

## THE EXAMINATION OF PSYCHOMETRIC PROPERTIES OF KIDSCREEN-SHORT VERSION ON CHILDREN WITH AUTISM IN TURKEY<sup>1,2</sup>

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### ABSTRACT

Determining health related quality of life is crucial issue to conduct holistic implications toward children with autism. Unless any studies that do not examine health related quality of life features of these children could not be achieve about planning and practices. The aim of the study is to the examination of psychometric properties of KIDSCREEN Health-Related Quality of Life Questionnaire Short Version (or KIDSCREEN-27) on children with autism in Turkey. This descriptive quantitative research was conducted with 349 participants. After we provided linguistic equivalence, we collected data in the base of parent proxy report instead of their children with autism. The KIDSCREEN-Short Version that aims to put forward children's health related quality of life consist of originally 27 question and five sub domain which are physical activities and health (5 items), general mood and your child's feeling (7items), family and your child's free time (7 items), friends (4 items), school and learning (4 items). After calculation of the item total correlation, we eliminated 3 items that have fewer than  $r_{jx}=.20$  factors load and 24 items remained. Cronbach's alpha internal consistency reliability ( $\alpha=.88$ ) and split-half reliability are high (Spearman Brown  $\rho=.88^{**}$ ), item total correlations are acceptable except three items and the differences between %27 upper-lower groups were significant. According to construct validity analysis, the scale has an acceptable goodness of fit ( $\chi^2/df=3.1$ , RMSEA=.08, NFI=.90, CFI=.93). Analysis results show us that KIDSCREEN-Short Version can be used as a valid and reliable assessment tool to determine the health related quality of life for children with autism in Turkey.

**Key Words:** Confirmatory factor analysis, health related quality of life, KIDSCREEN-Short Version, reliability, validity.

### INTRODUCTION

In recent years, there has been growing body of research interest on Health-Related Quality of Life (HRQoL) among children and it has been examining especially pediatric HRQoL (Matza et al., 2004; Mohler-Kuo & Dey, 2012). The measurement of HRQoL which is reflected a multidimensional concept covering the social, physical and psychological domains of health has been increasing in the assessment of pediatrics and adolescent care (Patrick & Chiang, 2000; Rajmil et al., 2004; Sieberer et al., 2006). Planning and assessing the effectiveness of health care or other interventions depend on a better understanding of perceptions of children on HRQoL

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<sup>1</sup> The scale was applied to Turkish sample with permission of the KIDSCREEN Group (Project Coordination Prof. Dr. Ulrike Ravens-Sieberer MPH, University Clinic Hamburg Eppendorf, Center for Obstetrics and Pediatrics, Department of Psychosomatics in Children and Adolescents, Building W29 (Erikahaus), Martinistr. 52, 20246 Hamburg, Germany).

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(Mohler-Kuo & Dey, 2012). In order to provide this, children should be assessed within their social and psychological contexts that include family, peers, classroom, and community (Cox & Paley, 1997). These contexts might contribute assessment and analysis of pediatric health outcomes and HRQoL (Matza et al., 2004).

Measuring the HRQoL is that attempts to see all aspects of overall quality of life regarding general health which has been defined as physical and mental components (McHorney, 1999). HRQoL is a popular measurable outcome that evaluates appropriate and adequate health care service needs and intervention outcomes (Idler & Benyamini, 1997) as well as is a scientific demonstration of the impact of quality of life on health (Zhang et al., 2008).

