

Cross Cultural Adaptation, into Gujarati, of the English version, Strengths and Difficulties Questionnaire

JAGDISH VARMA¹, SANDHYA NAIR², JAISHREE GANJIWALE³, SOMASHEKHAR NIMBALKA⁴, NIKHIL KHAROD⁵

ABSTRACT

Introduction: Adolescent mental health is a neglected entity today which needs to be addressed at the earliest. Several mental health screening questionnaires and tools are available for the same.

Aim: To translate and validate self-report version of Strengths and Difficulties Questionnaire (SDQ), (11-17 years) into Gujarati (language).

Materials and Methods: Cross-sectional study was conducted in two bilingual higher secondary schools from Anand district, Gujarat. A total of 30 students with 15 students (11-17 years) from Gujarati and English medium schools each belonged to 8th and 9th grades who were fluent in both Gujarati and English were selected. Scale performance was measured as normal/borderline/abnormal based on the scores of the 25 items of SDQ. Linguistic equivalence, conceptual equivalence, scale equivalence and reliability of both versions of the SDQ were compared. Ethical clearance from the Ethics Committee was obtained and permission was sought from the heads of the schools.

Results: Linguistic equivalence between the two versions was assessed using mean-difference scores for each item. 7 out of 25 items had mean difference score more than set standard 0.166. Items 9 and 10 had significantly different mean difference. Spearman's rank correlation coefficients showed good conceptual agreement between item and its corresponding subscale score in both, except item 7, 12 and 23 for Gujarati and item 12 for English version. Difference between pair of correlation coefficient was comparable for all except items 7,8 and 10. Concordance rate between classifications by 2 scales was good for Emotional (92.8%), Conduct (92.8%) and Pro-social behaviour subscale (96%) and fair for Hyperactivity and Peer problems subscale (67.8%). Total score concordance rate was 92.8%.

Conclusion: Gujarati version of SDQ (11-17 years) has acceptable linguistic and conceptual equivalence and found to be a valid and reliable measure. Items 9 and 10 were rephrased after analysis.

Keywords: Adolescent health, Child psychiatry, Child psychology, School health

INTRODUCTION

Strengths and difficulties questionnaire is a screening questionnaire for 11-17 years old children that survey their mental health symptoms and positive attitudes [1]. It addresses negative and positive behavioural attributes of children and adolescents and can be completed by parents or teachers or as a self-report by adolescents of age 11 or older. SDQ is widely used and has been translated, validated in several countries and also in different languages within India [2-5]. The aim of the present study was to translate and validate the SDQ in Gujarati (language) and use the self-report version of the same in a Gujarati speaking adolescent population for epidemiological study of mental health problems.

MATERIALS AND METHODS

Study type and setting: A total of 30 students from 8th and 9th grade (15 from a Gujarati medium school and 15 from English medium school) with equal number of boys and girls were randomly selected from the two schools. They were fluent in Gujarati and English.

Study Tool: Strengths and difficulties questionnaire consists of 25 items distributed across five dimensions; emotional symptoms, conduct problems, hyperactivity/inattention, peer relationship problems and prosocial behaviour. Items are scored on a 3-point Likert's scale with 0=not true, 1=somewhat true, and 2=certainly true with higher scores indicating larger problems. Higher scores for prosocial behaviour, indicates more positive behaviour and hence, is a protective factor. Subscale scores can be computed by summing scores on relevant items (after recoding reversed items; range 0-10).

Items from the first four problem areas (excluding prosocial behaviour) are summed up to generate a total difficulties score (0-40).

Procedure: Self-report version of SDQ was translated into Gujarati using back-translation translation process. Discrepancies were resolved and changes made after discussion. Translated version was then administered to the students. One week later the same students were administered English version of SDQ and scores were compared. SDQ total was categorised as normal for SDQ score upto 15 and 'borderline or abnormal' for all higher scores (16-40). Ethical clearance was obtained prior to the study and assent was taken from the study participants.

