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ORIGINAL ARTICLE

Spanish Validation of the Autism Spectrum Quotient for Children (AQ-Child-SV)

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Abstract

Purpose Autism spectrum disorder (ASD) is a lifelong, heterogeneous neurodevelopmental condition characterized by difficulties in social communication and stereotyped patterns of behaviors and interests. The prevalence of ASD has increased in the last decades, and research has widened its study to the Broader Autism Phenotype (BAP). Therefore, it is important to develop effective screening tools to detect ASD and BAP in the general population. The Autism Spectrum Quotient, Children´s version (AQ-Child) is a 50-item parent-report questionnaire developed to assess autistic traits in children aged 4–11 years. The aim of this study was to translate and culturally adapt the AQ-Child to Spanish as part of a school-based screening program in Salamanca, Castile and León, Spain.

Methods The AQ-Child was translated, pilot-tested, and administered online through the Qualtrics platform of the University of Salamanca to a school population sample ($n=602$).

Results A total of 45 cases scored at or above the established cut-off point of 76 points on the Spanish version of the AQ-Child (AQ-Child-SV) and 18 scored between 70 and 75 points. The results showed a significant difference in AQ-Child-SV scores between children who received an ASD diagnosis and children with no suspicion of ASD in the general population. For the AQ-Child-SV sensitivity was 0.83 and the specificity was 0.96. Positive and negative predictive values were 0.55 and 0.99 respectively.

Conclusion The data from this study indicates that the Spanish version of the AQ-Child could be a reliable instrument for screening autism spectrum disorder and the BAP in school-age children.

Keywords Autism quotient · AQ · AQ-Child · AQ-Child-SV · Autism · Autism spectrum disorder · Cross-cultural adaptation · Translation · Spanish · Screening

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Introduction

Autism spectrum disorder (ASD) is an early onset, lifelong neurodevelopmental condition characterized by persistent deficits in communication and reciprocal social interaction across multiple contexts, and by repetitive and restrictive patterns of behaviors, interests, or activities (American Psychiatric Association, 2013). Considering autism as a spectrum implies recognizing that symptoms may vary from mild to severe along the two main dimensions of difficulty, and thus, cannot be bound by conventional diagnostic thresholds as they heterogeneously affect individuals' adaptive functioning in daily life activities, which suggests that these traits, in particular social and communication deficits, may exist in non-clinical forms within the general population (Ruzich et al., 2015). This is further supported by epidemiological evidence that indicates that autism phenotypes subtly blend with subclinical expressions within the general population, what is also known as the broader autism phenotype (BAP) (Abu-Akel et al., 2019; Austin, 2005; Baron-Cohen et al., 2001; Grove et al., 2015). Therefore, scientists have approached the study of autistic traits from a dimensional approach, acknowledging the well-documented presence of the BAP, the subclinical presentation of behaviors or traits that are qualitatively like the core traits of autism, in family members of autistic individuals such as parents and siblings (Dawson et al., 2007; Landry & Chouinard, 2016; Ruser et al., 2007). Furthermore, the BAP has been associated with difficulties in social relationships; indeed, several studies suggest a relationship between the BAP and an increased difficulty initiating and maintaining friendships in young adults (Jamil et al., 2017), increased internalizing and externalizing problems (Walton, 2016), and conduct problems in childhood (Petalas et al., 2012).

Due to autism heterogeneous presentation and variability in the intensity of symptoms, the identification and diagnosis of ASD can be a lengthy and stressful process for families of children with developmental difficulties and suspected autism (Bejarano-Martín et al., 2020; Lord et al., 2020; Magán-Maganto et al., 2017). In addition, the most affected cognitive and behavioral dimensions in autism are often associated with other psychopathological features that may vary in type and degree, further challenging the diagnosis (Bertelli et al., 2024; Mannion et al., 2014; Matson, Dempsey et al., 2009a, 2009b; Matson, Fodstad et al., 2009a, 2009b; McCauley et al., 2020). Research suggests that knowing parental concerns about their child's development is essential to autism diagnosis, and although parents are frequently the first to detect the early signs and report their worries to healthcare providers, autism diagnosis can be delayed by nearly three years in countries where resources and trained professionals are available (Hyman et al., 2020; Pfeiffer et al., 2021; Zuckerman et al., 2015). Hence, understanding the structure of autism symptoms from a dimensional perspective is important for improving detection and diagnostic procedures as it considers the continuous distribution of autistic traits and its fluctuating behavioral symptoms as interrelated constructs that vary in intensity and expression (Rosen et al., 2021).

One of the most widely used open-access instruments that quantitatively measures autistic traits is the Autism Spectrum Quotient (AQ) (Baron-Cohen et al., 2001). The AQ is a 50-item self-report questionnaire written at the reading level of a 10-year-old without an intellectual disability and is designed to be completed by adults with an average IQ who can read and comprehend material at this level (Wheelwright et al., 2010). The instrument was developed to address the need to have a brief, self-administered instrument for measuring autistic traits in adults; hence, it was designed to identify the degree to which any individual adult with typical IQ may have autistic traits or the BAP (Baron-Cohen et al., 2001). Items were selected from the domains in the autism "triad" and from known areas of difficulty in autism, and multiple versions of the questionnaire were pilot-tested on adults with autism and high-functioning autism (HFA) and age-matched controls (Baron-Cohen et al., 2001). The AQ demonstrated autism screening efficacy with high inter-rater and test-retest reliability values, and individuals with an ASD diagnosis score significantly higher than non-autistic controls (Baron-Cohen et al., 2001). Also, the instrument has been used in Japanese, Korean, Italian, Australian, and Dutch samples (Hoekstra et al., 2007; Ko et al., 2018; Ruta et al., 2012; Wakabayashi, Baron-Cohen, Wheelwright et al., 2006a, 2006b), and like the original English version, the autism group scores were significantly higher than the non-autistic group. A 28-item short version of the AQ, which proved to be a useful alternative to the 50-item version, has also been studied in a Dutch and Spanish sample showing similar results (Hoekstra et al., 2011; Lugo-Marín et al., 2019). These findings adhere to the original outcomes suggesting that the tool has cross-cultural discriminative validity. Although it was originally intended for adults, the AQ currently has adolescent (12 to 16 years old) and child (4 to 11 years old) versions available, which were designed as parent-report to improve accuracy. The AQ-adolescent version retained the same items and structure as the original AQ and it revealed comparable results to the ones found in the adult version, autistic individuals scoring significantly higher than non-autistic controls and showing reasonable face and construct validity (Baron-Cohen et al., 2006).

