compuesto por seis factores (Sesgo egocéntrico, Culpar a los demás, Minimización/Etiquetado incorrecto, Asumir lo peor, Respuestas anómalas e Ítems positivos). **Conclusiones:** tras examinar las propiedades psicométricas de la versión española del HIT-Q, se concluyó que este instrumento proporciona una medida fiable y válida de las distorsiones cognitivas auto-sirvientes en adolescentes españoles.

*Palabras clave:* distorsiones cognitivas auto-sirvientes, HIT-Q, propiedades psicométricas, adolescentes.

According to social-cognitive theories, people act upon their interpretation of social events, and antisocial behaviour is based on mechanisms of moral disengagement (Bandura, 1991), processing biases that lead to misinterpretation of social information (Dodge, 2010), and cognitive distortions that reduce empathy or guilt aroused by moral judgments or self-definition as a virtuous person (Gibbs, 2003). Cognitive distortions are "non-veridical or inaccurate attitudes, thoughts, and beliefs" (Barriga & Gibbs, 1996). Cognitive distortions associated with antisocial behaviour are drawn from the social information-processing theory (Crick & Dodge, 1994; Dodge & Coie, 1987), where these distortions are characterized as biases in the processing that mediates between incoming stimuli and behavioural responses.

Gibbs, Potter and Goldstein (1995) introduced the term *self-serving* cognitive distortions to define cognitive distortions that are specifically associated with externalizing behaviours such as

aggression and antisocial behaviour. These authors described a four-category typological model of self-serving cognitive distortions: (a) Self-Centred defined as attitudes by which individuals focus on their own opinions, expectations, needs, and rights to such an extent that the opinions or needs of others are never or hardly ever considered or respected; (b) Blaming Others, which involves cognitive schemas of misattributing the blame for one's own behaviour to sources outside the individual; (c) Minimizing/Mislabelling, defined as distortions in which antisocial behaviour is seen as an acceptable way to achieve certain goals as well as a belittling and dehumanizing way of referring to others, and, finally, (d) Assuming the Worst, in which the individual attributes hostile intentions to others, considers the worst-case scenario as inevitable, or sees his or her own behaviour as beyond improvement.

Barriga and Gibbs (1996) divided self-serving cognitive distortions into two types: *primary* cognitive distortions, which are represented by the Self-Centred category and secondary cognitive distortions, represented by the categories Blaming Others, Minimizing/Mislabelling and Assuming the Worst. The primary cognitive distortions stem from the egocentric bias most prominently found among young children, reflecting more immature moral judgment stages (Barriga, Gibbs, Potter, & Liau, 2001). Secondary cognitive distortions are pre-transgression or post-transgression

rationalizations that serve to neutralize conscience, potential empathy, and guilt, thereby preventing damage to the self-image when an individual engages in antisocial behaviour.

The line of theorizing within the aggression and antisocial behaviour domain has developed independently from theories that have incorporated the concept of *self-debasing* cognitive distortions (Barriga, Hawkins, & Camelia, 2008). Self-debasing distortions, which theoretically increase self-reproach through processes such as misattributing blame to oneself or catastrophizing negative experiences, are specifically predictive of internalizing behaviours such as depression or anxiety (Leitenberg, Yost, & Carroll-Wilson, 1986), whereas self-serving distortions, which theoretically neutralize empathy or guilt though processes such as misattributing blame to others or minimizing the consequences of one's antisocial actions, are specifically predictive of externalizing behaviours such as aggression and antisocial behaviour (Andreu & Peña, 2013; Barriga, Sullivan-Cosetti, & Gibbs, 2009; Capuano, 2011; Plante et al., 2012; Van der Velden, Brugman, Boom, & Koops, 2010). Particularly, within the externalizing domain, it is noteworthy that self-serving distortions seem to be applied only to particular antisocial behaviours of youths and adolescents. Rather than a generic "criminal mind" that distorts experiences regardless of behavioural referent, the tendency to rationalize behaviour or neutralize guilt appears to be reserved only for specific areas of behaviour that are problematic for youths (Barriga, Landau, Stinson, Liau, & Gibbs, 2000; Barriga et al., 2008).

