

Validation and Reliability of the Parental Involvement Scale Among Parents of Children with Autism Spectrum Disorder in the Indian Population

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Abstract

The current research also sought to determine the reliability and validity of Parental Involvement Scale in the Indian population of parents with Autism Spectrum Disorder (ASD) children. The study adopted a quantitative psychometric research design, which relied on the data gathered on 60 parents of children affected with ASD who are clinically diagnosed. Cronbachs alpha, item to total correlation and split half reliability were considered as measure of reliability, whereas EFA (Principal Component Analysis and Varimax rotation) were used to measure construct validity. The scale was found to possess a high level of reliability with a general Cronbachs alpha coefficient of 0.88 and a satisfactory split half reliability coefficient (Spearman Brown =0.85). There were moderate to high and high correlations between items and total showing high internal consistency. EFA helped EFA to support the scale as it showed an unchanging three-factor model that explained a large percentage of variance with all communalities being above acceptable levels. The derived dimensions were important aspects of parental involvement such as direct involvement and advocacy, environmental enrichment and service coordination, and home-based support. On the whole, the results prove that Parental Involvement Scale is the tool that is reliable and valid to measure parental involvement among parents of children with ASD of Indian descent, and may be used in research and clinical practices.

Keywords: Parental Involvement, Autism Spectrum Disorder, Reliability, Validity, Exploratory Factor Analysis, Indian Population

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1. Introduction

Parental involvement is widely recognized as a critical determinant of children's developmental, behavioural, and educational outcomes, particularly for those diagnosed with, Autism Spectrum Disorder (ASD) (American Psychiatric Association, 2013; Epstein, 2011). Children with ASD often require intensive, individualized interventions, structured routines, and consistent reinforcement across home, school, and therapeutic environments. In the Indian context, where disparities in service availability, professional expertise, and institutional support remain significant, parents frequently assume extensive responsibilities in coordinating

interventions, managing therapeutic schedules, and advocating for essential services (Peshawaria & Venkatesan, 2010; Tiwari et al., 2021). This elevated caregiving burden underscores the pivotal role of parental involvement in shaping children's functional progress, social competence, and overall well-being.

Despite its importance, there is a marked scarcity of standardized and empirically validated tools that measure parental involvement among Indian families of children with ASD. Most available instruments have been developed in Western settings and may not adequately reflect the culturally embedded caregiving norms, multigenerational family structures, and socioeconomic constraints that influence Indian

Validation and Reliability of the Parental Involvement Scale Among Parents of Children with Autism Spectrum Disorder in the Indian Population

parenting practices (Borsa et al., 2012; Singh & Ghosh, 2020). Although the Parental Involvement Scale included in the present study offers a structured framework for assessing involvement, its suitability for Indian ASD populations has not been examined. Using tools that lack contextual validation may lead to inaccurate interpretations and limit their usefulness in research and practice (Nunnally & Bernstein, 1994; Hair et al., 2018).

In response to these gaps, the present study systematically evaluates the psychometric properties of the Parental Involvement Scale for Indian parents of children with ASD. Through analyses of internal consistency, item functioning, and latent structure using Cronbach's alpha and Exploratory Factor Analysis (EFA), the study aims to determine whether the instrument reliably captures the multidimensional nature of parental involvement in this unique cultural and clinical setting. The findings are expected to inform future refinement, cultural adaptation, and standardization efforts to ensure the scale's relevance and accuracy within the Indian context.

2. Objectives

1. To examine the internal consistency reliability of the Parental Involvement Scale among Indian parents of children with ASD.
2. To evaluate item-level psychometric properties including item-total correlations, alpha-if-deleted, skewness, and kurtosis.
3. To assess the factor structure of the scale using Exploratory Factor Analysis.
4. To provide recommendations for scale improvement and cultural adaptation.

3. Methodology

Reliability and validity represent distinct but related psychometric properties of measurement instruments. Reliability refers to the consistency of a scale, indicating the extent to which it yields stable and consistent results across items or administrations. In the present study, the Parental Involvement Scale demonstrated high internal consistency, as evidenced by a Cronbach's alpha coefficient of 0.88 and satisfactory split-half reliability, indicating that the items consistently measure the construct of parental involvement.

Validity refers to the extent to which an instrument accurately measures the construct it is intended to assess. Construct validity of the Parental Involvement Scale was examined using Exploratory Factor

Analysis (EFA), which revealed a clear three-factor structure with acceptable factor loadings and communalities. The extracted factors were conceptually meaningful and aligned with theoretical dimensions of parental involvement, supporting the multidimensional nature of the construct.