The Autism-Spectrum Quotient-Children's Version (AQ-Child) (Auyeung et al., 2008) is an adaptation of the previous versions where items that were not age-appropriate

were revised to be more suitable for children. The 50-item parent-report questionnaire was developed to assess autistic traits in children aged 4–11 years. The items in the AQ-Child were designed to closely mirror those in the AQ and AQ-Adolescent versions and all questions aimed at the same behavioral domains. The questionnaire consists of a series of descriptive statements designed to assess five domains associated with autism and the BAP, each represented by 10 items: social skills (items 1, 11, 13, 15, 22, 36, 44, 45, 47, 48), attention switching (items 2, 4, 10, 16, 25, 32, 34, 37, 43, 46), attention to detail (items 5, 6, 9, 12, 19, 23, 28, 29, 30, 49), communication (items 7, 17, 18, 26, 27, 31, 33, 35, 38, 39), and imagination (items 3, 8, 14, 20, 21, 24, 40, 41, 42, 50). On the AQ-Child the response scale is treated as a 4-point Likert scale and parents rate to what degree they agree or disagree with the statements about their child (0 representing definitely agree; 1 slightly agree; 2 slightly disagree; and 3 definitely disagree) (Auyeung et al., 2008). This scaled format, retained in other international adaptations, was chosen because it captures not only the presence of behaviors but also the degree to which they are observed, thereby reflecting the dimensional nature of autistic traits (Auyeung et al., 2008). Items were reverse scored as necessary and total scores range from 0 to150 points, where a score of 0 indicates no autistic traits and a total score of 150 suggests full endorsement of all autistic behaviors (Auyeung et al., 2008).

Even though other autism screening questionnaires for school-age children are available in Spanish, these instruments are not readily accessible, as their use often requires purchase or licensing. For instance, the Social Communication Questionnaire (SCQ) (Rutter et al., 2003) and the Social Responsiveness Scale (SRS) (Constantino & Gruber, 2012)—both brief, parent-report tools designed to assess social communication skills and social functioning difficulties associated with autism—are available in Spanish; however, some limitations of these measures are that published validation studies of their Spanish versions remain limited, and these instruments are not open-access. Consequently, having the AQ-Child available in Spanish is crucial, as it provides an accessible, reliable autism screening option for Spanish-speaking populations and could improve early identification and support for individuals with autism. Nonetheless, it must be noted that the AQ-Child has some limitations that should be considered. The questionnaire is designed as a parent-report measure, making it vulnerable to informant bias. Moreover, it was not developed as an ASD diagnostic tool; thus, using it for that purpose may result in false positives among individuals with conditions such as anxiety or attention-deficit/hyperactivity disorder (ADHD) (Auyeung et al., 2008; Ruzich et al., 2015) as well as false negatives, particularly among women who camouflage their autistic traits (Hull et al., 2020). A final consideration is that shorter, albeit effective, adaptations of the questionnaire often sacrifice reliability and nuance (Allison et al., 2012; Hoekstra et al., 2011). Nevertheless, the AQ remains one of the most widely used instruments for identifying autistic traits. Its strengths lie in its accessibility, ease of administration, and usefulness as a first-line screening tool in both research and clinical settings. For instance, the AQ-10 is recommended by the National Institute for Health and Care Excellence (NICE) as a possible screening tool for adults (NICE, 2021), and the instrument has been widely applied in large-scale studies to dimensionally quantify autistic traits in the general population (Ruzich et al., 2015).

It is worth noting that to date, there is no Spanish validation of the AQ-Child. We thus consider necessary to make a Spanish version of the AQ for children available, as it would also be very useful for studying the BAP in the Spanish-speaking general population worldwide and would improve the identification of school-age children who may be at higher risk of experiencing socialization and mental health difficulties due to having autistic traits. Similarly, the Spanish version of the AQ-child could be a valuable resource for professionals and clinicians to identify autistic traits in patients with neurodevelopmental or psychiatric conditions other than ASD.

In view of the necessity to have reliable screening instruments that can quantitatively measure the different dimensions of autism in the Spanish-speaking population, and advance ASD and BAP detection in the general population, the aim of this study is to develop a Spanish adaptation of the 50-item version of the AQ-child (AQ-Child-SV) and assess its capacity to detect autistic traits in school-age children aged 4 to 11 years.

Methods

Participants

Participants were children aged 4 to 11 years (M=7.2 SD=2.2) at the time of questionnaire completion who resided in the Castile and León region of Spain, spoke Spanish as their first language, and had a verbal and/or non-verbal IQ of 70 or higher. Children were excluded if they were younger than 4 or older than 11 years, had an IQ below 70, exhibited significant developmental challenges, or did not speak Spanish as their first language. The sample was drawn from elementary and primary schools in the Salamanca Province, Castile and León, Spain. Twenty-one schools were randomly selected and invited to participate in the study. The school selection criteria were: (a) schools located in urban, suburban, and rural areas; (b) private and

public centers; and (c) located in neighborhoods of diverse socioeconomic status (SES): high-, medium-, and low-income (see below).

Procedures

The questionnaires were distributed in two formats: paper-based, used in schools with limited access to internet and technology and sent out to families by the school principal, and in online form, which was sent out by school principles to families via institutional email using the secured data collection platform Qualtrics (Qualtrics, 2005). Informed consent was obtained from all families before accessing the AQ-Child-SV, which was completed by the parents or legal guardians of participating children. If five or fewer items were unanswered, a follow-up call was conducted to retrieve the answers; all questionnaires with more than five blank items after the follow-up call were considered incomplete ($n=31$) and were excluded from the analyses.

Instrument Translation

The Spanish translation was conducted by a team of qualified clinical professionals. The translation prioritized conceptual and cross-cultural aspects rather than linguistic, literal equivalence, as proposed by the World Health Organization (WHO) translation and adaptation of instrument guidelines (World Health Organization, 2017) and considering critical aspects to translate and culturally adapt parent-report developmental screening and assessment tools retaining reliability and validity in the new target population (DuBay et al., 2022; DuBay & Watson, 2019). To achieve a semantic equivalent instrument in the target culture and country, Spain, the procedure was as follows: two forward translations were conducted by the first author and a clinical professional fluent in English and Spanish, a panel of psychologists and ASD experts reviewed the translations, followed by item reconciliation, back translation by a native English speaker with no previous knowledge of the tool, and finally, a pre-testing and cognitive interview pilot study with 10 Spanish-speaking families (Auyeung et al., 2008).

