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ORIGINAL RESEARCH

Psychometric Properties of the Chinese Version of the Comprehensive Autistic Trait Inventory

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Background: The Comprehensive Autistic Trait Inventory (CATI) was an appropriate assessment tool that included all the principal dimensions related to autism defined in DSM-5 for the general population. However, its validity and reliability in the general Chinese population still need to be examined.

Purpose: We revised the inventory and estimated the validity and reliability of the Chinese version of the CATI among 2232 general undergraduates.

Methods: The Chinese version of the CATI (CATI-C) was administered to 2259 undergraduates using the online Questionnaires Star electronic system. Internal consistency, convergent validity, discriminant validity, test-retest reliability, and measurement invariance across gender were calculated. In order to determine the diagnostic accuracy and optimal cut-off score of the CATI-C, an analysis using the Receiver Operating Characteristic (ROC) was performed.

Results: The CATI-C includes 35 items of two factors and six dimensions. CFA demonstrated that the fit index of the structure of the scale was good (Satorra-Bentler chi-square/degrees of freedom [S-Bχ^2/df] = 2.406, Standardized Root Mean Square Residual [SRMR] = 0.038, Root Mean Square Error of Approximation [RMSEA] = 0.037, Comparative Fit Index [CFI] = 0.929, Tucker-Lewis Index [TLI] = 0.917). The convergent validity examined based on the Autism Spectrum Quotient total score was satisfactory (r = 0.54). The internal consistency reliability of social factor, non-social factor, and total scores were 0.87, 0.85, and 0.90. The test-retest reliability was 0.80. A cut-off score of 115 provided optimal sensitivity and specificity for the CATI-C (sensitivity = 0.926, specificity = 0.781, and Youden's index = 0.707).

Conclusion: The CATI-C has satisfactory reliability and validity in measuring autistic traits. It showed a good model fit for social and non-social second-order bifactors and measurement invariance across gender.

Keywords: comprehensive autistic trait inventory, psychometrics, measurement invariance

Introduction

A systematic review reveals an increase in the global prevalence of autism.[1] Autism spectrum disorder (ASD) affects approximately 1% of children worldwide, with the prevalence of autism in China close to that in the West.[2] ASD is a neurodevelopmental disorder that is defined by deficits in social communication and restricted, repetitive patterns of interests and behaviors. The severity and scope of these core behavioral traits can vary based on where an individual falls on the autism continuum.[3] Autistic traits refer to personality traits, social interaction characteristics, and behaviors similar to autism, first observed among parents and relatives of autistic children,[4] continuously distributed in individuals on the autism spectrum[5,6] and the general population.[7–9] Autistic traits can be considered a sixth factor of personality in addition to the Big Five.[10,11] Increasing numbers of studies have found that autistic traits are prevalent in the general population,[12–14] indicating that the construct of autism might form a continuum in the general population based on trait-like characteristics.[15] More and more studies have demonstrated the continuum model. According to the twin concordance study, autistic traits and ASD may share a genetic etiology,[16,17] and it is estimated that the heritability of autistic traits is 0.61–0.73.[18] Substantial and replicable etiological overlap between ASD and typical variations in social and communication abilities among the general population was found using large ASD consortiums and population-based

resources through linkage disequilibrium score regression and de novo variant analysis.[19] Using a dual Weibull mixture model, researchers provide perspectives on how autism traits are distributed along a continuum.[20] The meta-analysis of four population-based genome-wide association studies investigating autistic-like traits in the general population has shown the role of immune-related genes in specific autistic-like traits.[21] More and more refined evidence demonstrates that the continuum view of autistic traits in the general population merits further research.[22,23]