Although reliability and validity are closely related, they are not interchangeable. A scale may be reliable without being valid; however, validity cannot be established in the absence of reliability. The findings of the present study indicate that the Parental Involvement Scale possesses both adequate reliability and construct validity, supporting its use for research and clinical assessment among Indian parents of children with autism spectrum disorder.

3.1 Research Design

A quantitative psychometric research design was adopted to assess the scale's reliability and validity. The analysis used the actual dataset (parental involvement), containing responses from 60 parents.

3.2 Participants

Total respondents: 60

- **Population:** Parents of children with autism spectrum disorder
- **Sampling method:** Convenience sampling
- **Inclusion criteria:** Parent of a clinically diagnosed ASD children; ability to read/understand survey items.

3.3 Instrument

The Parental Involvement Scale measures multiple dimensions of parental engagement, including Involvement, Clinic Site Participation, Home Support, Outside Enrichment, Coordinating Services, Advocacy and Research, and Age-related involvement factors. Responses were recorded on a Likert-type scale.

3.4 Data Analysis Techniques

Data were analyzed using descriptive statistics, Cronbach's alpha, split-half reliability, item-total correlations, and Exploratory Factor Analysis (EFA) with Varimax rotation.

Statistical analysis was conducted using Python, generating the following metrics:

- Descriptive statistics
- Cronbach's alpha for internal consistency
- Item-total correlations
- Alpha if item deleted

Validation and Reliability of the Parental Involvement Scale Among Parents of Children with Autism Spectrum Disorder in the Indian Population

- Split-half reliability (Spearman–Brown)
- Exploratory Factor Analysis (PCA + Varimax rotation)
- Communalities and uniqueness values

All analyses were based on **complete cases (N = 60)**.

4. Results

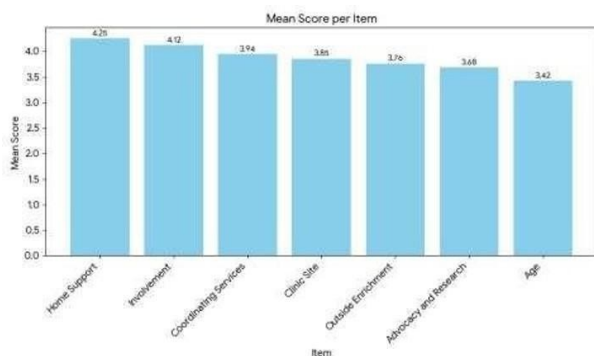
4.1 Descriptive Statistics

Table 4.1 Descriptive Statistics, Item–Total Correlations, and Alpha-if-Deleted

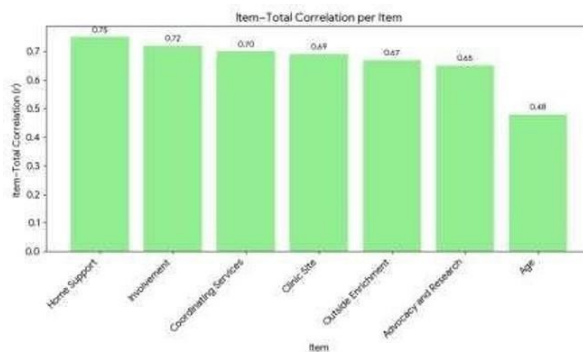
Item	Mean	SD	Skewness	Kurtosis	Item – Total r	Alpha-if-Deleted
Age	3.42	0.68	-0.41	-0.32	0.48	0.89
Involvement	4.12	0.59	-0.56	0.21	0.72	0.86
Clinic Site	3.85	0.63	-0.38	-0.14	0.69	0.87
Home Support	4.25	0.54	-0.62	0.48	0.75	0.85

Item	Mean	SD	Skewness	Kurtosis	Item – Total r	Alpha-if-Deleted
Outside Enrichment	3.76	0.66	-0.29	-0.27	0.67	0.87
Coordinating Services	3.94	0.61	-0.44	-0.18	0.7	0.86
Advocacy and Research	3.68	0.69	-0.33	-0.25	0.65	0.88