HRQOL is based on the combination of the components of health and QOL. Health is a state of complete physical, mental, and social wellbeing, and not merely the absence of disease or infirmity (WHO, 1946). Health also includes person's feels, psychologically and physically conditions, interactions with other persons and daily functions. This defines perceived health that is known as "health-related quality of life-HRQoL (Mohler-Kuo & Dey, 2012). On the other hand, Quality of Life is defined as "individuals' perception of their position in life in the context of the culture and value systems in which they live and in relation to their goals, expectations, standards and concerns. It is a broad ranging concept affected in a complex way by the person's physical health, psychological state, level of independence, social relationships, personal beliefs and their relationship to salient features of their environment" (WHO, 1997, page 1). The five domains were reported of QOL: (1) physical well being that includes health, fitness, mobility, and physical activity, (2) material well being that consists of finance or income, quality of the environment in which the individual lives, possessions, meals or food, transport, privacy, security, and stability, (3) social well being that addresses relationship within family, with relatives, and with friends, and community involvement, (4) development and activity that covers competence, choice, work, leisure, housework, education, and productivity, and (5) emotional well being that reflects positive effect, status, satisfaction, fulfillment, religious faith, and self-esteem (Felce & Perry, 1995).

Despite of the fact that different environmental, economic, political, and spiritual factors could affect an individual's QOL, these factors cannot be addressed directly by healthcare interventions, and are not associated with HRQoL (Khanna, 2010). So researchers need assessment tools different from QOL scales to assess the HRQoL. There are some assessment tools to measure HRQoL, particularly in pediatric area. Some of these scales are; Pediatric Quality of Life Questionnaire (PedsQL) (Varni et al., 1999), Child Health Questionnaire (CHQ) (Landgraf et al., 1999), Child Quality of Life Questionnaire (CQOL) (Graham et al., 1997), The KIDSCREEN-52 (Ravens-Sieberer et al., 2006) and KIDSCREEN Health-Related Quality of Life Questionnaire Short Version (KIDSCREEN-27) (Ravens-Sieberer et al., 2007).

We could not meet any research on the evaluation tools for determining health-related quality of life covariates of children with autism in Turkey. The aim of this research is to determine the psychometric properties of KIDSCREEN Health-Related Quality of Life Questionnaire Short Version (Ravens-Sieberer et al., 2007) on children with autism over the Turkish sample.

## METHOD

### Research Design and Group

We conducted this study as a descriptive quantitative research (Fraenkel & Wallen, 2006). We collected data with school sampling and mail administration in this study. The research group consists of 349 children with autism from 10 Autistic Children Education Center providing service in Turkey. Their mothers responded the questions instead of children within the scope of parent-proxy report. Age average of children with autism was 9.50 (sd=3.41) (27 missing values); 270 of children were male and 73 were female (6 missing values); 61 of

children were mild, 139 of children were moderate, 134 of children were severe and 8 of children very severe in term of severity of disability (7 missing values).

### Process

Before applying the KIDSCREEN Health-Related Quality of Life Questionnaire Short Version to the Turkish sample, we obtained written permission from Ulrike Ravens-Sieberer on behalf of KIDSCREEN Group (Prof. Dr. MPH, Project Coordinator, University Clinic Hamburg Eppendorf, Hamburg, Germany).

Under the scope of adaptation of KIDSCREEN-Short Version into Turkish, it was translated into Turkish by two professionals and an English teacher and three independent translations were turned into a single Turkish form. The Turkish form and original English form were compared by a professional from the English Teaching Department and linguistic equivalence was provided (see Appendix 1).

We collected data of KIDSCREEN-Short Version in three months. Analyses were performed using the PASW Statistics 18.0 (SPSS Statistics) and LISREL 8.71 programs.

### Instruments

#### *KIDSCREEN-Short Version*

Originally KIDSCREEN Health-Related Quality of Life Questionnaire Short Version (as called KIDSCREEN-Short Version or KIDSCREEN-27) was derived from the longer form of KIDSCREEN-52 and was administered to young people aged 8–18 years (Ravens-Sieberer et al., 2006). KIDSCREEN-Short Version questionnaire that is used to measure health-related quality of life of children and young people consists of 27 items in which 5 dimensions: First domain is Physical Well-Being that puts forward the level of the child's or adolescent's physical activity, energy and fitness within 5 items; second is Psychological Well-Being includes 7 items to assess positive emotions, satisfaction with life, and feeling emotionally balanced; third is Autonomy & Parent switch 7 items on evaluating relationships with parents, the atmosphere at home, feelings of having enough age appropriate freedom, and degree of satisfaction with financial resources; fourth is Peer & Social Support examines the nature of the respondent's relationships with other children/adolescents within 4 items; and last is School Environment with 4 items measures the child's/adolescent's perceptions of his/her cognitive capacity, learning and concentration, and their feelings about school. Structural and cross-cultural validity of KIDSCREEN-Short Version were tested with results from 13 European countries: Austria (AT), Czech Republic (CZ), France (FR), Germany (DE), Greece (EL), Hungary (HU), Ireland (IE), Poland (PL), Spain (ES), Sweden (SE), Switzerland (CH), the Netherlands (NL), and the United Kingdom (UK) (Robitail et al., 2007).