To understand the prevalence and impact of autistic traits in the general population, researchers designed several psychometric scales. The Autism-Spectrum Quotient (AQ)[24] has been widely used to investigate autism-related traits. Additionally, the Social Responsiveness Scale (SRS-2)[25] and the Broad Autism Phenotype Questionnaire (BAPQ)[26] are often applied to assess autistic traits. Furthermore, the above instruments are supplied qualitatively, primarily focusing on the core ASD features. The diagnostic understanding of autism has changed over the years, and ASD is conceptualized as a "spectrum" in DSM-5.[27] Due to the recent development of the subthreshold autism spectrum model,[28] subthreshold autistic trait (SAT) measures for the general population have been constructed, such as Subthreshold Autism Trait Questionnaire (SATQ)[29] and Adult Autism Subthreshold Spectrum (AdAS Spectrum).[30] However, SATQ does not include the modifications in DSM-5 in the criteria for ASD. Although AdAS Spectrum has subscales on sensory sensitivity and elucidates the extent of gender-related camouflage in DSM-5,[31] it is a complex (160 items) forced-choice test that does not refer to childhood and adolescence groups. As a result, an adequate assessment tool for the general population taking all the core indicators of autistic traits in DSM-5 into account is required, and it is of significant theoretical and practical value.

The Comprehensive Autistic Trait Inventory (CATI) consists of 42 items, and each subscale contains seven items that can be assessed using the five-point Likert scale. The autistic traits in the general population were measured according to the diagnostic criteria for ASD in DSM-5. The CATI is composed of social and non-social second-order bifactors. The social factor includes social interactions (SOC), communication (COM), and social camouflage (CAM), while the non-social factor includes repetitive behavior (REP), cognitive rigidity (RIG), and sensory sensitivity (SEN). The CATI maintains psychometric properties superior to the AQ and BAPQ in a study with a large sample of adults.[32] Internal consistency for all of the six subscales of the CATI was excellent (0.810–0.940), and total-scale internal consistency was 0.950. The CATI had better convergent validity than the AQ and BAPQ at both the total scale level ($r \geq 0.790$) and subscale level ($r \geq 0.680$). Additionally, the construct validity of CATI was supported by confirmatory factor analysis (CFA), which showed that the best-fit model had two correlated social and non-social bifactors and measurement equivalence among different gender groups.

Overall, the CATI is an effective measure to assess the autistic traits of the general population, and it is valuable to verify its psychometric properties in different cultural contexts. Though the CATI has been examined in five English-speaking countries, the psychometric properties of its Chinese version have yet to be studied, and there was no evidence supporting the measurement invariance of this factor structure across gender. Exploring the psychometric characteristics of the CATI-C is crucial, as there is currently no Chinese version of an assessment tool for autistic traits based on the DSM-5. In this paper, we explored the psychometric characteristics of the Chinese version of the CATI.

Methods
Participants and Procedure
Based on convenience sampling methods, the participants were recruited from five provinces (Anhui, Henan, Guangdong, Heilongjiang, and Shaanxi) who took part in an online survey and spoke Mandarin Chinese, and the research adhered closely to Internet research ethics.[33] The final sample consisted of 2259 undergraduates (see Table 1) from eight general comprehensive universities, aged 18–26 (53.829% females, mean age 20.116 ± 1.491 years), whose responses were uncompleted or less than five minutes were eliminated. The no-clinical sample included 2232 under-graduates who self-reported as non-autistic and 27 undergraduates who self-reported with diagnosed autistic or self-identifying as autistic.

After getting the author's authorization, the English version of CATI began to be translated into Mandarin Chinese. Back-translation was conducted to ensure the faithfulness of the translation. The specific procedures are as follows. First,

Table 1 Characteristics of Participants (N = 2259)

Variable		Total	Non-Clinical			Clinical
			Sample 1	Sample 2	Sample 3	Sample 4
Gender n (%)	Male	1043(46.171)	464(20.540)	508(22.488)	57(2.523)	14(0.620)
	Female	1216(53.829)	558(24.701)	519(22.975)	126(5.578)	13(0.575)
Age(X±SD)		20.116±1.491	19.696±1.235	20.729±1.523	18.951±0.879	20.556±2.190
Home location n (%)	Country	1683(74.502)	757(33.510)	766(33.909)	153(6.773)	20(0.885)
	City and town	576(25.498)	265(11.731)	261(11.554)	30(1.328)	7(0.310)
Grade n (%)	Freshman	871(38.557)	421(18.636)	257(11.377)	183(8.101)	10(0.443)
	Sophomore	714(31.607)	430(19.035)	277(12.262)	–	7(0.310)
	Junior	391(17.308)	146(6.463)	240(10.624)	–	5(0.221)
	Senior	283(12.528)	25(1.107)	253(11.200)	–	5(0.221)

a native Chinese speaker translated the CATI into Mandarin Chinese. Next, a native English speaker unfamiliar with the CATI translated it back into English. A native English speaker compared the original English version and the back-translated version. According to the author's advice, discrepancies were revised. There is some inaccurate understanding of items. For example, "I am uncomfortable with unexpected loud noises." Would be better than "I react poorly to unexpected loud noises". The Mandarin-Chinese CATI could be considered linguistically equivalent to the original English version.