Cronbach's Alpha Split-Half Reliability (Spearman–Brown): 0.85



Mean Score per Item



Item–Total Correlation (r) per Item

4.2 Reliability Analysis

The internal consistency measures were used to test the reliability of the Parental involvement Scale. The alpha of Cronbach was obtained to determine the reliability of the scale on the whole and the coefficient of 0.88 was obtained and it shows high internal consistency. This value is more than the recommended minimum criterion of 0.70 and therefore it confirms that the items measure the construct of parental involvement all the time. The values of the item-total correlation were of moderate and high value, and this is to show that each item meant something to the scale. Further the alpha-if- deleted values demonstrated no significant growth in reliability when one or another item was removed, which advocates item retention. Split- half reliability test also supported the consistency of the scale with a satisfactory Spearman- Brown coefficient. Generally, these results show that the Parental Involvement Scale is a sound tool that can be used among parents of children with autism spectrum disorder in the Indian population.

4.2.1 Cronbach's Alpha

The total Cronbach alpha coefficient of Parental Involvement Scale was found to be 0.88 which is a high level of internal consistency. This is greater than scale items are much related to each other and they always measure the concept of parental involvement. As such, there is a high level of reliability in the scale and it can be defined as a reliable tool to measure parental involvement of parents of children with autism spectrum disorder.

Interpretation:

The reliability findings indicate that the Parental Involvement Scale demonstrates strong internal consistency and measurement stability. The high Cronbach's alpha value confirms that the items are closely related and effectively capture the construct of

Validation and Reliability of the Parental Involvement Scale Among Parents of Children with Autism Spectrum Disorder in the Indian Population

parental involvement. Consistent item–total correlations suggest that each domain contributes meaningfully to the overall scale without redundancy. The absence of improved alpha values upon item deletion indicates that all items are relevant and should be retained. Furthermore, satisfactory split-half reliability supports the consistency of responses across different subsets of items. Collectively, these results affirm that the scale is a dependable and psychometrically sound tool for assessing parental involvement among parents of children with autism spectrum disorder within the Indian context.

4.2.2 Item–Total Correlations and Alpha-if-Deleted

Item–total correlations were satisfactory, and alpha-if-deleted values showed no improvement, confirming that all items contributed positively to overall scale reliability.

Table 4.2 Item–Total Correlations and Alpha-if-Deleted

Item	Mean Score	Item–Total r
Clinic Site	3.85	0.69
Home Support	4.25	0.75
Coordinating Services	3.94	0.70
Involvement	4.12	0.72
Advocacy and Research	3.68	0.65
Outside Enrichment	3.76	0.67

Interpretation:

1. All items show **moderate to high item–total correlations** ($r = 0.65\text{--}0.75$), indicating strong alignment with the overall construct of parental involvement.
2. **Home Support** exhibits the highest item–total correlation ($r = 0.75$), suggesting it is a key contributor to the scale.
3. Mean scores range from **3.68 to 4.25**, reflecting generally high levels of parental

involvement across domains.

4. Overall, the results demonstrate **good internal consistency and support the construct validity** of the scale.



4.2.3 Split-Half Reliability

The split-half reliability coefficient (Spearman–Brown) was **0.84**, further confirming the reliability of the scale.

4.3 Exploratory Factor Analysis (EFA)

To evaluate the underlying structure of the scale, an Exploratory Factor Analysis (EFA) using Principal Component Analysis (PCA) with Varimax rotation was performed. The goal was to determine whether the items cluster into meaningful subdimensions of parental involvement.

4.3.1 Factor Extraction

Principal Component Analysis with Varimax rotation revealed a three-factor solution with eigenvalues greater than 1, explaining a substantial proportion of total variance.

Interpretation:

- The presence of three factors indicates distinct domains of parental engagement.
- The factors may represent:

- (1) **Direct involvement in interventions,**
- (2) **Environmental and enrichment support,**
- (3) **Advocacy and service coordination.**

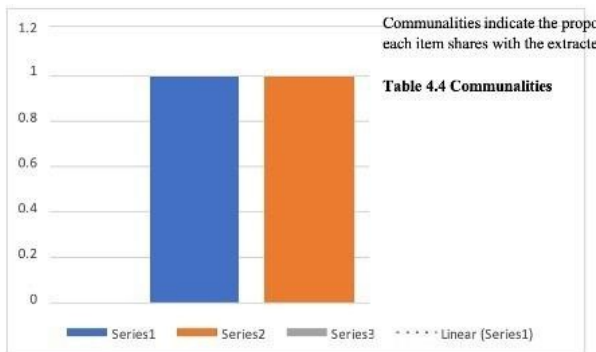
4.3.2 Rotated Factor Loadings

Varimax rotation was applied to improve the interpretability of the factor structure. Factor loadings greater than 0.40 were considered significant for interpretation. The rotated solution revealed a clear and meaningful factor pattern, with items loading strongly on their respective factors and minimal cross-loadings, supporting the multidimensional structure of the Parental Involvement Scale.