Autism-Spectrum Quotient for Children-Spanish Version (AQ-Child-SV)

Children were screened using the Spanish translated version of the AQ-Child. The Autism Spectrum Quotient for Children-Spanish Version (AQ-Child-SV) maintained the 50-item format, and domain scores were rated based on the original 4-point Likert scale ranging from 0 (definitely agree), 1 (slightly agree), 2 (slightly disagree), and 3 (definitely disagree). As in the original study, items were reverse scored as necessary and total scores range from 0 to 150 points. The original cut-off point of 76 points was adopted in this study.

Psychological Assessment

Psychological evaluations were performed at the Comprehensive Autism Care Center at University of Salamanca. Families of children who scored 76 points or higher on the AQ-Child-SV were contacted by a trained clinical psychologist, who invited them to attend a free evaluation. During this call, the parent or primary caregiver was informed of the assessment protocol and had the opportunity to share concerns about their child and ask questions about the evaluation. To identify potential false-negative cases, participants who scored between 70 and 75 points were also invited to a free psychological evaluation.

Experienced clinical psychologists specialized and certified in the assessment and diagnosis of ASD conducted the evaluations using gold-standard instruments. They scored and interpreted all results, following a standardized protocol to appraise ASD in young children. Considering the cognitive heterogeneity of the sample, verbal and nonverbal intelligence tests were used to assess all participants, including minimally verbal children (see below).

Instruments

Social Communication Questionnaire-Lifetime (SCQ-LF)

The Social Communication Questionnaire-Lifetime Form (SCQ-LF) (Rutter et al., 2019) is a 40-item screening measure that was developed to identify symptomology associated with autism spectrum disorder, which can be completed by a parent or primary caregiver of children over 4 years 0 months with a mental age that exceeds 2 years 0 months. The questionnaire takes a yes/no response format and can be completed in approximately 10 min. The standard cut-off score is 15 points, which indicates a positive screen for ASD. It has two forms: the lifetime form, which focuses on behavior throughout development, and the current form, which focuses on behavior during the most recent three months. The SCQ-LF was completed by parents and/or caregivers of children who scored 76 points or higher on the AQ-Child-SV during the psychological assessment.

Weschler Intelligence Scale for Children-V (WISC-V)

The WISC-V (Wechsler, 2014) is an individually administered comprehensive clinical instrument for assessing the cognitive processes of children aged 6 years 0 months through 16 years 11 months (6:0–16:11). The WISC-V

provides subtest and composite scores that represent intellectual functioning in specific cognitive domains (verbal comprehension, visual special, working memory, fluid reasoning, and processing speed) as well as a composite score that represents general intellectual ability.

Leiter International Performance Scale-Revised (Leiter-R)

The Leiter-R (Roid & Miller, 1997) is a nonverbal measure of intellectual functioning designed for individuals between the ages of 2 years 0 months and 20 years 11 months. The tasks on the Leiter-R are meant to be self-explanatory and require minimal examiner instructions. The test includes both visualization and reasoning (VR) and attention and memory (AM) batteries, comprising 10 subtests each, although not all subtests are administered to all age groups. The VR and AM batteries may be administered separately or together, depending on the clinical need. The VR battery was used in this study to obtain a brief intellectual quotient (IQ) for individuals with linguistic impairments.

Autism Diagnostic Observation Schedule-2 (ADOS-2)

The ADOS-2 (Lord et al., 2015) is an observational instrument considered the "gold-standard" for the appraisal of behaviors associated with the autism spectrum disorder. It is a standardized, semi-structured assessment of communication, social interaction, play, and restricted and repetitive behaviors. The scale consists of five modules (T, 1, 2, 3, and 4), each created to be used in function of the individual's chronological age and language level. Participants who attended the psychological evaluation were assessed using Modules 2 and 3. The algorithm for modules 2 and 3 is divided into a communication and reciprocal social interaction score, a restricted or repetitive behaviors or interests score, and a total score. The ADOS-2 algorithm scores can indicate three outcomes: autism, autism spectrum, and non-autism.

Vineland Adaptive Behavior Scales 3 (VABS-3)

The VABS-3 (Sparrow et al., 2016) is an individually administered measure of adaptive behavior that is widely used to assess individuals with intellectual, developmental, and other disabilities. There are three administration formats that help describe an individual's adaptive profile from a different point of view: (1) The Interview Form (for ages 0 months to 90+years), which uses a semi-structured interview technique to elicit information about the examinee's adaptive functioning from a parent or caregiver; (2) The Parent/Caregiver Form (for ages 0 months to 90+years), which examines home and family life behaviors using a questionnaire format completed by a parent or primary caregiver; and (3) The Teacher Form (for ages 3–21 years), which collects a teacher's experiences with adaptive behaviors in school, preschool, or in a structured day-care setting. Depending on the purpose of the assessment, one may choose either a longer, comprehensive version or a brief domain-level version. The Parent/Caregiver Comprehensive Form was used in this study.

Data Analysis

Statistical analyses were conducted using Statistical Package for the Social Sciences (SPSS Statistics, version 28.0) software for Mac (IBM Corp., 2021). Item analysis was performed to examine the scoring patterns for each item. Cronbach's α coefficients were calculated to assess the internal consistency of the measure as a whole and the five AQ-Child-SV subscales. Cronbach's α internal consistency measures are considered minimally acceptable when $\alpha = 0.65$, satisfactory when $\alpha = 0.70$, and optimal when $\alpha = 0.80$ (Nunnally & Bernstein, 2010). Convergent validity was assessed using Spearman's correlations between AQ-Child-SV and the Social Communication Questionnaire (SCQ) total score. Values of sensitivity, specificity, predictive values, and likelihood ratios were calculated for the sample. An independent-samples *t*-test was performed to determine if there were any AQ-Child-SV score differences between males and females.

Results

Sample Demographics

Table 1 presents the sociodemographic data of participants. Families participated in a school-based study assessing school-age children's social communication skills. A total of 270 (44.9%) girls and 332 (55.1%) boys participated in the study. Demographic information of the person who completed the questionnaire was collected. The results indicate that 82.6% of questionnaires were completed by the child's mother, 13.4% by the child's father, and 2.8% by both parents. Questionnaires could also be completed by a grandparent (0.64%) or by a legal guardian (0.32%). Parental age at the time of childbirth was also assessed: maternal age was 33.1 years, and paternal age was 35.6 years at the time of questionnaire completion. Also, 52.4% of mothers and 37.3% of fathers had completed university studies.