Measures

Comprehensive Autistic Trait Inventory (CATI)

The Comprehensive Autistic Trait Inventory (CATI) is a self-report questionnaire consisting of 42-item in six subscales (seven items in each subscale). These items are evaluated based on the five-point Likert scale: "Definitely disagree", "Somewhat disagree", "Neither agree nor disagree", "Somewhat agree", and "Definitely agree". Reverse-scored items include Items 1, 2, 5, 8, and 10. The English version of CATI calculated the reliability using Cronbach's alpha of 0.95.

The Autism-Spectrum Quotient (AQ)

The Autism-Spectrum Quotient (AQ)[24,34] has been widely used to assess autism-related traits. It is a self-report questionnaire consisting of 50 items in five subscales (Social Skill, Attention Switching, Attention to Detail, Communication, and Imagination), each with a 4-point rating scale, and twenty-four items were reverse-scored. The Chinese version of AQ has demonstrated adequate validity and reliability,[35] and the present study calculated the reliability using Cronbach's alpha of 0.74 and omega coefficient of 0.76.

Chinese Version of Comprehensive Autistic Trait Inventory (CATI-C)

The CATI-C is a self-report questionnaire consisting of 35 items (https://www.cati-autism.com/). Three subscales of SOC, COM, and CAM belong to the social factor; the other three subscales of REP, RIG, and SEN belong to the non-social factor. These items are evaluated based on the five-point Likert scale, ranging from 1(Definitely disagree) to 5 (Definitely agree). Reverse-scored items include Items 1, 2, and 5. The final score can range from 35 to 175, with a higher score indicating a higher level of autistic traits. The present study calculated the reliability using Cronbach's alpha of 0.90 and omega coefficient of 0.90.

Statistical Methods

Data analysis was performed using SPSS 26.0[36] for descriptive statistics and ROC analyses, AMOS 24.0 software for discriminant validity analysis, and Mplus 8.0 software for structural equation modeling. One of the subsets was for EFA, and another subset was for CFA showed the best-fit model for the data. To examine the construct validity and across-gender invariance of the CATI-C by applying CFA with Maximum-Likelihood Method (MLM). According to Hu and Bentler's suggestion, the value of RMSEA below 0.05 can be deemed acceptable, and the CFI and TLI values>0.90 were considered to represent proper model fit.[37] The SRMR value smaller than 0.05 was considered good.[38] The internal consistency was estimated based on the subscale and overall scale scores. The convergent validity, discriminant validity, and test-retest reliability were tested by correlation analysis.

Results

Construct Validity

Item Analysis and Exploratory Factor Analysis (EFA)

