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The reliability and validity of a Chinese version of the Beach Center Family Quality of Life Scale in Mainland China for families of children with autism

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Abstract

Purpose The objective of this study was to translate the Family Quality of Life (FQOL) Scale into simplified Chinese and assess its reliability and validity in mainland China for families of children with autism.

Methods The FQOL Scale was professionally translated from English into simplified Chinese using a forward-backward process. We conducted a survey in which families with autistic kids were asked to participate, it comprised of a general condition questionnaire and the FQOL Scale translated to Chinese. A total of 402 families took part in the study, out of which 333 data sets were complete and available for analysis. The FQOL Scale model was subject to exploratory factor analysis (EFA) and confirmatory factor analysis (CFA) to probe its scale dimensional design and structure, as well as its adaptability to autistic children and their families using SPSS AMOS 24.0. The internal consistency and reliability was examined using Cronbach's α (SPSS 22.0). And stepwise regression analysis was conducted to predict parents' attitudes towards prognosis based on the five dimensions of the modified Chinese version of the FQOL Scale (SPSS 22.0).

Results The data analysis yielded a revised Chinese version of the FQOL Scale. The analysis revealed that the overall reliability coefficient of the scale, as indicated by Cronbach's α, was 0.918. The results of the CFA provided support for the best fit of a five-factor model ($\chi2 = 285.237$, CFI = 0.930, TLI = 0.916, SRMR = 0.061, RMSEA = 0.062). The predictive equation for parents' attitudes towards prognosis based on the five-dimensional model of the modified Chinese version of the FQOL Scale was as follows: Parent prognostic attitude = -0.863 + 0.456* Parenting + 0.2* Physical/Material Well-being.

Conclusion The modified Chinese version of the FQOL Scale is suitable in mainland China for families of children with autism and has good reliability and model fit. The two dimensions of Parenting and Physical/Material Well-being can significantly predict parents' prognostic attitude, indicating that the better the status of Parenting and Physical/Material Well-being, the better the parents' prognosis attitude.

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Keywords Beach center family quality of life scale, Family quality of life, Autism, Mainland China

Introduction

Families having children with autism spectrum disorders (ASD) encounter numerous difficulties and pressures in their everyday life. The severity of the disorder combined with the amount of social aid given to the family can greatly impact their Family Quality of Life (FQOL) [1]. Therefore, providing interventions and backing to lessen parental stress and financial hindrances is essential. The unique requirements of every family should be specifically addressed with the intention of enhance the FQOL for households with ASD children [2]. Interventions targeting family adaptive functioning might also be a promising strategy for improving the lives of children with ASD and their families [3]. It is essential to understand various aspects of the FQOL of these families to help them address the impact of ASD and promote more effective interventions.

FQOL refers to a dynamic sense of well-being of the family, collectively and subjectively defined and informed by its members, in which individual and family-level need interact [4]. The FQOL theoretical framework includes concepts at various levels, such as system, performance, individual members, and the family unit. Based on this theory, FQOL tools were created to assess families from diverse backgrounds [5]. FQOL has become a key tool in diagnosing and treating intellectual impairments, assessing intervention effectiveness, and providing family support. It is recognized as an important outcome for services to disabled individuals and their families. The International Association for the Scientific Study of Intellectual Disability promotes further research by establishing a consensus on QoL assessment and implementation [6, 7]. The Beach Center on Disability at the University of Kansas developed the Beach Center FQOL Scale to assess families' perceived satisfaction across various dimensions of FQOL [8, 9]. The scale was designed as a research tool to assess program and service results and the efficacy of treatments [9] and could be an important outcome measurement for both early intervention for children with disabilities and their family [10]. This tool can be effectively used for evaluating guardians of young children with different disabilities, swiftly providing comprehensive information about a family's general well-being [11]. The scale includes 25 items in five domains: family interaction, parenting, emotional well-being, physical/material well-being and disability-related support [9]. This scale has been adapted into various languages and its reliability and validity have been proven within diverse cultural populations. It has successfully proven itself as a valid and reliable measure of the FQOL for families and their children affected by certain developmental disabilities [10, 12–17].