STATISTICAL ANALYSIS

Linguistic equivalence, the extent to which the translation is a literal one was compared by assessing the mean difference in scores for the 25 items of the Gujarati and English version [6]. For a 0-1 scale acceptable mean difference was set at ± 0.166 .

Conceptual equivalence, referred to as cultural equivalence, defined as having an analogous meaning and relevance of the constructs in the two cultures [7] was assessed by Spearman's rank-order correlation coefficients for each item and its corresponding subscale score [7,8]. A correlation of 0.3 or more indicated that a particular item is consistent with the content of the overall scale [8]. Spearman's rank-order correlation coefficients between each item of the two versions and p-values for the difference between the pair of correlation coefficients were also assessed.

Scale equivalence, the extent to which the Gujarati and English versions of SDQ categorised, child as having either an abnormal or borderline score was determined by comparing the concordance

rate between classifications by the 2 scales. To test reliability, the internal consistency of the Gujarati and English SDQ was assessed using Cronbach's alpha coefficient.

RESULTS

Linguistic equivalence: A total of 7 out of 25 items had mean difference of score more than set standard of 0.166. Items 9 and 10 had statistically significant mean-difference in scores [Table/Fig-1].

Conceptual equivalence: Spearman's rank-order correlation coefficients demonstrated good conceptual agreement between all items and their corresponding subscales on the Gujarati version except for items 7, 12 and 23. Conceptual agreement was also found to be poor for item 12 for English version. Difference between pairs of correlation coefficient was comparable ($p > 0.05$) for all except item 7, 8 and 10 [Table/Fig-2].

Scale equivalence: Three sub-scales of the Gujarati translation were found to be working well i.e., Emotional problems, Conduct problems and Prosocial behaviour subscale, each with a good

Item	Mean (SD) score on the Gujarati version	Mean (SD) score on the English version	Mean (SD) difference in scores (Gujarati - English)	p-value (one sample t-test)
Emotional problems				
3 (Illness complaints)	0.61 (0.69)	0.71 (0.53)	-0.10 (0.57)	0.45
8 (Worried)	0.93 (0.81)	1.04 (0.74)	-0.11 (0.92)	0.48
13 (Sorrowful)	0.61 (0.79)	0.68 (0.55)	-0.07 (0.81)	0.64
16 (Nervousness)	0.54 (0.69)	0.46 (0.58)	0.08 (0.90)	0.54
24 (Frightened)	0.71 (0.76)	0.43 (0.57)	0.28 (0.71)	0.06
Total	3.39 (2.57)	3.32 (1.70)	0.07 (2.16)	0.89
Conduct problems				
5 (Short tempered)	0.89 (0.74)	1.11 (0.62)	-0.22 (0.83)	0.13
7r (Disobedience)	0.61 (0.69)	0.64 (0.73)	-0.03 (1.00)	0.82
12 (Quarrelsome)	0.29 (0.53)	0.21 (0.42)	0.08 (0.47)	0.32
18 (Dishonesty)	0.54 (0.69)	0.39 (0.57)	0.15 (0.45)	0.26
22 (Stealing)	0.11 (0.42)	0 (0)	0.11 (0.42)	0.18
Total	2.43 (1.55)	2.36 (1.57)	0.07 (1.51)	0.81
Hyperactivity				
2 (Restlessness)	0.71 (0.94)	0.61 (0.92)	0.10 (1.07)	0.58
10 (Fidgetiness)	0.32 (0.55)	1.21 (0.63)	-0.89 (0.83)	0.0001
15 (Distracted)	0.68 (0.72)	0.79 (0.69)	-0.10 (0.74)	0.43
21r (Impulsive)	0.21 (0.50)	0.14 (0.36)	0.07 (0.60)	0.46
25r (Inattentive)	0.54 (0.64)	0.32 (0.48)	0.22 (0.57)	0.08
Total	2.46 (2.1)	3.07 (2.19)	-0.61 (2.06)	0.13
Peer problems				
6 (Loner)	0.71 (0.81)	0.57 (0.69)	0.14 (1.01)	0.37
11r (Friendless)	0.29 (0.66)	0.18 (0.55)	0.11 (0.88)	0.39
14r (Unpopular)	0.43 (0.69)	0.5 (0.64)	-0.07 (0.72)	0.60
19 (Victim of bullying)	0.54 (0.69)	0.39 (0.50)	0.15 (0.65)	0.26
23 (Poor social skills)	1.07 (0.72)	0.89 (0.79)	0.18 (0.86)	0.20
Total	3.04 (2.30)	2.54 (1.71)	0.5 (1.91)	0.26
Prosocial behaviour				
1 (Sympathetic)	1.79 (0.42)	1.93 (0.26)	-0.14 (0.45)	0.09
4 (Generosity)	1.82 (0.48)	1.82 (0.39)	0 (0.38)	1.00
9 (Caring)	1.93 (0.26)	1.61 (0.69)	0.32 (0.61)	0.0001
17 (Kindness)	1.75 (0.59)	1.61 (0.57)	0.14 (0.71)	0.22
20 (Helpful)	1.75 (0.52)	1.57 (0.74)	0.18 (0.77)	0.08
Total	9.04 (1.5)	8.54 (1.55)	0.5 (1.43)	0.09
Total difficulties score	11.32 (4.64)	11.29 (4.99)	0.04 (3.50)	0.97