In order to evaluate self-serving cognitive distortions, researchers have developed a number of instruments. However, these instruments have shown various limitations (see Barriga et al., 2001). To counter this problem, the How I Think Questionnaire (HIT-Q) was developed based on the four main categories of cognitive distortions (Barriga & Gibbs, 1996). The HIT-Q was validated by Barriga et al. (2001) in the midwest region of the USA. In the formulation of its items, the HIT applies four behavioural dimensions. For the "covert" dimension, the HIT items were developed on the basis of cognitive distortions related to stealing and lying. For the "overt" dimension, the items were developed on the basis of cognitive distortions related to oppositional and aggressive behaviour. In its preliminary English-language version, the HIT-Q showed strong test-retest reliability, with a statistically significant correlation of .91; and it also showed internal consistency across its cognitive and behavioural scales ranging from .78 to .90 (Barriga & Gibbs, 1996). Validation studies of the HIT-Q have revealed an association between self-serving cognitive distortions and specific externalizing behaviours —aggression and antisocial behaviour (Barriga et al., 2008; Barriga et al., 2000). Furthermore, comparable psychometric properties were obtained in the course of validating the instrument with different samples of English- and French-speaking adolescents (Barriga et al., 2001; Nas, Brugman, & Koops, 2008; Plante et al., 2012).

To the authors' knowledge, no Spanish-language instrument is available to assessing self-serving cognitive distortions in samples of Spanish adolescents. Given that the HIT-Q has a theoretical basis that has been empirically tested with promising results (Nas et al., 2008), and has also been used for evaluating treatment for adolescents (Gibbs, Potter, DiBiase, & Devlin, 2009), it would be really useful to extend the use of the HIT-Q in Spain to measure self-serving cognitive distortions and to evaluate change following participation in psychological programs for adolescents with externalizing behaviours. Therefore, the present study was designed

to test the validity, including the dimensionality and reliability, of the HIT-Q using samples of Spanish adolescents. On the basis of the study carried out by Barriga et al. (2001), we investigated the factor-analytic validity of the HIT-Q, and its convergent validity using different measures of aggression.

Method

*Participants*

The sample consisted of 1.490 Spanish-speaking adolescents recruited from twenty public and private schools in Madrid (Spain). The adolescents belonged to all types of regular education (Primary and Secondary Education, High-School Education and Professional Training). Their schools were located in large or medium-sized cities of the same part of Madrid. Researchers contacted with the schools and, after obtaining permission from the director and the orientation team, the classrooms were randomly selected from each school that participated at the study. All the participants chose to participate at the study.

Out of the participants, 5.6% were enrolled in Primary Education, 63% in Secondary Education, 1.4% in Professional Training and, finally, 3% in other studies (Social Guarantee Program). The participants had a mean age of 15.37 years ($SD$ = 1.67), 50.9% were between 14 to 16 years (51% males and 49% females), 32.2% between 17 and 19 years (48.6% males and 51.4% females), and 16.9% between 11 and 13 years (54.4% males and 45.6% females). Concerning country of origin, 87.9% of participants were born in Spain and 12.1% belonged to non-European countries. The adolescents' participation in this study was voluntary and their responses were confidential and anonymous.

*Measures*

*HIT-Q*. The *How I Think Questionnaire* (Barriga et al., 2001) is a 54-item self-report questionnaire designed to measure self-serving cognitive distortions. Participants respond on a 6-point Likert-type scale ranging from 1(*strongly agree*) to 6 (*strongly disagree*), with higher scores reflecting higher levels of cognitive distortions. The HIT-Q contains 39 items addressing self-serving cognitive distortions (Self-Centred, Blaming Others, Minimizing/Mislabelling, and Assuming the Worst), and one of the four antisocial behavioural categories of the *Diagnostic and Statistical Manual of Mental Disorders, 4th edition* (DSM-IV; American Psychiatric Association, 1994). These categories are: opposition-defiance, physical aggression, lying and stealing. Of the remaining 15 items, 8 items control for anomalous responses (AR) that measure social desirability (e.g., "Sometimes I get bored"), and 7 items act as positive fillers (PF); that is, they camouflage items with a prosocial meaning (e.g., "When friends need you, you should be there for them"). Table 1 presents the items of the HIT-Q, Spanish version.