Research on FQOL for ASD families lacks standardized tools and inclusive participation, often overlooking diverse experiences and focusing on individual rather than considering the collective familial experiences. As mentioned above, BC-FQOL may be a valuable tool for families of individuals with autism. Nonetheless, there is no simplified Chinese variant of the BC-FQOL scale available, and no research has been conducted to examine its psychometric properties in families in mainland China with children who have ASD. The aim of the present study was to translate the BC-FQOL scale into a simplified Chinese version and to assess its reliability, validity and psychometric properties in families with children diagnosed with ASD in mainland China.

Methods

Instrument

Demographic and general conditions

A structured questionnaire was used to collect the demographic and general conditions of participants. The questionnaire included the children's age, gender, the family's economic situation, the marital relationship, and the parents' attitudes towards the child's prognosis.

Beach center family quality of life scale

The study utilized the Beach Center FQOL Scale, which is a Likert scale scored 1 to 5 for each item, devised by the Beach Center on Disability at University of Kansas, USA. The total score for the Beach Center FQOL Scale, as well as the scores for its subscales, is typically calculated by summing the scores of the individual items within each scale or subscale. Higher scores indicate a better QoL, while lower scores signify more challenges or lower QoL. The scale consists of 25 items in five subscales (F1 to F25 represent different items, respectively): (1) family interaction contains six items, which refer to the closeness and trust between family members; (2) parenting contains six items, which refer to the family's education of children, including guidance of children's schooling and behavior; (3) emotional well-being contains four items, which refer to the physical and psychological condition of the family; (4) physical/material well-being contains five items, which refer to the daily life help and emotional support from neighbors, relatives and friends of the family; and (5) disability-related support contains four items, which refer to the professional support services received by the family in relation to the disability [8, 17]. Previous scales rated both importance and satisfaction, but recent research has shown that data on importance ratings are not very useful for the FQOL Scale [11], so this study rated satisfaction only. Satisfaction reflects parental satisfaction with various aspects of FQOL and the score range for each component was 0 (unsatisfied) to 5 (very satisfied), with the rating determined by the level of satisfaction. Prior psychometric research on the English variant of the FQOL Scale has substantiated its dependability as a tool for evaluating FQOL in persons with intellectual impairments.

Translation procedure

The process of translating the FQOL Scale into Simplified Chinese followed Vallerand's procedure for cross-cultural validation, carried out with the approval of the writers of the original English edition. The steps of the procedure included getting two bilingual professors to translate the scale into Chinese, which was then scrutinized and amended by an additional two specialists. Two impartial bilingual professors who had no prior knowledge of the original English scale were then enlisted to translate the Chinese version back into English. Once this was completed, the translated scale was reassessed by the same experts involved in Step Two, ensuring the language was not only accurate and fluent but also congruous with common expression habits in mainland China. Those two experts rated the accuracy, equivalence and cultural appropriateness of the scale. The ratings ranged from very inappropriate (1) to very appropriate (4). All items received scores of >3. The content validity index (CVI) of the Chinese version of the BCFQOL was acceptable.

Sample/participants

Families were asked to join this study if their children had been clinically diagnosed with ASD (Autism Spectrum Disorder), following the criteria of the DSM-V (Diagnostic and Statistical Manual of Mental Disorders Fifth edition). The participants were recruited from developmental behavioral pediatrics department, the Third Affiliated Hospital Sun Yat-Sen University since 2019 to 2021. And the study was ethically approved by the Third Affiliated Hospital Sun Yat-Sen University (No.[2019]02-329-01). The survey, which included a general questionnaire and the Chinese version of the FQOL Scale, was self-administered by parents or primary caregivers anonymously. The families involved were all informed that they had the voluntary choice to participate in this study and that all data, results analyses, and final report of the research would be kept confidential and would include only de-identified information. The questionnaires ultimately included in the analysis must meet the following criteria: (1) No more than three blank items; (2) No random answer; (3) No invalid answer.

Table 1 Demographic and general conditions of the study population

		n	%
Gender	Male	273	81.98
	Female	60	18.02
Age (months)	<24	15	4.5
	≥ 24, ≤ 48	250	75.08
	>48, ≤ 96	68	20.42

Statistical analysis

The research aimed at evaluating the dependability of the translated Chinese version of the scale, maintaining a minimum question-to-subject ratio of 1:5, thus necessitating a minimum sample size of 125 cases. Employing both EFA and CFA, the former required a sample of no less than 100 cases while the latter demanded at least 200 cases[18]. A total of 400 cases were planned to be investigated. Only analyzed the complete cases that have no missing values. Due to the use of different samples, the first 130 cases were selected for exploratory factor analysis, while the remaining samples were utilized for confirmatory factor analysis. All included samples were unified for reliability testing. The scale's structural validity was assessed through EFA and CFA using AMOS 24.0. Meanwhile, reliability was evaluated using the Cronbach's Alpha (α) coefficient with SPSS 22.0. And stepwise regression analysis was conducted to predict parents' attitudes towards prognosis based on the five dimensions of the modified Chinese version of the FQOL Scale (SPSS 22.0).