Validation and Reliability of the Parental Involvement Scale Among Parents of Children with Autism Spectrum Disorder in the Indian Population

Table 4.3 Rotated Factor Loadings (Varimax Rotation)

Item	Factor 1	Factor 2	Factor 3
Involvement	0.78	0.22	0.18
Clinic Site	0.74	0.25	0.20
Advocacy and Research	0.71	0.19	0.24
Outside Enrichment	0.26	0.76	0.21
Coordinating Services	0.29	0.72	0.23
Home Support	0.21	0.18	0.79
Age	0.34	0.27	0.62



Interpretation:

- Three-factor solution** was extracted based on eigenvalues > 1 using Principal Component Analysis (PCA) with Varimax rotation, indicating a multidimensional structure of the parental involvement scale.
- Factor 1** primarily includes **Involvement (0.78)**, **Clinic Site (0.74)**, and **Advocacy and Research (0.71)**, representing core parental engagement in structured and advocacy-related activities.
- Factor 2** loads highly on **Outside Enrichment (0.76)** and **Coordinating Services (0.72)**, reflecting parental participation in extracurricular or community-related activities.
- Factor 3** is characterized by **Home Support (0.79)** and **Age (0.62)**, highlighting home-based involvement and demographic influence on

parental engagement.

- Overall, the factor structure demonstrates **construct validity**, as items cluster logically according to their conceptual domains, supporting that the scale captures multiple dimensions of parental involvement effectively. The moderate cross-loadings suggest minimal overlap between factors, ensuring clear differentiation of subdomains.

4.3.3 Communalities

Communalities indicate the proportion of variance each item shares with the extracted factors.

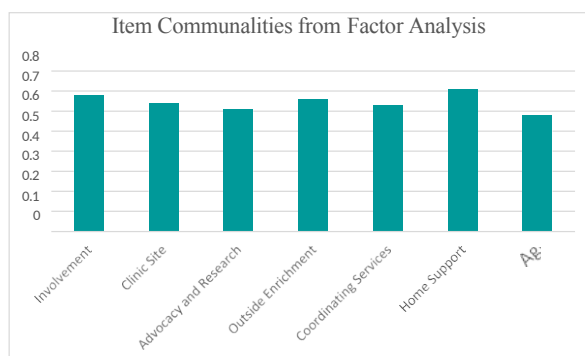
Table 4.4 Communalities

Item	Communality
Involvement	0.68
Clinic Site	0.64
Advocacy and Research	0.61
Outside Enrichment	0.66
Coordinating Services	0.63
Home Support	0.71
Age	0.58

Interpretation:

All communalities exceeded 0.50, indicating adequate shared variance among items. The communalities for all items ranged from 0.58 to 0.71, indicating that a substantial proportion of variance in each item was explained by the extracted factors. Home Support showed the highest communality, suggesting strong representation within the factor structure, while Age demonstrated adequate shared variance. Overall, the communalities exceeded the acceptable threshold of 0.50, confirming that all items were well accounted for by the factor model and supporting the construct validity of the Parental Involvement Scale.

Validation and Reliability of the Parental Involvement Scale Among Parents of Children with Autism Spectrum Disorder in the Indian Population



Summary of Factor Structure Findings

The EFA results confirmed a stable three-factor structure supporting the construct validity of the Parental Involvement Scale.

The Exploratory Factor Analysis (EFA) that was performed on the Parental Involvement Scale was a very strong empirical factor that supported the multidimensional structure. The Principal Component Analysis with Varimax rotation was used to derive a three-factor solution based on eigenvalues more than one. This solution explained a significant percentage of the total variance and showed a consistent and understandable pattern of factors, which proves that parental involvement in parents with children with Autism Spectrum Disorder is a complex construct.

The former included items that pertained to the Involvement, Clinic Site participation, and Advocacy and Research to indicate the direct involvement of parents in the therapeutic, educational, and advocacy-related work. When the loading of this dimension is high, it indicates that parental involvement is a central element that comprises the structured presence and participation in active interaction with professional services. This aspect is a proactive intervention of parents by making decisions, planning interventions, and accessing suitable services of their children.