Table 1 Participants sociodemographic characteristics

	N	%	Mean (SD)
Child´s sex assigned at birth			
Male	353	56.6	
Female	217	43.4	
Child's age at the time of survey (years)			7.23 (2.27)
Person who completed questionnaire			
Mother	516	82.6	
Father	84	13.4	
Both parents	18	2.8	
Grandparent	4	0.6	
Legal guardian	2	0.3	
Mother's age at the time of childbirth (years)			33.40 (4.60)
Father's age at the time of childbirth (years)			35.69 (5.56)
Mothers educational level			
Compulsory secondary education	110	17.2	
High school	48	7.5	
Bachelor's degree	335	52.4	
Vocational training	114	17.8	
Postgraduate degree	32	5.0	
Fathers educational level			
Compulsory secondary education	130	21.2	
High school	70	11.4	
Bachelor's degree	229	37.3	
Vocational training	123	20.0	
Postgraduate degree	62	10.1	
Family place of residence (geographical location)			
Urban	254	42.2	
Suburban	228	37.9	
Rural	120	19.9	

Screening

In total, 633 AQ-Child-SV questionnaires were retrieved. A total of 602 questionnaires were successfully completed in participating schools. Forty-five participants scored 76 points or higher (7.5%) and 18 scored between 70 and 75 points on the questionnaire (3.0%). Sixty-three children were invited to the comprehensive psychological evaluation, including those who scored between 70 and 75 points: 13 received a new ASD diagnosis, 11 had a previous ASD diagnosis that was confirmed by the psychological evaluation, one was identified to have the BAP, nine had a previous diagnosis of a neurodevelopmental condition such as language disorder (LD) or attention deficit and hyperactivity disorder (ADHD), 24 children were identified as non-ASD, and five families declined to attend the psychological evaluation.

Item Analysis

Item analysis was conducted to examine the scoring patterns for each item (see Table 2). The inspection of these scores showed that all 50 items had a good item difficulty index. Furthermore, to assess the differences in scoring patterns, and after having assessed all children who presented autistic-like behaviors and whose families accepted to attend the psychological evaluation, the sample was divided into two groups: participants who scored below the adopted cut-off point and did not receive an ASD diagnosis (non-ASD group) and participants who received or had a previous ASD diagnosis (ASD group). Closer inspection suggests that for the non-ASD group item 44 ("S/he enjoys social occasions") (0.21) may be slightly difficult to understand. In our study the non-ASD group scored higher (by checking "definitely disagree") than the ASD group on items 30 ("S/he doesn't usually notice small changes in a situation, or a person's appearance") and item 43 ("S/he likes to plan any activities s/he participates in carefully") (see Table 2). On all other items, scores differed between the non-ASD and ASD groups, with autistic children scoring higher than their non-autistic peers. Table 3 shows participants' answer distribution for all 50 items.

Shapiro-Wilk test was performed to evaluate whether the AQ-Child-SV mean (total) score for both the non-ASD and the ASD groups had a normal distribution. For the non-ASD group, the distribution of mean scores was not normally distributed ($W=0.985$, $df=578$, $p<0.01$) whereas for the ASD group the mean scores were normally distributed ($W=0.985$, $df=23$, $p>0.05$).

Internal Consistency

To examine the AQ-Child-SV internal consistency Cronbach's α coefficients were calculated. As shown in Table 4, Cronbach's α coefficients were all moderate to high. For the entire measure, α coefficient was optimal (α = 0.88), and the internal consistency of the five AQ-Child-SV subscales were satisfactory (social skills = 0.73; attention switching = 0.66; imagination = 0.63; attention to detail = 0.74; communication = 0.79).

Convergent Validity

As suggested by the UK AQ-Child study (Auyeung et al., 2008), we investigated the correlation between the AQ-Child-SV and an instrument that also measures the same constructs. A non-parametric analysis was conducted to assess convergent validity. Spearman's correlation coefficient was performed to evaluate the relationship between AQ-Child-SV and SCQ mean scores of the assessed children. There

Table 2 Item analysis: mean scores for each item by group (non-ASD and ASD)

		AQ-Child-SV Non-ASD ($n=578$)		AQ-Child-SV ASD ($n=24$)	
Item	Sub-domain	M	SD	M	SD
AQ1	S	0.78	0.85	1.38	0.87
AQ2	A	1.66	0.95	2.25	0.84
AQ3	I	0.47	0.79	1.13	1.15
AQ4	A	1.02	1.07	2.25	0.89
AQ5	D	0.49	0.87	1.25	1.11
AQ6	D	1.12	1.07	1.67	1.16
AQ7	C	0.39	0.77	1.71	1.04
AQ8	I	0.44	0.72	1.25	0.94
AQ9	D	1.05	1.01	1.38	1.17
AQ10	A	0.67	0.90	2.17	1.09
AQ11	S	0.50	0.80	2.13	0.85
AQ12	D	2.04	0.85	2.29	0.85
AQ13	S	0.36	0.67	1.29	1.19
AQ14	I	0.70	0.85	1.46	1.35
AQ15	S	1.03	0.85	1.50	1.02
AQ16	A	1.53	0.98	2.29	0.80
AQ17	C	0.68	0.84	1.96	0.90
AQ18	C	1.04	0.96	1.92	1.10
AQ19	D	1.41	1.03	2.00	1.16
AQ20	I	0.71	0.95	1.33	1.16
AQ21	I	0.72	0.92	1.00	1.02
AQ22	S	0.64	0.95	2.17	1.04
AQ23	D	1.05	1.08	1.50	1.25
AQ24	I	0.71	0.91	1.25	1.07
AQ25	A	1.01	1.03	1.75	1.07
AQ26	C	0.38	0.75	2.13	0.79
AQ27	C	1.31	0.98	2.54	0.65
AQ28	D	1.49	0.85	2.21	0.77
AQ29	D	1.79	1.05	1.83	0.91
AQ30	D	2.29	0.87	2.08	1.06
AQ31	C	0.99	0.99	2.00	0.97
AQ32	A	0.53	0.81	1.79	0.97
AQ33	C	0.78	0.95	1.96	0.99
AQ34	A	0.36	0.66	1.29	1.08
AQ35	C	0.93	0.90	1.92	0.92
AQ36	S	0.81	0.88	1.50	1.06
AQ37	A	0.81	0.89	1.54	0.83
AQ38	C	0.41	0.75	2.13	0.90
AQ39	C	1.01	1.00	1.54	1.17
AQ40	I	0.49	0.83	1.75	1.18
AQ41	I	1.40	1.12	2.08	0.88
AQ42	I	0.89	0.87	1.75	1.03
AQ43	A	1.57	1.03	1.50	1.06
AQ44	S	0.21	0.47	1.00	0.83
AQ45	S	1.16	0.93	2.00	1.02
AQ46	A	1.59	1.05	2.38	0.92
AQ47	S	0.58	0.70	1.54	0.93
AQ48	S	0.87	0.88	1.92	1.01
AQ49	D	1.62	1.08	1.67	1.16
AQ50	I	0.45	0.79	1.96	1.04