Results

Demographic

402 families participated in this study. 69 families were excluded because there were three or more missing answers on the Chinese version of the FQOL Scale. 333 families (82.8%) were analyzed. Out of 273 kids, 81.98% were males and 18.02% were females. The ages of the children ranged from 17 months to 96 months. The youngest child was 17 months old and the oldest 96 months old. Of the children 4.5% ($n = 15$) were younger than 24 months, 75.08% ($n = 250$) were aged between 24 and 48 months and 20.42% ($n = 68$) were aged between 48 and 96 months. The questionnaire was answered by either the father or mother of the child. Demographic and general conditions of the families are given in Table 1.

Validity

Exploratory factor analysis

The study implemented a factor analysis strategy that tackled each dimension individually, as the questionnaire was neatly divided into five subscales. These subscales encompassed family interaction, parenting, emotional well-being, physical/material well-being, and disability-related support. Each individual question variable within these dimensions was analyzed separately. The initial 130 cases were sampled, and an exploratory factor analysis was performed on 25 items.

The first subscale was family interaction and contained six questions. Before conducting the factor analysis, the KMO (Kaiser-Meyer-Olkin) and Bartlett's spherical tests were carried out on the sample, yielding a KMO value of 0.877 and significant Bartlett's spherical test results ($p < 0.001$). These outcomes revealed the existence of common factors in the correlation matrix, highlighting its suitability for factor analysis. Principal component analysis with orthogonal rotation using the maximum variance method allowed one factor to be extracted at the family interaction level, with an eigenvalue of 4.005 for the factor and 66.75% of the explained variance. An entry that had a factor loading below 0.7 was eliminated (F18). After further analysis, the remaining five entries produced a KMO value of 0.857 and a significant Bartlett's spherical test ($p < 0.001$). They contributed to a final distilled variance of 72.38% for a single common factor. The factor loadings of all the five question items exceeded 0.7, signifying that each question variable accurately mirrored its factor construct.

The second subscale was parenting and contained six questions. Before proceeding with factor analysis, the sample was evaluated with the KMO and Bartlett's spherical tests. The KMO test produced a value of 0.815 while Bartlett's spherical test showed significant results ($p < 0.001$). These findings suggested the data was appropriate for factor analysis. Using principal component analysis with orthogonal rotation using the maximum variance method, one factor was extracted at the parenting level, with an eigenvalue of 3.289 for the factor and 54.81% of the explained variance. A total of two entries with factor loadings less than 0.7 were removed (F2 and F5). The remaining four entries were tested and gave a KMO value of 0.785 and a statistically significant Bartlett's spherical test ($p < 0.001$). This resulted in a final contribution of 64.21% of variance for the one common factor extracted. The factor loadings for all four question items were above 0.7, indicating that each question variable was a valid reflection of its factor construct.

The third subscale was emotional well-being and contained four questions. Prior to factor analysis, the sample was subjected to KMO and Bartlett's spherical tests and the KMO value was found to be 0.744 and the Bartlett's spherical test was significant ($p < 0.001$), making it appropriate for factor analysis. Using principal component analysis with orthogonal rotation using the maximum variance method, one factor was extracted at the emotional well-being level, with an eigenvalue of 2.33 for the factor and 58.17% of the explained variance. One entry with a factor loading less than 0.7 was removed (F9). The remaining three entries were then analyzed and gave a KMO value of 0.697 and a statistically significant Bartlett's spherical test ($p < 0.001$), resulting in a final contribution of 68.36% of the variance of the one extracted common factor. The factor loadings for all three question items were above 0.8, indicating that each question variable was a valid reflection of its factor construct.