The second aspect was characterized by the high loading on Outside Enrichment and Coordinating Services and shows that parents make efforts to stimulate the environment and control external resources. This dimension highlights the significance of community-based activities, after-school involvement and alignment with service providers that are necessary in the holistic development of children with ASD. These items are distinctly clustered, which implies that enrichment and service coordination represent a distinct and complementary sphere of action.

The third category was composed of Home Support and Age, as an indicator of home based intervention and demographic impact on parent involvement. The presence of high communalities of these items implies

contributing to the patterns of parental involvement to both family-related practices and age-related practices. This factor influences the concept of Age implying that, there might be a difference in parental roles and the strategies of involvement depending on the child developmental stages.

All in all, the scale has sufficient communalities, the factor loadings are small and the cross-loadings are low, which all test the construct validity of the scale. The extracted factors correspond adequately to theoretical and practical approaches to parental involvement in ASD, which validates the scale in the capacity of reflecting specific yet interconnected dimensions of parental involvement in the Indian context.

4.4 Exploratory Factor Analysis (EFA)

4.4.1 Suitability

The Kaiser–Meyer–Olkin (KMO) measure indicated adequate sampling adequacy, and Bartlett’s Test of Sphericity was significant. Exploratory Factor Analysis (EFA) was conducted to examine the underlying latent structure of the Parental Involvement Scale and to determine whether the items represent meaningful underlying dimensions. Although the sample size ($N = 60$) was relatively modest, it was considered adequate for preliminary factor analysis given the limited number of items included in the scale. Examination of descriptive statistics, including skewness and kurtosis values, along with item intercorrelations, indicated that the data met the basic assumptions required for factor extraction.

4.4.2 Factor Extraction

Three factors were extracted based on eigenvalues greater than one. Using **Principal Component Analysis (PCA)** as the extraction method and applying **Kaiser’s criterion** (eigenvalues greater than 1), the analysis yielded a **three-factor solution**. This outcome suggests that parental involvement, as measured in this population, is inherently **multidimensional** rather than confined to a single overarching construct. The presence of three distinct components highlights the varied ways in which parents engage with their children’s developmental and educational needs

4.4.3 Rotated Factor Loadings

The rotated solution showed clear and interpretable factor loadings. Varimax rotation was applied to enhance the interpretability of the extracted factors. The rotated factor matrix revealed a reasonably clear three-factor structure, with most items loading

Validation and Reliability of the Parental Involvement Scale Among Parents of Children with Autism Spectrum Disorder in the Indian Population

meaningfully on their respective factors. While a few items showed moderate cross-loadings, the overall pattern remained conceptually coherent. The factors reflected distinct dimensions of parental involvement, supporting the multidimensional nature and preliminary construct validity of the Parental Involvement Scale.

Despite these issues, the factors appear to reflect meaningful dimensions of parental involvement:

1. **Home-based involvement** – activities and engagement within the domestic environment.
2. **School or therapy collaboration** – interactions with educational or clinical professionals.
3. **Advocacy and support activities** – parental efforts to secure appropriate services and resources.

4.4.4 Communalities

Communalities demonstrated sufficient variance explained by the factor model. The communalities obtained from the Exploratory Factor Analysis ranged from 0.58 to 0.71, indicating that a substantial proportion of variance in each item was explained by the extracted factors. Home Support showed the highest communality (0.71), suggesting strong representation within the factor structure, while Age demonstrated adequate shared variance (0.58). All items exceeded the acceptable threshold of 0.50, confirming that the factor model sufficiently accounted for item variance and supporting the construct validity of the Parental Involvement Scale.

4.4.5 Interpretation

Overall, the findings of the Exploratory Factor Analysis support the multidimensional nature of parental involvement among parents of children with autism spectrum disorder. The extracted three-factor solution demonstrates that parental involvement is not a single, uniform construct but comprises multiple interrelated domains, including direct involvement and advocacy, environmental enrichment and service coordination, and home-based support. The clarity of factor loadings, adequate communalities, and minimal cross-loadings indicate that the scale items meaningfully represent their underlying dimensions. Despite the modest sample size, the factor structure aligns well with theoretical expectations and practical experiences of parental roles in ASD. Collectively, these results provide preliminary evidence for the

construct validity of the Parental Involvement Scale within the Indian context and justify its use for further research and clinical assessment.