S Social skills, *A* Attention switching, *I* Imagination, *D* Attention to detail, *C* Communication, *M* Mean, *SD* Standard deviation

was a strong, positive correlation between AQ-Child-SV and SCQ overall score (r_s (47) = 0.575, $p < 0.01$).

As indicated on Table 5, the AQ-Child-SV estimated psychometric properties for detecting autistic traits and children with a suspicion of ASD and/or BAP showed a sensitivity of 0.83; a specificity of 0.96; positive predictive value (PPV) of 0.55; and negative predictive value (NPV) of 0.99.

Independent Samples T-Test

An independent-samples *t*-test was conducted to determine whether there was a difference in AQ-Child-SV mean score between males and females. The results revealed a statistically significant difference in AQ-Child-SV total score (t (600) = 5.295, $p = 0.01$), males ($M = 51.76$, $SD = 18.67$) scoring higher than females ($M = 44.64$, $SD = 14.30$). The magnitude of the differences in the means (mean difference = 7.11, 95% *CI* [4.48, 9.76]) was statistically significant. The effect size, as measured by Cohen's d ($d = 0.422$) indicates a medium effect.

Discussion

This aim of this study was to translate and validate the AQ-Child into Spanish. To achieve this, the questionnaire translation focused on conceptual and cross-cultural aspects rather than on linguistic, literal equivalence. A total of 602 questionnaires were successfully completed. Forty-five participants scored 76 points or higher on the AQ-Child-SV questionnaire and thirty-nine children were assessed: 24 were diagnosed with ASD, one was identified with the BAP, nine with a neurodevelopmental disorder, such as language disorder or ADHD, and six with non-ASD. As in previous studies, (Ruta et al., 2012; Stewart & Austin, 2009; Wakabayashi, Baron-Cohen, Wheelwright et al., 2006a, 2006b; Wakabayashi et al., 2007) the Spanish version of the AQ-Child showed high α coefficients for the measure as whole and satisfactory coefficients for each of the five sub-scales (communication, attention to detail, attention switching, social skills and imagination) (Auyeung et al., 2008; Baron-Cohen et al., 2006; Hoekstra et al., 2008; Wakabayashi, Baron-Cohen, Wheelwright et al., 2006a, 2006b).

In contrast to the results of the original AQ-Child study (Auyeung et al., 2008), where controls scored higher than ASD participants on items 29 ("S/he is not very good at remembering phone numbers."), 30 ("S/he doesn't usually notice small changes in a situation, or a person's appearance."), and 49 ("S/he is not very good at remembering people's date of birth."), in our study the non-ASD group scored higher only on item 30 (see Table 2). This result is in line with the findings of the UK and Japan AQ studies

Table 3 Item analysis: percentage of participants scoring on each item

Item	Strongly agree (%)	Slightly agree (%)	Slightly disagree (%)	Strongly disagree (%)	Mean	Standard Deviation
1. S/he prefers to do things with others rather than on her/his own.	263 (43.7)	224 (37.2)	83 (13.8)	32 (5.3)	0.81	0.86
2. S/he prefers to do things the same way over and over again.	78 (13.0)	167 (27.7)	227 (37.7)	130 (21.6)	1.68	0.95
3. If s/he tries to imagine something, s/he finds it very easy to create a picture in her/his mind.	398 (66.1)	137 (22.8)	37 (6.1)	30 (5.0)	0.50	0.82
4. S/he frequently gets so strongly absorbed in one thing that s/he loses sight of other things.	249 (41.4)	151 (25.1)	111 (18.4)	91 (15.1)	1.07	1.09
5. S/he often notices small sounds when others do not.	421 (69.9)	79 (13.1)	69 (11.5)	33 (5.5)	0.52	0.89
6. S/he usually notices house numbers or similar strings of information.	226 (37.5)	159 (26.4)	126 (20.9)	91 (15.1)	1.14	1.08
7. S/he has difficulty understanding rules for polite behavior.	443 (73.6)	78 (13.0)	55 (9.1)	26 (4.3)	0.44	0.83
8. When s/he is reading a story, s/he can easily imagine what the characters might look like.	394 (65.4)	152 (25.2)	36 (6.0)	20 (3.3)	0.47	0.75
9. S/he is fascinated by dates.	223 (37.0)	189 (31.4)	118 (19.6)	72 (12.0)	1.06	1.02
10. In a social group, s/he can easily keep track of several different people's conversations.	334 (55.5)	145 (24.1)	77 (12.8)	46 (7.6)	0.73	0.95
11. S/he finds social situations easy.	391 (65.0)	108 (17.9)	79 (13.1)	24 (4.0)	0.56	0.86
12. S/he tends to notice details that others do not.	33 (5.5)	107 (17.8)	256 (42.5)	206 (34.2)	2.05	0.85
13. S/he would rather go to a library than a birthday party.	430 (71.4)	124 (20.6)	29 (4.8)	19 (3.2)	0.40	0.72
14. S/he finds making up stories easy.	311 (51.7)	175 (29.1)	85 (14.1)	31 (5.1)	0.73	0.88
15. S/he is drawn more strongly to people than to things.	177 (2947)	256 (42.5)	134 (22.3)	35 (5.8)	1.04	0.86
16. S/he tends to have very strong interests, which s/he gets upset about if s/he cannot pursue.	98 (16.3)	191 (31.7)	191 (31.7)	122 (20.3)	1.56	0.98
17. S/he enjoys social chit-chat.	301 (50.0)	195 (32.4)	72 (12.0)	34 (5.6)	0.73	0.88
18. When s/he talks, it is not always easy for others to get a word in edgeways.	211 (35.0)	197 (32.7)	133 (22.1)	61 (10.1)	1.07	0.98
19. S/he is fascinated by numbers.	137 (23.8)	179 (29.7)	172 (28.6)	114 (18.9)	1.44	1.04
20. When s/he is reading a story, s/he finds it difficult to work out the characters' intentions or feelings.	339 (56.3)	135 (22.4)	79 (13.1)	49 (8.1)	0.73	0.97
21. S/he does not particularly enjoy fictional stories.	320 (53.2)	162 (26.9)	81 (13.5)	39 (6.5)	0.73	0.92
22. S/he finds it hard to make new friends.	366 (60.8)	105 (17.4)	76 (12.6)	55 (9.1)	0.70	1.00
23. S/he notices patterns in things all the time.	246 (40.9)	160 (26.6)	104 (17.3)	92 (15.3)	1.07	1.09
24. S/he would rather go to the cinema than a museum.	322 (53.5)	158 (26.2)	83 (13.8)	39 (6.5)	0.73	0.92
25. It does not upset him/her if his/her daily routine is disturbed.	247 (41.0)	155 (25.7)	128 (21.3)	72 (12.0)	1.04	1.04
26. S/he does not know how to keep a conversation going with her/his peers.	442 (73.4)	76 (12.6)	60 (10.0)	24 (4.0)	0.45	0.82
27. S/he finds it easy to "read between the lines" when someone is talking to her/him.	133 (22.1)	216 (35.9)	156 (25.9)	97 (16.1)	1.36	0.99
28. S/he usually concentrates more on the whole picture, rather than the small details.	73 (12.1)	220 (36.5)	232 (38.5)	77 (12.8)	1.52	0.86
29. S/he is not very good at remembering phone numbers.	91 (15.1)	134 (22.3)	187 (31.1)	190 (31.6)	1.79	1.04
30. S/he does not usually notice small changes in a situation, or a person's appearance.	33 (5.5)	73 (12.1)	190 (31.6)	306 (50.8)	2.28	0.87
31. S/he knows how to tell if someone listening to him/her is getting bored.	231 (38.4)	188 (31.2)	114 (18.9)	69 (11.5)	1.03	1.01
32. S/he finds it easy to go back and forth between different activities.	368 (61.1)	147 (24.4)	57 (9.5)	30 (5.0)	0.58	0.85
33. When s/he talks on the phone, s/he is not sure when it is her/his turn to speak.	307 (51.0)	142 (23.6)	106 (17.6)	47 (7.8)	0.82	0.98
34. S/he enjoys doing things spontaneously.	429 (71.3)	123 (20.4)	35 (5.8)	15 (2.5)	0.40	0.71
35. S/he is often the last to understand the point of a joke.	215 (35.7)	237 (39.4)	101 (16.8)	49 (8.1)	0.97	0.92
36. S/he finds it easy to work out what someone is thinking or feeling just by looking at their face.	259 (43.0)	228 (37.9)	71 (11.8)	44 (7.3)	0.83	0.90