*RPQ*. Reactive-Proactive Aggression Questionnaire (Raine et al., 2006). The RPQ was applied to the sample in order to analyse the convergent validity of the HIT-Q scores. The RPQ consists of 23 items rated on a 3-point Likert scale, ranging from 0 (*never*) to 2 (*always*) assessing reactive aggression (RA; e.g., "reacted angrily when provoked by others"), and proactive aggression (PA; e.g., "vandalized something for fun"). The Spanish version of the RPQ (Andreu, Peña, & Ramírez, 2009) was used in this

research. According to this adaptation, coefficient alphas for the reactive-proactive scales were .84 and .87, respectively. Internal consistency for the total RPQ score was .91. The means for the RA and PA scales were .83 (*SD* = .24) and .31 (*SD* = .17).

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*Table 1*
Items of the How I Think Questionnaire-Spanish Version

1. Las personas deberían intentar trabajar para solucionar sus problemas [People should try to work on their problems].

2. Por más que lo intento pierdo el control con frecuencia [I can't help losing my temper a lot].

3. A veces hay que mentir para conseguir lo que uno quiere [Sometimes you have to lie get what you want].

4. A veces me aburro [Sometimes I get bored].

5. Las personas necesitan que las maltraten de vez en cuando [People need to be roughed up once in a while].

6. Si cometo un error es porque me he juntado con la gente equivocada [If I made a mistake, it's because I got mixed up with the wrong crowd].

7. Si algo me gusta lo cojo [If I see something I like, I take it].

8. No se puede confiar en los demás porque siempre te mentirán [You can't trust people because they will always lie to you].

9. Soy generoso con mis amigos [I am generous with my friends].

10. Cuando me enfado no me importa a quién estoy haciendo daño [When I get mad, I don't care who gets hurt].

11. Si alguien se deja el coche abierto está pidiendo que se lo roben [If someone leaves a car unlocked, they are asking to have it stolen].

12. Uno debe vengarse de la gente que no le respeta [You have to get even with people who don't show you respect].

13. A veces levanto rumores infundados sobre otras personas [Sometimes I gossip about other people].

14. Mentir no es tan malo, todo el mundo lo hace [Everybody lies, it's no big deal].

15. Es inútil tratar de mantenerse al margen de las peleas [It's no use trying to stay out of fights].

16. Todo el mundo tiene derecho a ser feliz [Everyone has the right to be happy].

17. Si sabes que puedes salirte con la tuya, solo un tonto no robaría [If you know you can get away with it, only a fool wouldn't steal].

18. No importa cuánto lo intente, no puedo dejar de meterme en problemas [No matter how hard I try, I can't help getting in trouble].

19. Solo un cobarde huiría de una pelea [Only a coward would ever walk away from a fight].

20. Alguna vez he dicho algo malo de un amigo [I have sometimes said something bad about a friend].

21. No está tan mal mentir si alguien es tan tonto como para creérselo [It's OK to tell a lie if someone is dumb enough to fall for it].

22. Si realmente quiero algo no me importa cómo conseguirlo [If I really want something, if doesn't matter how I get it].

23. Si no te defiendes de la gente que te rodea te acabarán siempre molestando [If you don't push people around, you will always get picked on].

24. Los amigos deben ser sinceros unos con otros [Friends should be honest with each other].

25. Si una tienda o una casa ha sido robada es culpa de ellos por no tener mejor seguridad [If a store or home owner gets robbed, it's a really their fault for not having better security].

26. La gente me fuerza a mentir si me hacen demasiadas preguntas [People force you to lie if they ask too many questions].

27. Alguna vez he intentado vengarme de alguien [I have tried to get even with someone].

28. Debes conseguir lo que necesitas aunque alguien salga dañado [You should get what you need, even if it means someone has to get hurt].

29. La gente siempre está intentando molestarme [People are always trying to hassle me].

30. Las tiendas ganan suficiente dinero, por lo que está bien coger lo que uno necesita [Stores make enough money that it's OK just take things you need].