First, the item analysis showed that the correlation index of four items (items 8, 10, 12, 23) with the total score was lower than 0.3, and the correlation coefficients between the score of the other items and the total score ranged from 0.33 and 0.60 ($P < 0.001$). Second, all subjects were sorted based on the total score and divided into the high total score group and the low total score group according to the criteria of 27%. Significant differences were found in 38 items ($P < 0.001$) between the high total score and low total score groups. EFA showed that three items (Items 22, 33, 35) tended to load on two factors, with KMO = 0.90 and Bartlett's test of sphericity χ^2 = 12,185.75 ($P < 0.001$), both considering eigenvalues greater than 1.0 and visually inspecting the scree plot (Figure 1), resulting in 51.75% of cumulative variance explained by six factors—the loading values for each entry range from 0.53 to 0.81 (Table 2).
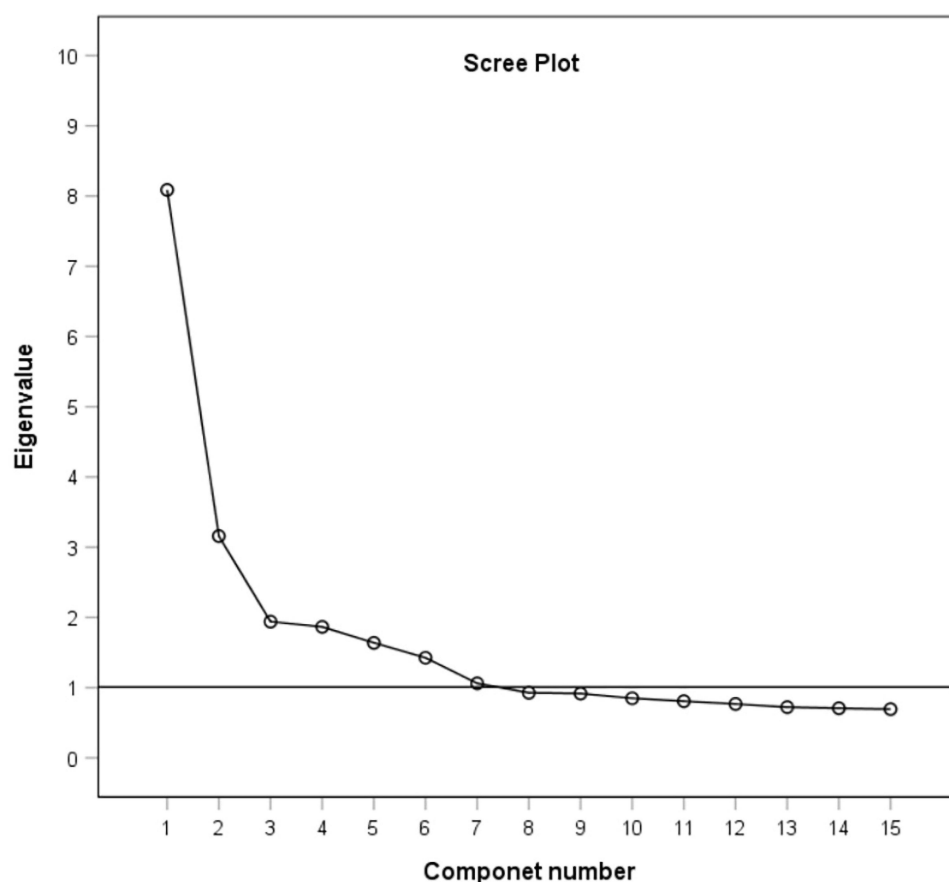
Figure 1 Scree plot of eigenvalues of CATI-C after principal component analysis.

Table 2 Factor Loadings of the CATI-C Items Resulting from the EFA (n_1=1022)