The fourth subscale was physical/material well-being and contained five questions. Before factor analysis, the sample was subjected to KMO and Bartlett's spherical test, the KMO value was 0.805 and the Bartlett's spherical test returned a significant result ($p < 0.001$), making it suitable for factor analysis. Principal component analysis with orthogonal rotation using the maximum variance method resulted in one factor being extracted for physical/material well-being dimensions, with an eigenvalue of 2.817 for the factor and 56.34% of the explained variance. One entry with a factor loading less than 0.7 was removed (F6). The remaining four entries gave a KMO value of 0.793 and a statistically significant Bartlett's spherical test ($p < 0.001$), resulting in a final variance contribution of 66.86% for the one common factor. The factor loadings for all four question items were above 0.7, indicating that each question variable was a valid reflection of its factor construct.

The fifth subscale was disability-related support and contained four questions. Before conducting the factor analysis, the sample underwent both the KMO and Bartlett's spherical test. The results indicated a KMO value of 0.849 and a significant Bartlett's spherical test ($p < 0.001$), thus qualifying the sample for factor analysis. Using principal component analysis with orthogonal rotation using the maximum variance method, a total of one factor was extracted at the disability-related support level, with an eigenvalue of 3.219 for the factor and 80.49% of explained variance. The factor loadings for all four question items were above 0.7, indicating that each question variable was a valid reflection of its factor construct. The results of the final selected factor entries for each level of EFA are given in Table 2.

Confirmatory factor analysis

The exploratory factor analysis yielded a modified Chinese version of the FQOL Scale, consisting of 20 items. The theoretical model was validated with AMOS 24.0, producing the structure of the standardized model illustrated in Fig. 1. CFA was performed to examine the dimensionality of the five-factor structure of the BCFQOL. Model fit was assessed using fit indices including the ratio of $\chi2$ to the degrees of freedom (the $\chi2/df$ ratio), the goodness-of-fit index (GFI), the standardized root mean square residual (SRMR), the root mean square error of approximation (RMSEA), the tucker–lewis index (TLI), the comparative fit index (CFI) and the incremental fit index (IFI). The fit indices of the modified Chinese

Table 2 Results of exploratory factor analysis

I/FL	F-I	*P*	E-W	*P*/M-W	DR-S	CV	RVC
F11	0.911						
F12	0.902						
F10	0.853						
F7	0.849						
F1	0.726						
						3.619	72.376
F14		0.846					
F19		0.805					
F17		0.783					
F8		0.770					
						2.568	64.208
F3			0.840				
F4			0.828				
F13			0.812				
						2.051	68.363
F16				0.877			
F15				0.845			
F20				0.830			
F21				0.708			
						2.675	66.863
F23					0.916		
F24					0.911		
F25					0.898		
F22					0.862		
						3.219	80.487

I: Item; FL: Factor loading; F-I: Family Interaction; P: Parenting; E-W: Emotional Well-being; P/M-W: Physical/Material Well-being; DR-S: Disability-Related Support; CV: Characteristic value; RVC: Relative variance contribution

version of the FQOL Scale derived from the five-dimension models are presented in Table 3. The χ2/df value was 1.783, falling within a reasonable range of < 3 for an ideal fit. Additionally, the RMSEA was 0.062, which is less than 0.08 (indicating an ideal fit), and the SRMR was 0.061, also less than 0.08 (ideal fit). Furthermore, the TLI was 0.916, exceeding the ideal fit threshold of 0.9, while the CFI, IFI, and GFI values were all greater than 0.9, indicating an ideal fit. Considering the above indicators collectively, the model appears to fit well and the structural validity of the questionnaire is good.

Reliability

The Cronbach's α coefficients for every modified Chinese version of the FQOL Scale subscale exceeded 0.7, demonstrating suitable reliability, except for the emotional health subscale, which was 0.677. The total reliability coefficient for the scale was 0.918, indicating impressive reliability as it surpasses 0.9. The overall reliability coefficient of the scale was 0.918, which is higher than 0.9, suggesting a very good reliability. The Cronbach's α coefficients of the modified scale and each dimension are given in Table 4.

Analysis of the relationship between FQOL of Children with Autism and parents' prognostic attitudes.

Using the five dimensions of the modified Chinese version of the FQOL Scale to predict parents' prognostic attitudes, a stepwise regression analysis was employed. The effective predictive variables that ultimately entered the model were Parenting and Physical/Material Well-being, which explained 48% and 4% of the variance in parents' prognostic attitudes, respectively. The equation can be constructed from the model's unstandardized regression coefficients as follows: Parents' prognostic attitude = -0.863 + 0.456* Parenting + 0.2* Physical/Material Well-being. The regression analysis data is shown in Table 5.