[Table/Fig-1]: Mean (SD) scores and mean difference scores for each item and total scores on the Gujarati and English version of the SDQ.

Item	Spearman's rho for Gujarati version of SDQ	p-value	Spearman's rho for English version of SDQ	p-value	p-value for difference between pair of correlation Coefficients
Emotional problems					
3 (Illness complaints)	0.589	0.001	0.483	0.009	0.59
8 (Worried)	0.820	<0.001	0.535	0.003	0.04
13 (Sorrowful)	0.727	<0.001	0.608	0.001	0.44
16 (Nervousness)	0.542	0.003	0.544	0.003	0.99
24 (Frightened)	0.760	<0.001	0.724	<0.001	0.77
Conduct problems					
5 (Short tempered)	0.670	<0.001	0.769	<0.001	0.46
7r (Disobedience)	0.373	0.050	0.768	<0.001	0.02
12 (Quarrelsome)	0.324	0.093	0.261	0.179	0.81
18 (Dishonesty)	0.424	0.024	0.642	<0.001	0.27
22 (Stealing)	0.448	0.017	-	-	-
Hyperactivity					
2 (Restlessness)	0.769	<0.001	0.744	<0.001	0.83
10 (Fidgetiness)	0.410	0.030	0.769	<0.001	0.04
15 (Distracted)	0.605	0.001	0.565	0.002	0.82
21r (Impulsive)	0.423	0.025	0.546	0.003	0.56
25r (Inattentive)	0.799	<0.001	0.804	<0.001	0.96
Peer problems					
6 (Loner)	0.616	<0.001	0.492	0.008	0.52
11r (Friendless)	0.618	<0.001	0.395	0.037	0.28
14r (Unpopular)	0.656	<0.001	0.720	<0.001	0.66
19 (Victim of bullying)	0.499	0.007	0.775	<0.001	0.08
23 (Poor social skills)	0.332	0.085	0.406	0.032	0.76
Pro-social behaviour					
1 (Sympathetic)	0.654	<0.001	0.280	0.149	0.08
4 (Generosity)	0.555	0.002	0.613	0.001	0.75
9 (Caring)	0.401	0.034	0.635	<0.001	0.25
17 (Kindness)	0.584	0.001	0.572	0.001	0.95
20 (Helpful)	0.771	<0.001	0.677	<0.001	0.48

[Table/Fig-2]: Spearman's rank-order correlation coefficients for each item on the Gujarati and English versions of the SDQ with its corresponding sub-scale score.

concordance rate. However, the Hyperactivity and Peer problems subscales, were found to have fair concordance rate which was just acceptable. Concordance rate for total score was 92.8% [Table/Fig-3].