31. En el pasado he mentido para librarme de algún problema [In the past, I have lied to get myself out of trouble].

32. Uno debe golpear primero antes de que te golpeen [you should hurt people first, before they hurt you].

33. Una mentira realmente no importa si uno no conoce a esa persona [A lie doesn't really matter if you don't know that person].

34. Es importante tener en cuenta los sentimientos de otras personas [It's important to think of other people's feelings].

35. Uno puede siempre robar. Si no lo haces tú, otro lo hará por ti [You might as well steal. If you don't take it, somebody else will].

36. La gente siempre está tratando de iniciar peleas conmigo [People are always trying to start fights with me].

37. Las normas generalmente están hechas para otras personas [Rules are mostly meant for other people].

38. He ocultado cosas que he hecho [I have covered up things that I have done].

39. Si alguien es tan descuidado como para perder la cartera merece que se la roben [If someone is careless enough to lose a wallet, they deserve to have it stolen].

40. Todo el mundo incumple la ley, no es tan malo [Everybody breaks the law, it's no big deal].

41. Cuando los amigos te necesitan debes estar ahí para ayudarles [When friends need you, you should be there for them].

42. Conseguir lo que uno necesita es lo más importante [Getting what you need is the only important thing].

43. Tú también puedes robar. La gente te robaría si tuviera la oportunidad [You might as well steal. People would steal from you if they had the chance].

44. Si la gente no coopera conmigo, no es mi culpa que alguien pueda salir dañado [If people don't cooperate with me, it's not my fault if someone gets hurt].

45. He hecho cosas malas que no le he contado a nadie [I have done bad things that I haven't told people about].

46. Si pierdo el control es porque la gente intenta enfurecerme [When I lose my temper, it's because people try to make me mad].

47. Coger un coche no es tan malo si no le ocurre nada al coche y el dueño lo recupera [Taking a car doesn't really hurt anyone if nothing happens to the car and the owner gets it back].

48. Todo el mundo necesita ayuda de vez en cuando [Everybody needs help once in a while].

49. Podría mentir cuando digo la verdad, de todos modos la gente no me cree [I might as well lie-when I tell the truth, people don't believe me anyway].

50. A veces tienes que dañar a alguien si tienes un problema con él [Sometimes you have to hurt someone if you have a problem with them].

51. He cogido cosas sin pedir permiso [I have taken things without asking].

52. Si miento a alguien es mi problema [If I lied to someone, that's my business].

53. Como todo el mundo roba, uno debería conseguir su parte [Everybody steals-you might as well get your share].

54. Si realmente quiero hacer algo no me importa que sea legal o no [If I really want to do something, I don't care if it's legal or not].

*Procedure*

The HIT-Q was translated according to the following method. First, the English version was translated into Spanish by a professional translator. Then, this Spanish version was back-translated into English by another translator. Each step was validated by the research team, which made sure that the meaning of the items was conveyed faithfully from version to version and the language was adapted to the adolescents.

Thirty public and private schools were initially contacted, twenty of which agreed to participate in the study. Pupils were informed about the study by their teachers. Data collection was conducted by Psychology students from the Complutense University of Madrid. After parental informed consent was given, the questionnaire was administered to an entire class during school hours. Data collection lasted from October 2011 to September 2012. All participants filled out the questionnaires in a quiet room and their participation in the study was voluntary. They were informed that the information provided would only be used for research purposes, and that all their data would remain confidential and anonymous. They were also informed that the research was to determine what adolescents of their age think about certain aspects of life and that there were no right or wrong answers. This study was approved by the ethics review board of the responsible institution.

*Data analysis*

To test the theoretical structure of the HIT-Q, confirmatory factor analysis was applied using AMOS 7.0 (Arbuckle, 2006), and a maximum likelihood procedure as the technique for parameter estimation. The present study used multiple statistical tests and indexes designed to assess the goodness of fit of the data to the proposed models, following the recommendations of Hu and Bentler (1999). Values ≥ .90 in the Goodness of Fit Index (GFI) have been accepted as indicators of a good fit. In the case of the Root Mean Square Error of Approximation (RMSEA), values ≤.05 have been considered indicators of a good and acceptable fit. Satorra-Bentler chi-square and Akaike Information Criteria (AIC) are presented as well.