Items	SOC	COM	REP	CAM	RIG	SEN
1. Social interaction is easy for me. (R)	**0.792**	0.078	0.013	0.024	0.037	0.038
2. I generally enjoy social events. (R)	**0.778**	−0.076	0.023	0.021	0.010	0.015
3. I find social interactions stressful.	**0.718**	0.203	0.131	0.119	0.082	0.120
4. Social occasions are often challenging for me.	**0.589**	0.247	0.084	0.146	0.099	0.091
5. I feel confident and capable when meeting new people. (R)	**0.764**	0.104	0.065	0.060	−0.028	0.047
6. In social situations, I try to avoid interactions with other people.	**0.698**	0.120	0.124	0.151	0.088	0.144
7. I find it difficult to make new friends.	**0.676**	0.216	0.114	0.159	0.073	0.116
9. Reading non-verbal cues (eg, facial expressions, body language) is difficult for me.	0.116	**0.657**	0.142	0.058	0.022	−0.032
11. Metaphors or "figures of speech" often confuse me.	0.177	**0.653**	0.021	0.135	0.058	0.155
13. I have difficulty understanding the "unspoken rules" of social situations.	0.144	**0.719**	0.036	−0.012	0.057	0.122
14. I have difficulty understanding someone else's point-of-view.	0.162	**0.665**	0.145	0.176	0.017	0.059
15. I often find myself fiddling or playing repetitively with objects (eg, clicking pens).	0.102	0.062	**0.632**	0.033	0.201	0.118
16. There are certain objects that I fiddle or play with that can help me calm down or collect my thoughts.	0.007	−0.040	**0.649**	0.044	0.177	0.088
17. I often rock when sitting in a chair.	−0.006	0.111	**0.575**	0.099	0.002	−0.005
18. There are certain repetitive actions that others consider to be "characteristic" of me (eg, stroking my hair).	0.055	0.035	**0.617**	0.123	0.029	0.179
19. I have a tendency to pace or move around in a repetitive path.	0.143	0.070	**0.574**	0.108	0.204	0.137
20. I engage in certain repetitive actions when I feel stressed.	0.126	0.054	**0.677**	0.153	0.111	0.168
21. I have certain habits that I find difficult to stop (eg, biting/tearing nails, pulling strands of hair).	0.095	0.127	**0.613**	0.057	−0.032	0.150
24. Before engaging in a social situation, I will create a script to follow where possible.	0.050	0.054	0.055	**0.784**	0.124	0.080
25. I rely on a set of scripts when I talk with people.	0.169	0.113	0.096	**0.813**	0.093	0.088
26. I try to follow certain "rules" in order to get by in social situations.	0.286	0.051	0.140	**0.649**	0.189	0.167
27. I expend a lot of mental energy trying to fit in with others.	0.016	0.176	0.232	**0.588**	0.063	0.126
28. When interacting with other people, I spend a lot of effort monitoring how I am coming across.	0.176	0.037	0.167	**0.527**	0.275	0.184
29. I like to stick to certain routines for every-day tasks.	0.218	0.005	0.171	0.210	**0.540**	0.068
30. I like my belongings to be sorted in certain ways and will spend time making sure they are that way.	0.012	0.012	0.016	−0.006	**0.800**	0.158
31. There are certain activities that I always choose to do the same way, every time.	0.183	0.150	0.193	0.263	**0.654**	0.087
32. I often insist on doing things in a certain way, or re-doing things until they are "just right".	0.026	0.048	0.187	0.129	**0.728**	0.167
34. I like to arrange items in rows or patterns.	−0.081	0.014	0.107	0.134	**0.609**	0.285
36. I am over-sensitive to bright lighting.	0.142	0.009	0.127	0.143	0.080	**0.620**
37. I am sensitive to flickering lights.	0.054	0.020	0.048	0.119	0.141	**0.704**

(*Continued*)

Table 2 (Continued).

Items	SOC	COM	REP	CAM	RIG	SEN
38. I react poorly to unexpected loud noises.	0.036	0.111	0.077	−0.020	0.092	**0.675**
39. There are times when I feel that my senses are overloaded.	0.110	0.155	0.209	0.239	0.103	**0.542**
40. I am over-sensitive to touch.	0.176	0.068	0.096	0.067	0.124	**0.637**
41. I am over-sensitive to particular tastes (eg salty, sour, spicy, or sweet).	−0.038	−0.019	0.128	0.089	0.075	**0.634**
42. Sometimes the presence of a smell makes it hard for me to focus on anything else.	0.077	0.072	0.164	0.030	0.123	**0.622**

Notes: R represents that the score of the focal item needs to be reverse-coded. Data in bold indicates a factor load >0.50. Adapted from English, MCW, Gignac, GE, Visser, TAW, Whitehouse, AJO, Enns, JT, and Maybery, MT. (2021). The Comprehensive Autistic Trait Inventory (CATI): development and validation of a new measure of autistic traits in the general population. *Mol Autism*. 2021;12(1):1–23.[32]

Confirmatory Factor Analysis (CFA)

The CFA results for various models are compiled in Table 3. The data fitted well with the model of correlated social and non-social bifactors, with S-Bχ^2(df) = 1226.842 (510), SRMR = 0.038, RMSEA = 0.037, CFI = 0.929, TLI = 0.917.

Convergent Validity and Discriminant Validity

We used the AQ as the gold standard and correlated it with the CATI in sample 1 (n_1=1022). The CATI and AQ correlate at the total score level ($r = 0.54$, $P < 0.010$). At the bifactor score level, the AQ also showed a strong correlation with the social factor ($r = 0.64$, $P < 0.010$) and non-social factor ($r = 0.33$, $P < 0.010$).