Discussion

Without the support of their families, the development and rehabilitation of children with ASD would not be achievable. Nonetheless, looking after a child who has autism frequently places enormous emotional and physical strain on the individuals providing care. Failure to effectively release stress not only negatively impacts the physical and mental health of families, exposing them to additional challenges, but also influences their attitudes toward the children, thereby affecting the children's rehabilitation and development (Table 6).

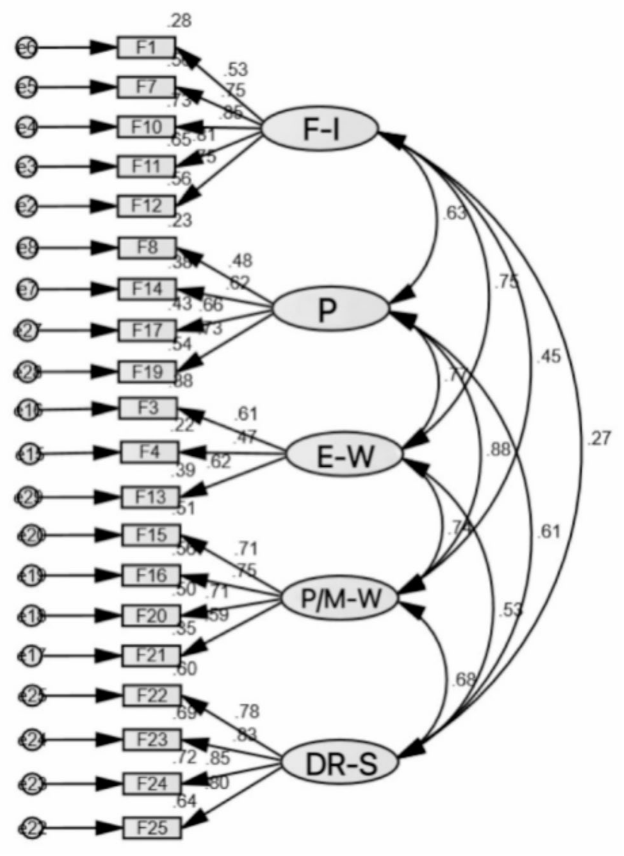

Fig. 1 Structure of the standardized model

Table 4 Overall and internal consistency of the formal questionnaire

Dimensionality	Number of entries	Cronbach's α
Family interaction	5	0.871
Parenting	4	0.760
Emotional Well-being	3	0.677
Physical/Material Well-being	4	0.804
Disability-Related Support	4	0.899
Overall	20	0.918

Table 5 The regression analysis data

	R	R^2	β	B	t
Parenting	0.69	0.48	0.528	0.456	9.947***
Physical/Material Well-being	0.72	0.04	0.246	0.200	4.638***

*$p < 0.05$, ***$p < 0.001$

There is both a growing recognition that families play a critical role throughout the lives of individuals with ASD and an increasing interest in discovering constructive approaches to enhance the QoL for these families [18, 19]. Although family-centered research on ASD has become increasingly common, it is still underdeveloped in developing countries and less developed regions [20]. Families frequently find themselves responsible for caring for and supporting their children with ASD, as well as bearing all associated costs. Hence, enhancing the QoL for families of children with ASD is of utmost vital, whether it be for the individual rehabilitation and development of the child with ASD or for the overall well-being of family members [21]. FQOL provides a conceptual framework for the discovery of positive ways in which the FQOL bringing up children with disabilities can be improved. The outcome of this approach is to support the development of children who have autism in the family and community, support the best role of the family and promote the sustainable stability of society [17, 22]. Enhancing the QoL requires an effective evaluation of the FQOL for autistic children as an initial step [23].

Research has provided evidence that the FQOL Scale is appropriate for assessing the FQOL among American children with disabilities [8]. However, as noted by the scale's authors, the structural components of the scale might not be replicated in particular groups, such as families of children with other specific conditions or in populations that do not speak English. EFA results and the associated reliability coefficients play a pivotal role in shaping the structure of a scale and ensuring its effectiveness. EFA reveals the dimensional makeup of a construct and guides the refinement of items, while reliability coefficients provide assurance of internal consistency and stability, ultimately influencing the validity and applicability of the measurement tool in research contexts. Based on the scale's content and in consideration of its original five dimensions, a stratified EFA was utilized in mainland Chinese families of children with autism. The results revealed some of the statistical indices to be lower than an acceptable threshold. This resulted in removal of items with factor loadings less than 0.7 to obtain a modified 20-item, five-dimensional structural model. CFA was employed to estimate this new model, and the outcome indicated satisfactory model fit alongside strong structural validity for the questionnaire. The reliability of the formal model was assessed, and it was determined that the modified Chinese version of the FQOL Scale exhibited strong reliability for families and their autistic children.