Gender differences were analysed using Student's *t*-test, determining the effect size with the partial square eta coefficient ($\eta_p^2$). Pearson correlations were used to investigate the convergent validity of the HIT-Q with reactive and proactive aggression as measured by the RPQ. Finally, the internal consistency of the questionnaire was examined with Cronbach's alpha. Analyses were performed with the SPSS (version 19) computer program.

Results

*Factor-analytic validity*

Following Barriga et al.'s (2001) study, we tested a six-factor solution (four cognitive factors plus one AR and one PF factor) against a three-factor solution (one cognitive distortion factor, one AR, and one PF factor), and a four-factor solution (one primary and one secondary cognitive distortion factor, one AR, and one PF factor), and a higher-order seven-factor solution (including a cognitive distortion factor underlying the four cognitive distortions).

Table 2 shows the fit indexes corresponding to the four-factor model proposed by the original authors. Comparing these models, the six-factor model obtained better fit indexes (GFI = .96, RMSEA = .05, AIC = 8328.16). The solution of the other models tested showed a poor fit to the data (GFI <.90, RMSEA >.05), with an AIC higher than that of the six-factor solution. Table 3 presents the square multiple correlations for each sub-scale of the HIT-Q and the standardized factor loading of each item.

*Gender differences*

Table 4 presents the descriptive statistics of the HIT-Q for the study of gender differences in the Spanish sample. When the total scores of male and female subgroups were compared, males showed more self-serving cognitive distortions than females (*t* = 10.62, *p*<.001). This was also true for all the cognitive subscales of the HIT-Q and for the AR subscale (Table 4). However, the PF subscale differed from this pattern in that females scored higher than males (*t* = -7.23, *p*<.001). Nevertheless, the effect size of these gender differences, estimated by the $\eta_p^2$ coefficient, was very low ($\eta_p^2$ <.10). Finally, age was positively correlated with the scores of the male sample (*r* = .10, *p*<.01), but no significant correlations were found between age and total scores in the female sample (*r* = .01, *p* = .87).

*Correlations among the Subscales of the Spanish Version of the HIT-Q*

Table 5 shows that all pairs of associations among the subscales of the HIT-Q were significant (*p*<.001) except for PF and AR (*r* = .02, *ns*). The strongest correlations were found between Assuming the Worst and Blaming Others (*r* = .82, *p*<.001), and between Minimizing/Mislabelling and Blaming Others (*r* = .80, *p*<.001). Interestingly, the PF subscale showed significant and negative correlations with the self-serving cognitive distortion subscales.

*Convergent validity*

To determine the convergent validity, the HIT-Q scores (total and subscales) were correlated with the RPQ scores (total and subscales). As expected, given the specific relationship between self-serving cognitive distortions and antisocial behaviour in adolescents (Barriga et al., 2008), significant positive correlations emerged between the HIT-Q total score and the RPQ total score (*r* = .72, *p*<.001). In addition, as shown in Table 6, all the HIT-Q subscales were positively correlated with the RPQ subscales. Interestingly, Assuming the Worst was the self-serving cognitive distortion that was most strongly correlated to RA (*r* = .59, *p*<.001) and PA (*r* = .63, *p*<.001).

| Table 2 Goodness-of-fit indices for each of the models | | | | | |
|---|---|---|---|---|---|
| **Model** | **χ²** | **df** | **AIC** | **RMSEA** | **GFI** |
| Six-factor model | 8100.16* | 1371 | 8328.16 | .05 | .96 |
| Three-factor model | 9514.52* | 1378 | 9728.52 | .06 | .78 |
| Four-factor model | 1017.68* | 1377 | 10394.68 | .07 | .77 |
| Seven-factor model | 9948.61* | 1370 | 8778.59 | .06 | .81 |
| *\* p<.01* | | | | | |