The discriminant validity of the Chinese CATI assessment was assessed through the heterotrait-monotrait (HTMT) ratio of correlations method. HTMT values smaller than 0.85 indicate high discriminant validity;[39] the smaller the HTMT value, the higher the discriminant validity.[40] All HTMT values were smaller than 0.85 in the current study, as shown in Table 4.

Table 3 The Confirmatory Factor Analysis Results of the CATI-C (n_1 = 1022, n_2 = 1027)

Models of Confirmatory Factor Analysis		S-Bχ^2	df	SRMR	RMSEA	CFI	TLI
n_1	Single general factor	5044.017	560	0.089	0.088	0.554	0.526
	Correlated social and non-social two factors	3907.117	559	0.081	0.074	0.667	0.646
	Single hierarchical factor	1813.261	554	0.056	0.047	0.875	0.865
	Correlated social and non-social hierarchical factors	1778.190	553	0.054	0.046	0.878	0.869
	Correlated factors	1682.171	545	0.047	0.045	0.887	0.877
	Bifactor: single	1337.336	517	0.038	0.039	0.918	0.906
	Bifactor: social and non-social	1226.842	510	0.038	0.037	0.929	0.917
n_2	Single general factor	3063.424	560	0.096	0.094	0.539	0.510
	Correlated social and non-social two factors	2443.624	559	0.088	0.081	0.653	0.631
	Single hierarchical factor	1328.290	554	0.067	0.052	0.858	0.847
	Correlated social and non-social hierarchical factors	1301.462	553	0.065	0.051	0.862	0.852
	Correlated factors	1273.755	545	0.061	0.051	0.866	0.854
	Bifactor: single	1007.308	517	0.045	0.043	0.910	0.896
	Bifactor: social and non-social	932.675	510	0.046	0.040	0.922	0.909

Abbreviations: S-Bχ^2, Satorra-Bentler chi-square; df, degrees of freedom; SRMR, standardized root mean square residual; RMSEA, root mean square error of approximation with 90% confidence interval; CFI, Comparative Fit Index; TLI, Tucker-Lewis Index.

Table 4 HTMT of the Subscale of the CATI-C (n_2 = 1027)

	SOC	COM	CAM	REP	RIG	SEN
SOC	–					
COM	0.615	–				
CAM	0.457	0.432	–			
REP	0.417	0.428	0.569	–		
RIG	0.265	0.259	0.546	0.509	–	
SEN	0.414	0.378	0.439	0.514	0.552	–

Table 5 Measurement Invariance Across Gender (n_2 = 1027)

	S-Bχ^2	df	SRMR	RMSEA	CFI	TLI	ΔTLI	ΔCFI	ΔRMSEA	
Total	1226.842	510	0.038	0.037	0.929	0.917	–	–	–	
Female	847.077	510	0.040	0.036	0.938	0.928	–	–	–	
Male	920.923	510	0.046	0.040	0.916	0.902	–	–	–	
Configural Invariance	1856.134	1020	0.043	0.040	0.917	0.903	–	–	–	Accept
Metric Invariance	1983.907	1081	0.049	0.040	0.910	0.901	0.002	0.007	0.000	Accept
Scalar Invariance	2041.094	1108	0.049	0.040	0.907	0.900	0.001	0.003	0.000	Accept

Measurement Invariance Across Gender

The correlated bifactor model fitted well with the data for both the male and female participants. Therefore, the results of this study can be directly used for comparing male and female participants, and the differences can be interpreted based on the criteria of ΔCFI < 0.01[41] and ΔRMSEA < 0.015,[42] as shown in Table 5.

Internal Consistency and Test-Retest Reliability

The Chinese version of CATI had high internal consistency, as shown by the analysis of sample 2, with Cronbach's alpha of 0.90 and an omega coefficient of 0.90. The social factor included 16 items; Cronbach's alpha was 0.87, and the omega coefficient of 0.87. The non-social factor included 19 items, Cronbach's alpha was 0.85, and the omega coefficient of 0.86. Cronbach's alpha for the six subscales was 0.65–0.87, and the omega coefficient was 0.66~0.87.