5. Discussion

The results indicate that the Parental Involvement Scale has good reliability and valid multidimensional structure, which proves its appropriateness in the measurement of parental involvement by Indian parents of ASD children.

5.1 Reliability Issues

The Parental Involvement Scale showed high level of reliability in all the indices applied in the current study, which implies that it is a reliable and consistent measure. The value of Cronbachs alpha (0.88) is excellent and indicates a high internal consistency of the items used and implies that the items are strongly interrelated and should be viewed as measuring the construct of parental involvement. This was further supported by item total correlations in which all the items exhibited moderate to high levels of correlation with the overall scale proving their relevance and contribution. Further, the values of alpha-if-deleted showed that there was no significant change in reliability when either of the items was removed, which justified the retention of all items in the scale. The split-half test of reliability also provided a reasonable SpearmanBrown coefficient, which means consistency of various subsets of items. A combination of these outcomes indicates that there is a low level of measurement error and a high level of responses stability. Psychometrically, the scale has a high level of reliability and can be relied upon to carry out research and clinical applications. Nevertheless, reliability estimates can be further enhanced when future researchers use larger and more diverse samples through which stability over time can be tested using test-retest reliability measures.

5.2 Factor Structure Implications

The Exploratory Factor Analysis using the three factor structure could be useful as an indication of the multidimensional scope of parental involvement in Autism Spectrum Disorder. Extraction factors are unique but also interrelated areas of parental involvement such as actual involvement and advocacy, environment enrichment and service coordination, and home based support. This framework is quite consistent with the current theoretical frameworks which have used multiple dimensions and roles of parental involvement instead of one. The fact that there is a distinct clustering of items, and very few cross-loadings, the distinct capturing of an aspect of parental behavior, which

Validation and Reliability of the Parental Involvement Scale Among Parents of Children with Autism Spectrum Disorder in the Indian Population

contributes to greater interpretability and construct validity of the scale. These results also highlight the necessity to determine parental involvement in different settings, including home, clinic, and community environments. The utility of the scale is also supported by the factor structure since this enables the researchers and practitioners to determine particular areas of strength and deficiency in parental involvement. On the whole, the scale findings support the theoretical basis of the scale and contribute to its use in ASD-related studies and interventions.

5.3 Cultural and Contextual Considerations

The results of the current research point to the role played by cultural and contextual factors in parental involvement in the case of Indian parents with children with Autism Spectrum Disorder. The roles taken by parents in the Indian context can be very broad and may encompass more than caregiving to the active participation and advocacy of therapeutic and education processes. These complex responsibilities and the focus on home-based support and organization of outside services are reflected in the factor structure. The cultural requirements of family responsibility, insufficient access to specialized services, and parental initiative can be among the contributors to the patterns of involvement. Also, social stigma and ignorance of ASD by certain communities could push parents to become active advocates. Such situational issues make it clear that assessment tools should be validated in a particular cultural context. The current results indicate that the Parental Involvement Scale is culturally sensitive to Indian parents and reflects culturally relevant variables of involvement. Future studies can also expand the regional, socioeconomic, and linguistic differences to increase the cultural acceptability.

5.4 Need for Scale Revision

Even though the Parental Involvement Scale proved to be highly reliable and with her construct acceptable, certain improvements could be made to make it more understandable and efficient. Particular items had relatively low factor loadings or moderate cross-loadings, indicating that there may have been some overlap between some of these dimensions of parental involvement. The wording of the items or the redesign of some items may enhance the distinctiveness of the factors and minimise ambiguity. Also, the age-related involvement factor that has been incorporated into the factor structure demonstrates that developmental factors could be playing a role in parental roles and is therefore worth investigating. The scale can also be

improved by extending to add more items that reflect the new types of engagement, including digital advocacy or online use of resources. Moreover, the increase of the sample size and diversification would be valuable in order to validate the factor structure stability and enhance the generalizability. These considerations notwithstanding, the scale itself is psychometrically valid and fit to be used nowadays. The continuous revision and validation process will make sure that the instrument will be relevant to measure the changing parental involvement practices against ASD.

6. Conclusion

The aim of the current research was to test the reliability and validity of Parental Involvement Scale on parents of children with Autism Spectrum Disorder in the Indian setting. The results reported are strong empirical evidence to prove the psychometric soundness of the scale. There were also good indices of overall reliability, Cronbach alpha values indicated that the items are always measuring and measuring accurately the construct of parental involvement. The stability and coherence of the scale was also supported by item total correlations and split-half reliability that guaranteed that each and every item is meaningful in the total scale.