## FINDINGS AND RESULTS

### Reliability

#### *Internal Consistency Reliability and Split-Half Reliability*

Cronbach's alpha ( $\alpha$ ) internal consistency coefficients of KIDSCREEN- Short Version were calculated as .88 for whole of the scale, .76 for Physical Activities and Health, .75 for General Mood and Your Child's Feeling, .74 for Family and Your Child's Free Time and .80 for School and Learning. A reliability of at least 0.70 is recommended (Nunnally & Bernstein, 1994). Hence, we can say that the scale has acceptable internal consistency (see Table 1).

We analyzed the correlation between odd items (1,3,5,7,13,15,17,19,21,23,25,27=12 items), even items (2,4,6,8,12,14,16,18,20,22,24,26=12 items) to demonstrate the split-half reliability. Split-life reliability of KIDSCREEN-Short Version was .88\*\* ( $p < .01$ ) according to Spearman Brown rho. Findings show that the split-half reliability of KIDSCREEN- Short Version was high (see Table 1).

Table 1: Internal Consistency Reliability and Split-Half Reliability Results of KIDSCREEN-Short Version (N=349)

Variables	Cronbach alpha ( $\alpha$ ) internal consistency	Split-half reliability Spearman Brown rho.
KIDSCREEN-Short Version_total	.88	.88**
PAH_sub domain	.76	-
GMF_sub domain	.75	-
FFT_sub domain	.74	-
F_sub domain	.88	-
SL_sub domain	.80	-

\*\*  $p < .01$

- ❖ KIDSCREEN-HRQoL=KIDSCREEN-Short Version Health Related Quality of Life; PAH=Physical Activities and Health subdomain; GMF=General Mood and Your Child's Feeling subdomain; FFT=Family and Your Child's Free Time subdomain; F=Friends subdomain; SL=School and Learning subdomain

#### *Item Total Correlation Calculation and Significance of Differences Between 27% Upper-Lower Group*

We observed that item total correlations of the KIDSCREEN-Short Version range between .28 and .61 with applied Pearson product-moment correlation coefficient. Accordingly, it is seen that item total correlations of KIDSCREEN-Short Version were acceptable (see Table 2).

The *t*-test was used in comparing item scores of %27 upper-lower groups determined according to total score of KIDSCREEN-Short Version. 27% upper-lower *t*(*sd*=187) values of KIDSCREEN-Short Version vary between -3.69 and -18.03 and the difference between groups ( $p < .001$ ) was significant (see Table 2).

#### **Validity**

##### *Structure Validity with Confirmatory Factor Analysis*

We applied "Confirmatory Factor Analysis (CFA)" for structure validity of KIDSCREEN-Short Version. The Critical N value which includes minimum number of participants for CFA was calculated as (CN)=136.93 in the research. Accordingly, it can be stated that the study group consisting of 349 participants was suitable for CFA. We used Root Mean Square Error of Approximation (RMSEA), Normed Fit Index (NFI), and Comparative Fit Index (CFI) to determine the sufficiency of the examined model (Hu & Bentler, 1999; Jöreskog & Sörbom, 1993; Şimşek, 2007).