The test-retest reliability coefficient analyzed with sample 3 was 0.80 on the total score scale, 0.80 for the social factor, and 0.73 for the non-social factor. Regarding subscale scores, test-retest reliability coefficients ranged between 0.48 and 0.76 (all with $P < 0.001$).

Identification of a Relevant Threshold

The CATI was originally designed to evaluate autistic traits in non-clinical populations. However, for certain research purposes, a cut-off score is necessary to differentiate between autistic and non-autistic individuals. To this end, ROC analyses were conducted to determine the sensitivity and specificity of the CATI-C total score. The results, depicted in Figure 2, indicate that the CATI-C possesses a high level of discriminatory power, with a maximum area under the curve (AUC) of 0.932 (95% CI: 0.893, 0.971). The optimal cut-off score for identifying individuals with autism is 115, and diagnostic utility was considered acceptable (sensitivity = 0.926, specificity = 0.781, and Youden's index = 0.707) for the CATI-C.

Discussion

This study presents the psychometric assessment of a novel scale designed to measure autistic traits, which was developed based on the diagnostic criteria for autism spectrum disorder outlined in the DSM-5. The findings indicate that the CATI-C exhibits favorable levels of reliability and validity when applied to the general population. By gaining
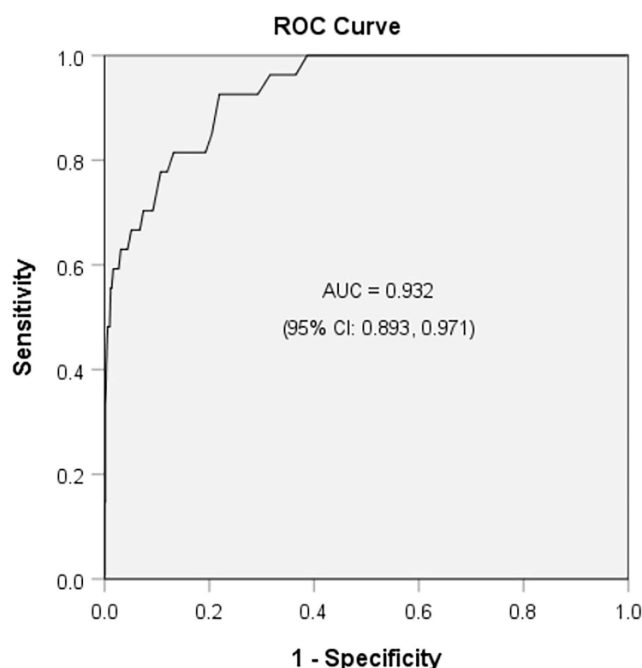
Figure 2 ROC curves for CATI-C.

insight into the behavioral and cognitive patterns of individuals without autism, it becomes possible to more accurately identify those who may require intervention and implement suitable measures to aid them.