Table 3 Fit indices for the modified scale

χ^2	df	χ^2/df	RMSEA	SRMR	TLI	CFI	IFI	GFI
285.237	160	1.783	0.062	0.061	0.916	0.930	0.931	0.878

χ^2: Chi-square goodness of ft; *df*: Degrees of freedom; RMSEA: Root mean square error of approximation; SRMR: Standardized root mean square residual; TLI: Tucker–Lewis index; CFI: Comparative fit index; IFI: Incremental fit index; GFI: Goodness of fit index

Table 6 Descriptive statistics of the FQOL scale scores

	Satisfaction	
Item	Mean	SD
Family Interaction		
My family enjoys spending time together	3.35	1.06
My family members talk openly with each other	3.52	0.95
My family solves problems together	3.56	0.95
My family members support each other to accomplish goals	3.57	0.95
My family members show that they love and care for each other	3.50	1.01
Parenting		
Family members teach the children how to get along with others	3.50	0.97
Adults in my family teach the children to make good decisions	3.47	0.94
Adults in my family know other people in the children's lives (i.e. friends, teachers)	3.35	1.01
Adults in my family have time to take care of the individual needs of every child	3.25	1.05
Emotional Well-being		
My family has the support we need to relieve stress	3.32	0.99
My family members have friends or others who provide support	3.24	0.97
My family has outside help available to us to take care of special needs of all family members	2.86	0.98
Physical/Material Well-being		
My family gets medical care when needed	3.41	1.06
My family has a way to take care of our expenses	3.23	1.10
My family gets dental care when needed	3.18	1.06
My family feels safe at home, work, school, and in our neighborhood	3.62	0.93
Disability-Related Support		
My family member with special needs has support to make progress at school or workplace	2.97	0.93
My family member with special needs has support to make progress at home	3.14	0.94
My family member with special needs has support to make friends	3.09	0.94
My family has a good relationship with the service providers who work with our family member with a disability	3.17	0.92

The responses to the FQOL in the sample of families of autistic children tested employing the modified Chinese version of the FQOL Scale were consistent with those observed in other language and cultural communities, as well as in families of children with or without other disabilities. However, further researches are needed to investigate the stability of these dimensions or the presence of alternative variables. The target population tested is linguistically and culturally different from the sample used for the English FQOL Scale, so we need to create a distinct infrastructure to serve this target population. Moreover, families of autistic children may differ from those with children diagnosed with other disabilities. Once families receive a definitive diagnosis of ASD for their children, they are confronted with the necessity of making numerous simultaneous adaptations. These adjustments include: (1) Comprehending the diagnosis and its implications for both their child and family; (2) Start finding suitable services and handling the financial expenses linked to those services (such as hiring private caregivers or taking time off work to look after their children); (3) Adjust their way of nurturing their children; and (4) Reconfigure family dynamics within the household (such as relationships with relatives, etc.). Parents are also required to devise tactics for managing the consequences of the child's condition on the family in order to sustain mental wellbeing. This involves balancing work with caregiving for the child and additional facets of family life, while adjusting to the changes in a couple's relationship that accompany being parents of a child with autism [24, 25]. For these reasons the results collected using the FQOL Scale may demonstrate factors in domestic life that interfere with QoL. It has been shown that the FQOL results and subsequent outcomes identified in the initial diagnosis of children with ASD may not be consistently identified in some studies, which may exhibit lower overall satisfaction ratings at the beginning of the ASD diagnosis when compared to subsequent follow-up outcomes. According to this speculation, the theoretical dimensions of FQOL may become more evident as the family context stabilizes. This requires further investigation.

The modified Chinese version of the FQOL Scale highlighted the significant positive relationship between Parenting and Physical/Material Well-being dimensions and parents' prognostic attitudes. To effectively support families with autism, interventions should focus on enhancing these dimensions. Programs that provide parenting skills training and promote physical/material well-being through workshops and resources can foster better coping strategies and resilience among parents. Additionally, tailored support services that address the unique challenges faced by autism families can help improve overall family well-being, thereby positively influencing parents' outlook on prognosis and care.