Subscales	Concordance (%)	Kappa Value
Emotional problems	92.85	0.759
Conduct problems	92.85	0.759
Hyperactivity	67.85	- 0.167
Peer- problems	67.85	0.241
Prosocial behaviour	96.42	-----
Total Score	92.85	0.759

[Table/Fig-3]: Concordance rate of each subscale and corresponding Kappa value.

*Kappa value for Prosocial behaviour could not be calculated as one variable is constant

Reliability: Cronbach's alpha revealed fair levels of internal consistency for Emotional problems (0.71), Hyperactivity (0.58), Peer problems (0.65) and Prosocial behaviour (0.65), however, not for Conduct problems (0.23) subscale for the Gujarati version.

DISCUSSION

One of the most commonly used tool for screening mental health issues in children is the SDQ. The present study aimed to translate

and validate the self-report version of the SDQ into Gujarati (language) for use in adolescent school children of a district of Gujarat.

The present study demonstrates that the Gujarati translation of the SDQ had reasonable linguistic equivalence, i.e., the translation from English into Gujarati was a literal one with only 7 out of 25 items displaying mean difference score more than the set standard of 0.166. Items 9 and 10 on the translated version had a significant difference in mean score. This might have probably occurred as the words would have been a literal translation of the English version instead of refining it to fit the context. Concepts such as fidgeting and squirming are sparsely used in Gujarat. We had expected that the Gujarati words chosen for these concepts may be difficult for the participants to comprehend. Hence, item 10 may not have performed well. These two questions were rephrased to convey the meaning in a better way.

Conceptual equivalence on the other hand demonstrated that the Gujarati and English versions were comparable for each item with their corresponding sub-scale scores except for items 7, 12 and 23. Item 23 had issues with corresponding peer problem subscale. Item 12 (Bullying behaviours) did not show good conceptual agreement with its subscale (conduct problems) on the original English version. This could be due to bias in reporting of this socially undesirable behaviour. Similar bias could explain poor conceptual agreement of item 7 of the Gujarati translation with its subscale score (also belonging to conduct subscale). For items 7 and 10 the differences between the correlation coefficients had a p-value less than 0.05 indicating less conceptual equivalence. Low conceptual equivalence on items 7 and 10 can be explained based on the reasons cited above. Eventhough, the difference between the correlation coefficients was less than 0.05 for item 8, the Spearman's rank order correlation of the Gujarati translation is higher than the English version, thus indicating that the Gujarati version conveys the meaning better.

The evaluation of scale equivalence demonstrated that the total concordance rate was 92.8% with good concordance for 3 out of the total 5 subscales. The emotional subscale, conduct problem subscale and prosocial behaviour subscale each had a concordance rate above 90%. The hyperactivity subscale and peer problem subscale had a concordance rate of 68% only, which was fairly acceptable. Above two findings along with poor internal consistency for Conduct subscale on translated version suggested that scores on these items may be skewed by desirability bias.

In view of the above findings changes were made to item numbers 9 and 10 and the questions were re-framed. The Gujarati questionnaire was again re-administered to 10 students and a week later followed by the English version. The scores were compared and it showed good correlation between the Gujarati and the English versions. It was found that majority of the subscales of the translated version were working well and the few challenges were faced probably

due to difficulty in understanding the concept of some questions. Hence, after reviewing the results, the Gujarati self-report version of SDQ can be considered to be performing reasonably well.