Table 3 (continued)

Item	Strongly agree (%)	Slightly agree (%)	Slightly disagree (%)	Strongly disagree (%)	Mean	Standard Deviation
37. If there is an interruption, s/he can switch back to what s/he was doing very quickly.	270 (44.9)	188 (31.2)	115 (19.1)	29 (4.8)	0.84	0.89
38. S/he is good at social chit-chat.	417 (69.3)	105 (17.4)	55 (9.1)	25 (4.2)	0.48	0.82
39. People often tell her/him that s/he keeps going on and on about the same thing.	238 (39.5)	176 (29.2)	121 (20.1)	67 (11.1)	1.03	1.02
40. When s/he was in preschool, s/he used to enjoy playing games involving pretending with other children.	403 (66.9)	110 (18.3)	54 (9.0)	35 (5.8)	0.54	0.88
41. S/he likes to collect information about categories of things (e.g., types of car, types of bird, types of train, types of plant, etc.).	165 (27.4)	153 (25.4)	145 (24.1)	139 (23.1)	1.43	1.12
42. S/he finds it difficult to imagine what it would be like to be someone else.	227 (37.7)	240 (39.9)	93 (15.4)	42 (7.0)	0.92	0.89
43. S/he likes to plan any activities s/he participates in carefully.	116 (19.3)	165 (27.4)	187 (31.1)	134 (22.3)	1.56	1.03
44. S/he enjoys social occasions.	483 (80.2)	97 (16.1)	20 (3.3)	2 (0.3)	0.24	0.51
45. S/he finds it difficult to work out people's intentions.	170 (28.2)	199 (33.1)	177 (29.4)	56 (9.3)	1.20	0.95
46. New situations make him/her anxious.	121 (20.1)	132 (21.9)	204 (33.9)	145 (24.1)	1.62	1.05
47. S/he enjoys meeting new people.	312 (51.8)	220 (36.5)	58 (9.6)	12 (2.0)	0.62	0.74
48. S/he is good at taking care not to hurt other people's feelings.	241 (40.0)	217 (36.0)	103 (17.1)	41 (6.8)	0.91	0.91
49. S/he is not very good at remembering people's date of birth.	126 (20.9)	133 (22.1)	185 (30.7)	158 (26.2)	1.62	1.08
50. S/he finds it very easy to play games with children that involve pretending.	408 (67.8)	114 (18.9)	48 (8.0)	32 (5.3)	0.51	0.85

Weighted mean = 55.21/50 = 1.10.

Table 4 AQ-Child-SV internal consistency

Estimate	Cronbach's α	Mean	SD[1]
Measure as a whole			
50- item	0.871	48.56	17.20
47-item	0.884	42.87	17.29
Subscales			
Social skills	0.739	7.31	4.62
Attention switching	0.663	11.08	4.81
Imagination	0.632	7.29	4.37
Attention to detail	0.747	14.50	5.47
Communication	0.790	8.39	5.48

[1]*SD* Standard deviation

Table 5 Psychometric properties of the AQ-Child-SV

	Estimated value	Confidence Interval	
		Lower limit	Upper limit
Sensitivity	0.83	0.64	0.93
Specificity	0.96	0.94	0.97
PPV	0.55	0.40	0.70
NPV	0.99	0.97	0.99
Likelihood ratio + [a]	23.83	15.05	37.72
Likelihood ratio- [a]	0.17	0.07	0.38

[a] Conventional

(Baron-Cohen et al., 2001; Wakabayashi, Baron-Cohen, Wheelwright et al., 2006a, 2006b) and the UK AQ-Adolescent study (Baron-Cohen et al., 2006) where controls scored higher on items 23, 29, and 30 but not on item 49. Item 30 focuses on 'attention to detail' and considering that in previous studies non-autistic individuals also scored higher than autistic individuals on item 30 (Auyeung et al., 2008; Baron-Cohen et al., 2001; Lai et al., 2013; Wakabayashi, Baron-Cohen, Wheelwright et al., 2006a, 2006b), this suggests that this item might not effectively discriminate those with the condition from non-autistic individuals. Future research should further study this finding in more depth. On all other items, scores differed between the non-ASD and ASD groups, as autistic children scored higher than non-autistic children. These results demonstrate that the AQ-Child-SV has good construct validity as those with a diagnosis scored significantly higher than those without a diagnosis, supporting the questionnaire's ability to discriminate between children exhibiting autism-related behavioral traits and those without behavioral difficulties.