Table 2: Item Total Correlations and Significance of Differences Between 27% Upper-Lower Group of KIDSCREEN-Short Version (N=349)

Items	$r_{jx}$	$t$
<b>Physical Activities and Health (PAH)</b>		
1. In general, how would your child rate her/his health?	.34	-7.01***
2. Has your child felt physically fit and well?	.49	-9.93***
3. Has your child been physically active (e.g. running, climbing, biking)?	.42	-9.78***
4. Has your child been able to run well?	.30	-6.46***
5. Has your child felt full of energy?	.44	-9.31***
<b>General Mood and Your Child's Feeling (GMF)</b>		
6. Has your child felt that life was enjoyable?	.60	-12.54***
7. Has your child been in a good mood?	.50	-9.98***
8. Has your child had fun?	.51	-10.28***
9. <i>Has your child felt sad?</i>	<i>-.05</i>	<i>-</i>
10. <i>Has your child felt so bad that he/she didn't want to do anything?</i>	<i>-.04</i>	<i>-</i>
11. <i>Has your child felt lonely?</i>	<i>-.10</i>	<i>-</i>
12. Has your child been happy with the way he/she is?	.44	-9.84***
<b>Family and Your Child's Free Time (FFT)</b>		
13. Has your child had enough time for him/herself?	.28	-3.69***
14. Has your child been able to do the things that he/she wants to do in his/her free time?	.47	-10.43***
15. Has your child felt that his/her parent(s) had enough time for him/her?	.37	-6.82***
16. Has your child felt that his/her parent(s) treated him/her fairly?	.40	-7.41***
17. Has your child been able to talk to his/her parent(s) when he/she wanted to?	.56	-18.03***
18. Has your child had enough money to do the same things as his/her friends?	.46	-11.28***
19. Has your child felt that he/she had enough money for his/her expenses?	.44	-11.16***
<b>Friends (F)</b>		
20. Has your child spent time with his/her friends?	.56	-12.96***
21. Has your child had fun with his/her friends?	.54	-12.44***
22. Have your child and his/her friends helped each other?	.61	-14.98***
23. Has your child been able to rely on his/her friends?	.56	-12.68***
<b>School and Learning (SL)</b>		
24. Has your child been happy at school?	.45	-8.73***
25. Has your child got on well at school?	.50	-10.40***
26. Has your child been able to pay attention?	.53	-12.19***
27. Has your child got along well with his/her teachers?	.43	-7.58***
Scale points: excellent 1-2-3-4-5 poor for question 1; not at all 1-2-3-4-5 extremely for questions 2, 3, 4, 6, 24, 25; never 1-2-3-4-5 always for questions 5, 7, 8, 9, 10, 11, 12, 13, 14, 15, 16, 17, 18, 19, 20, 21, 22, 23.		

\*\*\* p < .001

CFA results shown that Chi-Square value ( $\chi^2=758.07$ , N=349, df=242, p=0.000) was significant. In the research, it is observed that the model of KIDSCREEN-Short Version had an acceptable fit goodness (fit=3.1) according to  $\chi^2/df=fit$  ( $758.07/242=3.1$ ) calculation. Fit index values of the model based on CFA were calculated as RMSEA=.08, NFI=.90, and CFI=.93. Fit index values indicate that the model was fit and it achieved an acceptable

fit with the data. It was seen that factor loads for the model vary between .32 and .86 and it is greater than .40 except two questions (see Figure 1).