Our research has recognized the evaluation value of the Chinese modified version of the FQOL scale in families with autistic children. We can further employ this scale to study the QoL in families with children with autism and explore the influencing factors. We predict that multiple factors are associated with the QoL in families with autistic children, such as the initial age of autism diagnosis, duration of intervention, educational level of primary caregivers, and family financial status. It can be inferred that a lower age of diagnosis may indicate earlier access to appropriate interventions and support services, longer durations of intervention may suggest increased access to resources and support, higher levels of education for the caregivers may provide caregivers with a better understanding of the disorder, access to information and resources, and the ability to advocate effectively for their child's needs, families with higher financial resources may have greater access to specialized interventions, therapies, and support networks. All of the aforementioned factors have the potential to improve the FQOL. But these need to be verified by more scientifically designed research studies. Understanding these correlations can help professionals and policymakers develop targeted interventions and support systems to improve the overall well-being of these families. By tackling these factors, we can strive to build a more inclusive and supportive environment for individuals with autism and their families.

The limitation of this study is that no re-evaluation of FQOL in the families of the children occurred after intervention. And we did not conduct cognitive interviews with participants to assess the clarity and comprehensibility of the translation project. Furthermore, there was no analysis and comparison of any re-evaluation results with the initial evaluation. We believe that a more informed conclusion could be achieved with expansion of the relevant research.

Conclusion

This study translated and modified the FQOL Scale into Chinese and reported psychometric characteristics of families of autistic children in mainland China. The scale has a five-dimension model comprised of family interaction, parenting, emotional well-being, physical/material well-being and disability-related support. Analysis of results support the reliability and validity of the scale. The two dimensions of Parenting and Physical/Material Well-being can significantly predict parents' prognostic attitude, indicating that the better the status of Parenting and Physical/Material Well-being, the better the parents' prognosis attitude. The results presented herein advocate for the application of our scale within mainland China's population of families with autistic children. The scale facilitates the monitoring of these families after their children have been diagnosed with ASD and assessing the influence of services and rehabilitation treatments on their FQOL at distinct stages throughout various service processes. The scale can be applied to large populations and offer an impartial evaluation of the impact of interventions and treatments on autistic children and their families.

Abbreviations

The FQOL Scale	The Beach Center Family Quality of Life Scale
FQOL	Family quality of life
EFA	exploratory factor analysis
CFA	Confirmatory factor analysis
QoL	Quality of life
ASD	Autism spectrum disorders
ADOS	Autism Diagnostic Observation Scale
CVI	content validity index
KMO	Kaiser-Meyer-Olkin
I	Item; FA: Factor loading
F-I	Family interaction
P	Parenting
E-W	Emotional well-being
P/M-W	Physical/Material well-being
DR-S	Disability-related support
CV	Characteristic value
RVC	Relative variance contribution
χ^2	Chi-square goodness of fit
df	Degrees of freedom
RMSEA	Root mean square error of approximation
SRMR	Standardized root mean square residual
TLI	Tucker–Lewis index
CFI	Comparative fit index
IFI	Incremental fit index
GFI	Goodness of fit index
DSM-V	Diagnostic and Statistical Manual of Mental Disorders Fifth editon

Supplementary Information

The online version contains supplementary material available at https://doi.org/10.1186/s12887-025-05649-x.

Supplementary Material 1

Supplementary Material 2

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Author contributions

FW and HL designed the study protocols. FW applied for research ethic approval. LL, YP-X, YW, YJ, MY-C and SZ translated the scale, recruited the participants and collected data respectively. LL and LFX analyzed the data and prepared the manuscripts. HL supervised all study stages, including data collection, analysis, interpretation, and revision of the manuscript, and proofread the manuscripts.

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Data availability

No datasets were generated or analysed during the current study.

Declarations

Ethics approval

We confirmed that informed consent was obtained from all participants' legal guardians. All the families had been informed that participation in the study was voluntary and anonymous, the researcher would keep the study confidential, and the final report of the study would only contain analysis of the data with de-identifiable information. This study has been approved by the Ethics Committee (No.[2019]02-329-01). And all methods were carried out in accordance with relevant guidelines and regulations.

Informed consent

All patients signed the informed consent form.

Competing interests

The authors declare no competing interests.

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