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Kidscreen : quality of life in children and adolescents

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KIDDSCREEN: QUALITY OF LIFE
IN CHILDREN AND ADOLESCENTS

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Abstract: The KIDSCREEN is a European cross-cultural and standardized instrument that assesses ten quality of life dimensions in children, adolescents and their parents. The get validity evidences to support general inferences on quality-of-life measures obtained by Portuguese version of KIDSCREEN-52 for children and adolescents, in the context of a survey research.

The present study focuses only in the KIDSCREEN children and adolescents versions. A sample of 3195 children and adolescents from 5th grade (48,8%) and 7th grade (51,2%), mean age 11,8; SD 1,46; 49,2 % boys, were inquired.

KIDSCREEN instrument showed a good internal consistency for most of the 10 subscales, with a lower value for a self-perception (á= 0, 60) and the highest for financial resources (á= 0, 88). In order to test the theoretical model fit index an exploratory factor analysis and a confirmatory factor analysis were used. The RMSEA value was 0, 06 can be consider a good fit index. The CFI value is 0, 97 and NNFI is 0,97 reflecting both an excellent fit index.KIDSCREEN-52 questionnaire is a reliable instrument to estimate the perception of quality of life in children and adolescents.

Key words: Assessment, Health-Related Quality of Life, Children and Adolescents.

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Resumo: O KIDSCREEN é um instrumento estandardizado que avalia dez dimensões de qualidade de vida em crianças, adolescentes e pais. As dimensões do Kidscreen são: Bem-estar físico, Auto-percepção, Autonomia, Relações com Pais e Contexto Familiar, Recursos Financeiros, Suporte Social e Pares, Envolvente Escolar e Aceitação Social e Bullying.

O presente estudo utiliza a versão do Kidscreen para crianças e adolescentes. Foi utilizada uma amostra de 3195 crianças e adolescentes do 5º ano (48.8%) e 7º ano (51.2%), media de idades de 11.8 anos, DP 1.46 e 49.2% dos inquiridos pertencem ao sexo masculino.

O KIDSCREEN apresentou bons indicadores de consistência interna para as 10 subescalas, com valor inferior para a subescala de auto-percepção (á= 0, 60) e superior para a escala de recursos financeiros (á= 0, 88). Para testar um ajustamento ao modelo teórico inicialmente hipotetizado, foram conduzidas Análises Factoriais Exploratórias e Análises Factoriais Confirmatórias. O valor de RMSEA foi de 0,06 e pode ser considerado um valor ajustado. O valor de CFI foi de 0, 97 e o de NNFI igual a 0,97 reflecte um ajustamento das medidas utilizadas. Desta forma, consideramos o KIDSCREEN-52 um instrumento adequado para estimar a percepção da qualidade de vida em crianças e adolescentes.

Palavras-chave: Avaliação, Qualidade de vida relacionada com a saúde, Crianças e Adolescentes

INTRODUCTION

Over the last decade, quality of life (QoL) has emerged as an important concept in the evaluation of the health system related to prevention, treatment and rehabilitation (Helseth & Lund, 2005).

The most widely cited definition of QoL is provided by the World Health Organization (WHOQoL group), who defined the QoL as the individual's physical health, psychological well-being, independence level, social relationships and relationship with their environment and social context. QoL can also be defined as a personal perception of individual's own life in their specific cultural context and the value systems; and related to their goals, expectations, values and perspectives (WHOQOL, 1994; 1995; 1998a; 1998b).

The conceptualization principles of the quality of life are QoL construct which (1) is a multidimensional influenced by the interaction of the personal and the environmental factors (Bramston, Chipuer & Pretty, 2005; Fuh, Wang, Lu & Juang, 2005; Lawford & Eiser, 2001; WHOQOL, 1994; 1995; 1998a; 1998b); (2) has both the subjective and the objective components; (3) is enhanced by a self determination, resources, the purpose in life, and a sense of belonging (Cummins, 2005; Skevington, 2002); and (4) it can be measure with generic or specific instruments (Helseth & Lund, 2005; Koot, 2002; Zekovic & Renwick, 2003).

In the developing process of the KIDSCREEN project, in order to create a new European generic measure of HRQOL in children and adolescents, was

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found that all the HRQOL instruments analysed by included items in the physical, psychological, and social, but the allocation of items among these domains varied significantly. The aim of the KIDSCREEN project was to build a standardized cross-cultural instrument, to estimate the subjective quality of life in children and adolescents and their parents. The KIDSCREEN is the first generic HRQOL measure for children developed simultaneously in several languages to ensure cross-cultural relevance and comparability. The KIDSCREEN-52 instrument includes ten dimensions, (Ravens-Sieberer et al. 2001; 2005; The KIDSCREEN Group Europe, 2006), and was translated and piloted for the Portuguese population in 2005 (Gaspar, Matos, Ribeiro & Leal, 2005; 2006; Matos et al. 2006).

Studies focusing on children subjective well-being usually include interactions between demographics (e.g. age, gender and socio economic status), personal characteristics (e.g. Self Perceptions, Psychological Well-being, General Mood) and interpersonal characteristics (e.g. social relationships with family, peer group and community) (Bronfenbrenner, 1989; Caldera & Hart, 2004; Gaspar, 2005; Mccullough, Huebner & Laughlin, 2000; Plancherel, Bolognini & Halfon, 1998), adopting an ecological perspective and including multiple levels of analysis, namely self-perceptions and family perceptions (Harding, 2001; Nelson, Laurendeau & Chamberland, 2001).