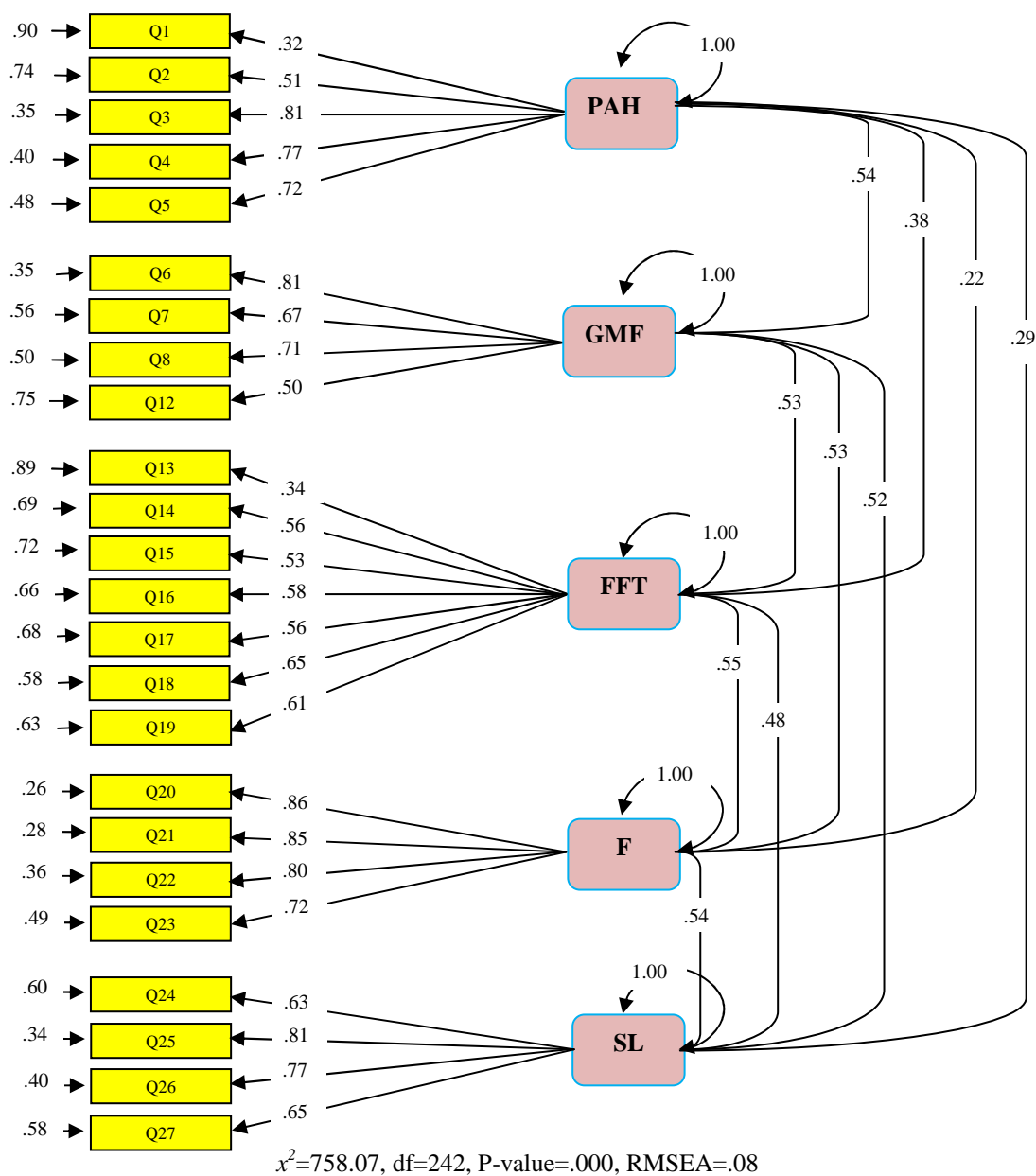


Figure 1 CFA Results of KIDSCREEN-Short Version HRQoL (path diagram)

## CONCLUSIONS AND RECOMMENDATIONS

In the research, we aimed to examine the psychometric properties of KIDSCREEN Health-Related Quality of Life Questionnaire Short Version. Under reliability calculations of the scale, it was seen that total and sub-domains internal consistency reliability values were acceptable and split-half reliability of scale was high. We determined that item total correlations of the scale were good except for the 3 eliminated items (items 9-10-11). Also the differences between 27% upper-lower item averages of scale were significant. According to CFA results, it was seen that fit values of suggested model of KIDSCREEN-Short Version are within acceptable fit index values range and the model of the scale has an acceptable fit.

These findings of the research show that KIDSCREEN Health-Related Quality of Life Questionnaire Short Version can be used as a valid and reliable assessment tool to determine the health-related quality of life of children with autism in Turkey. Since not being able to examine test-rest reliability and concurrent validity were a restriction, it is beneficial to include related reliability and validity calculations in the further researches.

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