This study proved that the psychometric properties of the Chinese version of the CATI are reliable and could be a valuable measurement for assessing autistic traits among Chinese undergraduates. We first revised the original CATI into a Chinese version and rechecked the translation with the original author to confirm the accuracy of the translation. We revised some expressions of the sentences to make them more accurate, easier to understand, and more adaptable to Chinese reading habits. Specifically, item 27, "I expend a lot of mental energy trying to fit in with others", is revised to "I use a lot of mental energy trying to fit in with others"; item 38, "I react poorly to unexpected loud noises" is revised to "I am uncomfortable with unexpected loud noises". In addition to the content revisions, some items were removed based on the results of the data analysis. Four items (Items 8, 10, 12, 23) were removed by item analysis because of the poor correlation index with a total score (of <0.3), and three items (Items 22, 33, and 35) were removed by the EFA because they tended to load on two factors. Furthermore, the CFA results showed that the best-fit model was that with social and non-social second-order bifactors (see Figure 3) consistent with the original scale; the social factor included SOC, COM, and CAM, while the non-social factors included REP, RIG, and SEN.
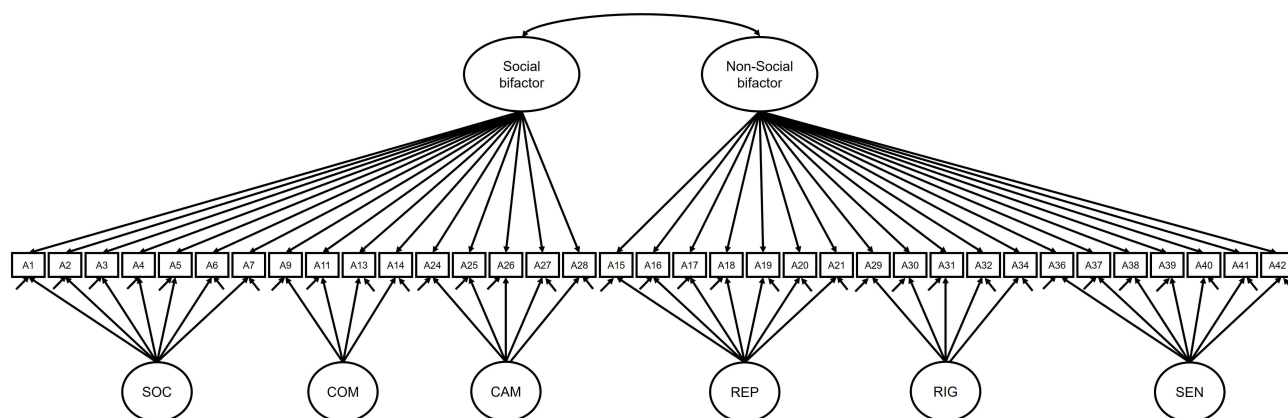
Figure 3 Correlated bifactors model of the Chinese version of the CATI.

In this study, the strong correlation between the total score of the CATI, social, and non-social bifactors score of the CATI with the total score of the AQ indicated good criterion validity. Currently, all HTMT values were smaller than 0.85, indicating the high discriminant validity of the CATI. Additionally, multi-group factor analysis demonstrated the gender measurement invariance of the CATI. Furthermore, the CATI showed good internal consistency and test-retest reliability. Finally, the CATI-C showed good sensitivity and specificity in discriminating between autistic and non-autistic individuals. The Chinese version of the CATI is a promising instrument for the assessment of the social and non-social autistic traits of undergraduates.

Limitations and Future Research

Limitations of this study include the following. First, all the participants were self-reported undergraduates, which may minimize the results' generalizability. More population groups, such as clinical groups, enterprise employees, and adolescents, can be included in the future. Second, the criterion validity for the Chinese version of the CATI was only evaluated based on the total score of the AQ. In future research, it is necessary to apply content-matched scales for the criterion validity analysis of each subscale of the Chinese version of the CATI. Furthermore, though the Chinese version of the CATI involved a broad range of autistic trait dimensions,[43] it still absent some dimensions such as "hypo-responsiveness of sensory input",[44] "restricted interests",[45] and "rumination",[46] therefore, developing the above absence dimensions would be an area worthy of the future.

Conclusion

Although the current study has limitations, it contributes to the body of evidence supporting the psychometric properties of the CATI in non-Western settings. It is beneficial for a more comprehensive understanding of autism traits in the general population should be assessed. The CATI is one of the most comprehensive self-reported measures currently available, even though it does not reflect every aspect of autism. Examining the psychometric properties of the Chinese version of the CATI will promote autistic trait-related research and cross-cultural studies.

Data Sharing Statement

The datasets used and analyzed during the current study are available from the corresponding author upon reasonable request.

Ethics Approval

All procedures were performed by the ethical standards in the 1964 Declaration of Helsinki and its later amendments. The Ethics Committee of Anhui Normal University (AHNU-ET2019015) approved the study. All the respondents participated voluntarily, and informed consent was obtained before the investigation.

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Author Contributions

All authors made a significant contribution to the work reported, whether that is in the conception, study design, execution, acquisition of data, analysis and interpretation, or in all these areas; took part in drafting, revising or critically reviewing the article; gave final approval of the version to be published; have agreed on the journal to which the article has been submitted; and agree to be accountable for all aspects of the work.

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Disclosure

The authors declare there are no competing interests in this work.

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