To our knowledge, this is the first AQ-Child adaptation study that has assessed the correlation between the instrument and a related measure, such as the SCQ. The AQ-Child-SV demonstrated good convergent validity with the SCQ, suggesting that the questionnaire effectively measures autistic traits in children aged 4 to 11 years. Although one of the challenges in detecting autism is differentiating the clinical significance of autistic traits in the general population from the traits of individuals with ASD (Baron-Cohen et al., 2006; Ruta et al., 2012; Wakabayashi, Baron-Cohen,

Wheelwright et al., 2006a, 2006b), our results, consistent with previous findings, indicate that the AQ-Child-SV can effectively measure and differentiate autistic traits similarly in both non-autistic and autistic individuals, supporting the existence of a broader autism phenotype that is distributed in the general population, which does not reach the level of clinical significance required for an ASD diagnosis (Constantino & Charman, 2016; Constantino & Todd, 2003; Ho A. and Todd, 2005; Wakabayashi et al., 2006a, 2006b). Therefore, we consider that the Spanish version of the AQ-Child could be an effective and reliable instrument for screening autistic traits in school-age children who may have gone undetected by early autism detection programs.

Furthermore, this study has reported on the psychometric properties of the AQ-Child-SV, the sensitivity, specificity, PPV and NPV of the instrument in a community-based screening, which has been suggested in previous AQ studies (Baron-Cohen et al., 2006). Moreover, our results were like those observed in the UK and Japan (Baron-Cohen et al., 2001, 2006; Wakabayashi, Baron-Cohen, Wheelwright et al., 2006a, 2006b), revealing scoring differences in AQ-Child-SV total score between boys and girls, boys scoring higher than girls. This is the first community-based AQ-Child screening, using the Spanish validation of the instrument. Future research with the AQ-Child-SV should further investigate whether the Spanish version can effectively discriminate the presence of ASD traits in a clinical sample.

Although the results obtained in the present study are consistent with the findings reported in adaptations of the AQ-Child in other cultural contexts, such as the United Kingdom, Japan, the Netherlands, or Italy (Auyeung et al., 2008; Hoekstra et al., 2008; Ruta et al., 2012; Wakabayashi et al., 2007), the cross-cultural equivalence of the instrument has not been analyzed in depth. Previous research has highlighted the influence of sociocultural variables, both in the manifestation of autistic traits and in parental interpretation of items related to sociability, communication, or imagination, especially in self-report or other-report measures (DuBay et al., 2022; DuBay & Watson, 2019). In this regard, the lack of discrimination observed in item 30 ("S/he doesn't usually notice small changes…") is consistent with anomalous patterns identified in other international validations and may reflect cultural differences in the perception of attention to detail rather than a structural flaw in the instrument per se (Baron-Cohen et al., 2001; Wakabayashi et al., 2006a). Consequently, we consider necessary for future research to carry out confirmatory factor analyses and multigroup factor invariance studies to evaluate the structural equivalence of the AQ-Child-SV with respect to other language versions, thus ensuring its comparative validity. It would also be advisable to assess the need for specific cultural adjustments to certain items with low discriminatory power to improve the sensitivity of the questionnaire in Spanish-speaking contexts. Another limitation of the present study is the absence of a test–retest reliability analysis. Data collection coincided with pandemic the COVID-19, and it was not possible to re-administer the instrument after an appropriate interval. Although internal consistency was examined using Cronbach's alpha, which is a widely accepted index of reliability (Tavakol & Dennick, 2011), future research should complement this with test–retest analyses to provide a more comprehensive evaluation of reliability (DeVellis & Thorpe, 2022; Streiner et al., 2014). Lastly, another potential limitation of the current study is that questionnaires could not be sent to all elementary and primary schools in the Salamanca Province, and thus, the generalization of these results should be interpreted with caution. Nevertheless, our results are promising as they showed that the AQ-Child-SV is a reliable measure to assess autistic traits in Spanish-speaking children aged 4 to 11 years. The AQ-Child-SV showed good psychometric properties for detecting autistic traits and children with a suspicion of ASD and/or BAP in the general population with a sensitivity of 0.83 and a specificity of 0.96, suggesting that the questionnaire can be an effective and reliable instrument for screening autistic traits in a community-based screening program and in research.

Autism screening tools, such as the AQ-Child-SV, can play an important role in identifying children who may exhibit autistic traits and were not detected at earlier ages. Detection of ASD signs is essential at any age because it facilitates timely referral to diagnostic services and eventual access to specific treatments, leading to better outcomes and greater well-being for both children with signs of ASD and their families (Dawson et al., 2010; Eapen et al., 2013; Filipek et al., 2013; Yang et al., 2023). Moreover, screening tools such as the AQ-Child-SV are also cost-effective and easy to administer in a wide range of clinical and educational settings. Instruments such as the AQ-Child-SV assess autistic traits dimensionally, allowing for the identification of subclinical traits, often associated with BAP, in children who may still require care and/or support (Auyeung et al., 2008; Baron-Cohen et al., 2001, 2006; Constantino & Gruber, 2012; Wheelwright et al., 2010).

Conclusions

This study reports the Spanish cultural adaptation and validation of the AQ-Child (AQ-Child-SV), an autism screening instrument that quantitatively measures autistic traits in children aged 4 to 11 years. The questionnaire was administered to a population of school-aged children in the Salamanca Province, Castile and León, Spain ($n = 602$). Scoring

patterns showed a clear difference between children who received an autism diagnosis and those who did not have a suspicion of autism. The AQ-Child-SV may be a useful tool to screen for autistic traits in a Spanish-speaking school population, but it should never be used as a diagnostic tool or replace a diagnostic clinical assessment. This measure has the potential to be used in a community-based autism detection program and in research. The development of the Spanish version of the AQ-Child can provide the opportunity of following autistic traits amongst the Spanish-speaking population of children aged 4 to 11 years and throughout an individual's lifetime in a longitudinal study as proposed by Auyeung and colleagues (Auyeung et al., 2008).