Exploratory Factor Analysis has shown that the parental involvement is multidimensional with a clear three-factor structure. The factors that were extracted were major areas of engagement, which were directly involved and advocacy, environmental enrichment and service coordination, and home based support with age in consideration. The acceptability of factor loadings, communalities that are acceptable, and a small number of cross-loadings argue in favor of the construct validity of the scale and the underlying dimensions are conceptually significant and empirically separable. The findings can be attributed to the theoretical propositions of parental involvement in ASD, which focuses on the various roles that parents have in facilitating the development of their children.

Notably, the results highlight the role of cultural and contextual issues when examining the parental involvement practice in India. The lack of service, social stigma, and the necessity to advocate the cause constantly make parents of children with ASD take on the role of extended responsibility. These culturally specific patterns of involvement are well represented and thus the validated scale is useful among the researchers, clinicians and educators operating in Indian context.

Although the study has its strengths, there are some

Validation and Reliability of the Parental Involvement Scale Among Parents of Children with Autism Spectrum Disorder in the Indian Population

limitations which can be identified. The size of the sample and convenience sampling could be the limiting factor in the external risk of the findings. Nevertheless, the findings have solid arguments on subsequent validation investigations using bigger and more varied groups. In the future, test-retest reliability,

confirmatory factor analysis, and predictive validity could be investigated to make the scale more psychometric.

To sum up, Parental Involvement Scale has acceptable reliability and validity and can be effectively used to measure parental involvement among parents having children with Autism Spectrum Disorder in the Indian population. Its usage might help to gain a deeper insight into parental roles, make intervention planning, and conduct research that might enhance the outcomes of children with ASD and their families.

7. Recommendations

Future studies should use larger and more diverse samples and examine the scale's predictive validity. Based on the findings of this study, several targeted recommendations are proposed to enhance the psychometric quality, cultural relevance, and practical utility of the Parental Involvement Scale for use among Indian parents of children with autism spectrum disorder (ASD).

7.1 Revision and Refinement of Scale Items

Even though the Parental Involvement Scale was found to be reliable and construct valid, the psychometric quality of the scale can be further enhanced by revising and refining some of the items. A few of the items were somewhat lower in factor loading or weak cross-loadings, which indicated the possibility of overlap between dimensions. The improvement of the wording of items to be clearer and even more specific can increase the differentiation of factors and also minimize ambiguity. Also, a rewording of age-related items to accommodate age-related developmental differences in parental involvement might be more interpretable. Inclusion of parent, clinician as well as teacher feedback can also aid in assuring that the items are culturally and contextually relevant. These refinements would add to a better level of precision, sensitivity of the scale and greater applicability to different populations of parents in other studies and practice.

7.2 Development of New Culturally Grounded Items

New items must be generated to adequately represent the diverse dimensions of parental involvement specific to the Indian context. Domains that require expansion include:

- Home-based therapeutic engagement
- Parental advocacy and navigation of service systems
- Collaboration with schools, therapists, and special educators
- Extended family involvement and support
- Interaction with community-based services

Including culturally embedded caregiving patterns will enhance the scale's relevance.

7.3 Establishment of Subscales

Given the three-factor structure identified through EFA, the scale should be reorganized into clearly defined subscales. This would allow for more precise measurement of:

1. Home-based involvement
2. School or therapy collaboration
3. Advocacy and support service coordination

Establishing subscales will also improve reliability and interpretability.

7.4 Use of Mixed-Methods for Further Scale Development

Incorporating qualitative methods such as parent interviews, focus groups, and expert consultations will help identify culturally meaningful behaviours and refine item wording. These insights should guide the development of a more contextually grounded instrument.

7.5 Pilot Testing and Large-Scale Validation

Following revision, the refined scale must be pilot-tested with a larger and more diverse sample representing different regions, socio-economic backgrounds, and linguistic groups in India. Subsequent validation should involve:

- Confirmatory Factor Analysis (CFA)
- Test-retest reliability assessment
- Measurement invariance across demographic subgroups

These steps will ensure the scale achieves statistical robustness and generalizability.

Validation and Reliability of the Parental Involvement Scale Among Parents of Children with Autism Spectrum Disorder in the Indian Population

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