The corrected version of the translated scale and back translations were sent to the original English version authors. They suggested minor changes to items 10, 12 and 23 which were carried out and the latest translated version is now available on the SDQ website (www.sdqinfo.com). Following validation of the SDQ self-report version in Gujarati (language), it was administered as a screening tool for mental health problems in a larger number of adolescent school children.

LIMITATION

The present study has a number of limitations. Two items on the Gujarati version were reworded, and the subsequent re-testing was done in a smaller number of students. The sample size was relatively small to conduct factor analysis. While concordance rate between the two version was above 90%, on subscale analysis, Hyperactivity and Peer problems subscale on the Gujarati version had just acceptable concordance rates. Hence future studies using the Gujarati version may focus on analysing sub-scale data, and interpret Hyperactivity, Peer problem subscales with caution.

CONCLUSION

The SDQ is a short, easy to use questionnaire, which could be utilised to screen adolescents for mental health. The Gujarati translation of the self-report version of SDQ (11-17 years) had acceptable linguistic and conceptual equivalence and was found to be valid and reliable tool that can be used in our cultural setting.

REFERENCES

- [1] Goodman R. The strengths and difficulties questionnaire: a research note. *J Child Psychology Psychiatry*. 1997;38:581-86.
- [2] Achenbach TM, Becker A, Döpfner M, Heiervang E, Roessner V, Steinhausen HC, et al. Multicultural assessment of child and adolescent psychopathology with ASEBA and SDQ instruments: research findings, applications, and future directions. *J Child Psychology Psychiatry*. 2008;49:251-75.
- [3] Woerner W, Fleitlich-Bilyk B, Martinussen R, Fletcher J, Cucchiari G, Dalgalarondo P, et al. The strengths and difficulties questionnaire overseas: evaluations and applications of the SDQ beyond Europe. *European Child Adol Psychiatry*. 2004;13:ii47-54.
- [4] Owen JA, Mirza KA, Goodman R. Validating screening tool in Malayalam for mental disorders. *Indian J Pediatrics*. 2015;82:595-600.
- [5] Singh K, Junnarkar M, Sharma S. Anxiety, stress, depression, and psychosocial functioning of Indian adolescents. *Indian J Psychiatry*. 2015;57:367.
- [6] Lane DA, Jajoo J, Taylor RS, Lip GY, Jolly K. Cross-cultural adaptation into Punjabi of the English version of the Hospital Anxiety and Depression Scale. *BMC Psychiatry*. 2007;7:1.
- [7] Wang WL, Lee HL, Fetzter SJ. Challenges and strategies of instrument translation. *Western J Nursing Res*. 2006;28:310-21.
- [8] Nunnally JC, Bernstein IH. *Psychometric theory*, 3rd ed. New York: McGraw-Hill; 1994.

PARTICULARS OF CONTRIBUTORS:

1. Associate Professor, Department of Psychiatry, Pramukhswami Medical College, Karamsad, Anand, Gujarat, India.
2. Resident, Department of Paediatrics, Pramukhswami Medical College, Karamsad, Anand, Gujarat, India.
3. Statistician, Department of Central Research Services, Pramukhswami Medical College, Karamsad, Anand, Gujarat, India.
4. Professor and Head, Department of Paediatrics, Pramukhswami Medical College, Karamsad, Anand, Gujarat, India.
5. Professor, Department of Paediatrics, Pramukhswami Medical College, Karamsad, Anand, Gujarat, India.

NAME, ADDRESS, E-MAIL ID OF THE CORRESPONDING AUTHOR:

Dr. Somashekhar Nimbalkar,
Professor and Head, Department of Paediatrics, Pramukhswami Medical College, Karamsad, Anand-388325, Gujarat, India.
E-mail : somu_somu@yahoo.com

Date of Submission: **Oct 04, 2017**
Date of Peer Review: **Feb 14, 2018**
Date of Acceptance: **Apr 19, 2018**
Date of Publishing: **Jul 01, 2018**

FINANCIAL OR OTHER COMPETING INTERESTS: None.