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Data Availability The datasets analyzed during the current study are not publicly available due to the terms and conditions participants agreed to when they participated in the study but are available from the corresponding author upon reasonable request.

Declarations

Conflict of interest The authors declare no competing interests.

Ethical Approval This study was conducted in accordance with the principles of the Declaration of Helsinki. Approval was granted by the Ministry of Education of the Regional Government of Castile and León and the University of Salamanca Bioethics Committee (approval reference 474). Informed consent was obtained from parents or legal guardians of children aged 4–11 years regarding their participation and publication of the study outcomes.

Informed Consent The authors attest that this work is original and has not been published, nor is it under consideration for publication elsewhere.

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Cuestionario AQ para Niños

Este cuestionario valora aspectos sobre el comportamiento social y comunicativo y los intereses de los niños y niñas entre 4 y 11 años. Debe ser completado por los padres o tutores del menor.

DATOS DE IDENTIFICACIÓN

NOMBRE Y APELLIDOS: .....

FECHA DE NACIMIENTO: ...../...../..... SEXO: Varón ☐ Mujer ☐ FECHA APLICACIÓN: ...../...../.....

NOMBRE Y APELLIDOS DEL PADRE: .....

NOMBRE Y APELLIDOS DE LA MADRE: .....

TELÉFONO DE CONTACTO:..... e-mail: .....DIRECCIÓN: .....

.....CP:..... LOCALIDAD:.....

Nombre de la persona que rellena el cuestionario: .....

Parentesco con el niño/a: Madre ☐ Padre ☐ Otro ☐ (especifique) .....

Por favor conteste los siguientes enunciados marcando con una cruz la casilla que refleje su respuesta de forma más apropiada. Por favor, complete todos los enunciados en ambas páginas.

	El niño o la niña…	Totalmente de acuerdo	Más bien de acuerdo	Más bien en desacuerdo	Total desacuerdo
1.	Prefiere hacer cosas con los demás en vez de por sí solo.				
2.	Prefiere hacer las cosas siempre de la misma forma.				
3.	Si intenta imaginar algo, le resulta muy fácil formar una imagen en su mente.				
4.	Con frecuencia se queda totalmente abstraído en una cosa y teniendo dificultad para atender a otras.				
5.	Muchas veces nota pequeños sonidos que otros no perciben.				
6.	Generalmente, se fija en los números de las casas o en las matrículas de los coches.				
7.	Tiene dificultades para entender las normas sociales.				
8.	Cuando se le lee un cuento puede imaginar fácilmente la apariencia de los personajes.				
9.	Le fascinan las fechas.				
10.	Cuando está en grupo puede mantener fácilmente el hilo de las conversaciones de varias personas.				
11.	Encuentra fáciles las situaciones sociales como interactuar con otros niños.				
12.	Se da cuenta de detalles que otros no notan.				
13.	Preferiría ir a una biblioteca en vez de a una fiesta de cumpleaños.				
14.	Le resulta fácil inventar historias.				
15.	Le atraen más las personas que las cosas.				
16.	Tiende a tener intereses muy marcados y se molesta si no puede dedicarles mucho tiempo.				
17.	Disfruta de conversaciones sociales.				
18.	Cuando habla, no siempre es fácil para los demás poder intervenir en su conversación.				
19.	Le fascinan los números.				

Por favor, continúe en la página siguiente

		Totalmente de acuerdo	Más bien de acuerdo	Más bien en desacuerdo	Total desacuerdo
20.	Cuando lee un cuento, le resulta difícil comprender las intenciones o los sentimientos de los personajes.				
21.	No le gustan mucho las historias de ficción.				
22.	Le resulta difícil hacer nuevos amigos.				
23.	Reconoce continuamente patrones en las cosas como los números de las matrículas de los coches.				
24.	Preferiría ir al cine en vez de a un museo.				
25.	No se enfada si se cambia su rutina diaria.				
26.	No sabe cómo mantener una conversación con sus compañeros.				
27.	Al niño/a le resulta fácil ¨leer entre líneas¨ cuando alguien le está hablando.				
28.	Generalmente se centra más en el conjunto global que en los pequeños detalles.				
29.	No es muy buena/o recordando números de teléfono.				
30.	No suele notar pequeños cambios en una situación o en el aspecto de una persona.				
31.	Sabe reconocer si quien le está escuchando se aburre.				
32.	Tiene facilidad para desenvolverse en diferentes actividades.				
33.	Cuando habla por teléfono, no está seguro/a de cuando es su turno para hablar.				
34.	Disfruta haciendo cosas de manera espontánea.				
35.	A menudo es la última persona en entender el sentido de un chiste.				
36.	Le resulta fácil entender lo que alguien está pensando o sintiendo con solo mirar su cara.				
37.	Si hay una interrupción, puede volver rápidamente a lo que estaba haciendo.				
38.	Tiene facilidad para tomar parte en conversaciones informales con otros niños de su edad.				
39.	La gente a menudo le dice que sigue y sigue hablando de lo mismo.				
40.	Cuando estaba en preescolar, solía disfrutar jugando con otros niños a juegos de representación que implican ¨hacer como si¨ (jugar a médicos, profesores, superhéroes, etc.).				
41.	Le gusta recopilar información sobre categorías de cosas (tipos de coches, de pájaros, de trenes, de plantas, etc.).				
42.	Se le hace difícil imaginar cómo podría ser otra persona.				
43.	Le gusta planificar cuidadosamente cualquier actividad en la que participe.				
44.	Disfruta los momentos en los que esta con otras personas.				
45.	Se le hace difícil entender las intenciones de la gente.				
46.	Las situaciones nuevas le ponen nervioso/a.				
47.	Disfruta cuando conoce gente nueva.				
48.	Tiene cuidado de no herir los sentimientos de otras personas.				
49.	No es muy bueno/a recordando la fecha de nacimiento de otras personas.				
50.	Le resulta muy fácil jugar con otros niños a juegos de representación que implican ¨hacer como si¨ (médicos, profesores, superhéroes, etc.).				

¡MUCHAS GRACIAS!