*Table 3*
Square multiple correlations and standardized factor loadings for the Confirmatory Factor Analysis of the HIT-Q

| SCALE | |
|---|---|
| *Self-Centred* | (.94) |
| Item 3 | .43 |
| Item 7 | .47 |
| Item 10 | .49 |
| Item 22 | .56 |
| Item 28 | .69 |
| Item 37 | .60 |
| Item 42 | .45 |
| Item 52 | .21 |
| Item 54 | .65 |
| *Blaming others* | (.99) |
| Item 6 | .28 |
| Item 11 | .53 |
| Item 21 | .58 |
| Item 25 | .54 |
| Item 26 | .49 |
| Item 36 | .56 |
| Item 39 | .69 |
| Item 44 | .66 |
| Item 46 | .52 |
| Item 50 | .65 |
| *Minimizing/Mislabelling* | (.99) |
| Item 5 | .43 |
| Item 12 | .58 |
| Item 14 | .49 |
| Item 17 | .66 |
| Item 19 | .57 |
| Item 30 | .65 |
| Item 33 | .56 |
| Item 40 | .61 |
| Item 47 | .59 |
| *Assuming the Worst* | (.98) |
| Item 2 | .47 |
| Item 8 | .41 |
| Item 15 | .51 |
| Item 18 | .53 |
| Item 23 | .41 |
| Item 29 | .39 |
| Item 32 | .59 |
| Item 35 | .68 |
| Item 43 | .74 |
| Item 49 | .45 |
| Item 53 | .68 |
| *Anomalous Response* | (.28) |
| Item 4 | .20 |
| Item 13 | .36 |
| Item 20 | .41 |
| Item 27 | .64 |
| Item 31 | .66 |
| Item 38 | .72 |
| Item 45 | .64 |
| Item 51 | .62 |
| *Positive Fillers* | (.19) |
| Item 1 | .17 |
| Item 9 | .35 |
| Item 16 | .46 |
| Item 24 | .59 |
| Item 34 | .60 |
| Item 41 | .70 |
| Item 48 | .65 |

*Table 4*
Descriptive statistics of the HIT-Q scales for the study of gender differences

| | Gender | N | M | SD | Student t-test | $\eta_p^2$ |
|---|---|---|---|---|---|---|
| Self-Centred | Male | 757 | 3.01 | .89 | 9.05*** | .05 |
| | Female | 733 | 2.61 | .77 | | |
| Blaming others | Male | 757 | 2.53 | .89 | 12.01*** | .08 |
| | Female | 733 | 2.01 | .76 | | |
| Minimizing/Mislabelling | Male | 757 | 2.50 | .93 | 9.37*** | .05 |
| | Female | 733 | 2.07 | .81 | | |
| Assuming the Worst | Male | 757 | 2.62 | .84 | 11.34*** | .07 |
| | Female | 733 | 2.14 | .77 | | |
| Anomalous responding | Male | 757 | 3.93 | .92 | 5.37*** | .01 |
| | Female | 733 | 3.67 | .95 | | |
| Positive fillers | Male | 757 | 5.31 | .68 | -7.23*** | .03 |
| | Female | 733 | 5.52 | .46 | | |
| Total HIT-Q | Male | 757 | 3.19 | .63 | 10.62*** | .07 |
| | Female | 733 | 2.85 | .58 | | |

*** $p<.001$

*Table 5*
Correlations among subscales of the Spanish Version of the HIT-Q

| Scale | 1 | 2 | 3 | 4 | 5 |
|---|---|---|---|---|---|
| 1. Self-Centred | | | | | |
| 2. Blaming others | .71*** | | | | |
| 3. Minimizing/Mislabelling | .74*** | .80*** | | | |
| 4. Assuming the Worst | .70*** | .82*** | .79*** | | |
| 5. Anomalous responding | .53*** | .45*** | .44*** | .47*** | |
| 6. Positive fllers | -.23*** | -.37*** | -.36*** | -.35*** | .02 |

*** $p<.001$

*Table 6*
Zero-order correlations between Reactive and Proactive Aggression (RPQ) and the HIT-Q

| HIT-Q scales | Reactive aggression | Proactive aggression | Total RPQ |
|---|---|---|---|
| Self-Centred | .52*** | .56*** | .60*** |
| Blaming others | .54*** | .60*** | .63*** |
| Minimizing/Mislabelling | .50*** | .58*** | .59*** |
| Assuming the Worst | .59*** | .63*** | .67*** |
| Anomalous responding | .50*** | .52*** | .56*** |
| Positive fillers | .-15*** | .-25*** | .-21*** |
| Total HIT | .63*** | .67*** | .72*** |

*** $p<.001$

*Reliability*

The internal consistency of the HIT-Q, estimated though the Cronbach's alpha coefficient, was .92 for the total score. Regarding

the cognitive distortions of the HIT-Q, internal consistency ranged from .75 to .81. Cronbach's alpha for Self-Centred was .75, for Blaming Others .81, for Minimizing/Mislabelling .81, and for Assuming the Worst .81. Finally, Cronbach's alpha for the AR subscale was .76, and for the PF subscale, it was .69.

## Discussion

The aim of this study was to examine a Spanish-language version of the How I Think Questionnaire (Barriga et al., 2001), evaluating its psychometric properties. The HIT-Q was translated and validated by investigating its factor structure, convergent validity, and reliability.

Confirmatory factor analysis (CFAs) provided information on the structure of the Spanish version of the HIT-Q. Our results showed that the original six-factor structure (four self-serving cognitive distortions plus one AR factor and one PF) is also justified for the Spanish version. The factor loadings of nearly all items were satisfactory, and fit indexes were similar to those of the North American version (Barriga & Gibbs, 1996; Barriga et al., 2001). Furthermore, these results are consistent with other studies in different populations of adolescent English-speaking Americans, Canadians and Dutch (Barriga et al., 2001; Nas et al., 2008; Plante et al., 2012; Wallinius, Johansson, Larden, & Dernevik, 2011).

The mean scores obtained in this study were also similar to those obtained in the original study of adolescent students (Barriga et al., 2001). The differences between males and females were statistically significant and in the expected direction: males scored higher than females on all self-serving cognitive distortions. These results are similar to the differences found in the study of Larden, Melin, Holst and Langstrom (2006). However, the differences obtained in the present study had a very small effect size, therefore, they are lacking in any practical applications. More research is needed on gender differences in self-serving cognitive distortions in adolescents, taking into account the moderator effect of age.

The correlation coefficients among the six subscales of the Spanish version of the HIT-Q were similar to those obtained by Barriga et al. (2001). The strongest correlations were found between Assuming the Worst and Blaming Others, and between Minimizing/Mislabelling and Blaming Others. Interestingly, the

PF subscale showed a significant and negative correlation with all the self-serving cognitive distortion subscales. Correlations among the self-serving cognitive distortion scales were high, indicating that these constructs are closely related. Other studies also have reported moderate to high correlations between the HIT-Q scales both in community samples of adolescents and young offenders (Nas et al., 2008).

Concerning reliability, these properties seem satisfactory. The levels of internal consistency for the total HIT-Q score and its subscales were satisfactory and similar to those reported in the original version (Barriga et al., 2001), supporting the reliability of the Spanish version of the HIT-Q.

Convergent validity was also satisfactory. The relationship between the self-serving cognitive distortion scales and reactive-proactive aggression was in all cases in the expected direction. Particularly, when the different types of self-serving cognitive distortions are examined, Assuming the Worst obtained the highest correlation both with RA and PA. Interestingly, the relationship found in this study between self-serving cognitive distortions and different measures of functional aggression is consistent with previous findings (Andreu & Peña, 2012; Barriga et al., 2000; Calvete & Orue, 2010; Koolen, Poorthuis, & van Aken, 2012).

Notwithstanding these satisfactory psychometric properties, this Spanish version of the HIT-Q presents a few limitations. A potential limitation of this study concerns the characteristics of the sample recruited, given that all the participants were students. In order to consolidate the instrument and generalize its use, it would be of interest to replicate the results of this research in other samples of adolescents with antisocial behaviour, delinquency, or psychopathological problems, especially, conduct disorders.

To sum up, after examining its psychometric properties, it can be concluded that the Spanish version of the HIT-Q is a reliable and valid measure of self-serving cognitive distortion in Spanish adolescents. Regarding practical considerations, this version of the Spanish HIT-Q could be useful for individual assessment, particularly when the possibility of adolescents committing aggressive acts is limited. In fact, this questionnaire could also lead to better planning of psychological interventions for Spanish-speaking adolescents in order to determine their self-serving cognitive style.

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