The main objective of this paper was to get validity evidences to support general inferences on quality-of-life measures obtained by Portuguese version of KIDSCREEN-52 for children and adolescents, in the context of a survey research.

METHODS

Sample

Sampling methods were derived from the international study "Health Behaviour School Aged-Children" (HBSC/WHO). The HBSC/WHO study's sample was enlarged, and two extra random classes (5th grade and 7th grade) were selected in each of the national randomly selected schools. Schools were stratified by National Educational Regions (5 in the whole country), following HBSC/WHO. (For further details about sampling procedures, see Currie, Samdal, Boyce, & Smith, 2001; Matos et al, 2003; Matos et al, 2006, or www.hbsc.org). The present study is thus a cross sectional national study, representative of Portuguese public schools (except Portuguese islands), and provides a random national representative sample of 5th and 7th grade pupils.

KIDSCREEN questionnaires were applied in a classroom setting. Questionnaires were anonymous and answered in a voluntarily bases. The research project was submitted and approved by several national organizations (Ministry

of Education, National Data Protection Commission and Ethics Commission) and parents' informed consent was requested.

The study involved 95 schools and 162 classes. A sample of 3195 children and adolescents from 5th grade (48,8%) and 7th grade, mean age 11,8; SD 1,46; ranging from 10 to 16 (41,1% between 10 or11 years old and 58,9% 12 years old or older; 49,2 % boys were inquired. The European KIDSCREEN Group used two age groups (8-11 years old and 12-18 years old). In this paper the school grade was used as a proxy for age because the majority of the students attending the 5th grade had a mean age 10, 7; SD=0, 95 and pupils attending 7th grade had a mean age 12, 86; SD=1,02. The majority of students come from a low or very low socio-economic status (62, 2%), and 3, 3% do not have a Portuguese nationality; those pupils are immigrants from the African countries or from Brazil. Parents were included in the main study (Matos; Gaspar. Simões et al, 2006) but parents' data was not included in this paper.

Instrument

KIDSCREEN-52 was developed within the European project "Screening and Promotion for Health-Related Quality of Life in Children and Adolescents – A European Public Health Perspective" (European Commission). During 3 years (2001-2004), 13 countries were co-ordinated by the German team (Rajmil et al., 2004; Ravens-Sieberer et al., 2001) who developed and evaluated this instrument, presenting a version for children and a version for parents, which can be used with children from 8 to 18 years old, and theirs parents. It is a self-reported questionnaire of 52 items, which requires about 15 minutes being filled and reporting to the "last week". The KIDSCREEN-52 are organized in 10 dimensions: Physical Well-being (5 items), Psychological Well-being (6 items), Moods and Emotions (7 items), Self Perception (5 items), Autonomy (5 items), Parent Relation and Home Life Context (6 items), Financial Resources (3 items), Social Support and Peers (6 items), School Environment (6 items) and Social Acceptance and Bullying

In order to score KIDSCREEN-52 instrument, it is necessary to recode in the opposite sense (to inverse) 14 items, to make all items formulated positively (which means a higher score reflecting a higher HRQoL). The score range for KIDSCREEN-52 dimensions is 0-100.

The original scale was developed in English.

The statistical analyses of the KIDSCREEN survey included different issues. One of the issues was to confirm and test the KIDSCREEN-52. That process included analyses to determined how well the structure of the instrument fit the data; confirmatory factor analysis (CFA) as well as multitrait analyses (MAP) was conducted to explore if the inter-item correlation could be reasonable

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explained by specific 10-dimensional questionnaire structure. For each scale the internal consistency reliability (Cronbach's alpha) and the test-retest reliability was calculated. The results of MAP analyses as well as the CFA confirmed the structure of the multi-scale KIDSCREEN instrument. The goodness of the fit of the model was tested using Root Mean Square Error of Approximation (RMSEA = 0,049) and Comparative Fit Index (CFI =0,979). The Cronback's alpha values were between 0, 89 and 0,79 (The KIDSCREEN Group Europe, 2006).

According to international guidelines, the translation of the KIDSCREEN draft questionnaire included a forward-backward-forward translation procedure with harmonisation processes.

The psychometric properties of the instrument were examined in terms of the frequency, internal consistency reliability, discriminant validity, correlation analyses, exploratory factor analyses and confirmatory factor analyses

RESULTS

The data analyses were performed using SPSS 15.0. The Exploratory Factor analysis (EFA) and the Confirmatory Factor Analysis (CFA) was undertaken using LISREL 8.72 (Joreskog & Sorbom, 2001). The Partial Credit Model (PCM), the item and person parameter estimates were calculated using the software WINMIRA (Davier, 1997).

Quality of completion

Missing data is displayed in table 1. There can be seen how many partici-pants answered all items in each KIDSCREEN-52 dimensions. If the participants miss one or more items for one dimension it was considered as a missing data for the whole dimension. "N" is it also provided by school grade groups (5th and 7th).

Table 1. Quality of completion: N total and by school grade for
KIDSCREEN-52 dimensions

	N Total	N School grade			
	Mean age= 11,8; SD 1,46	5th grade Mean age= 10,70; SD=0,95		7th grade Mean age= 12,86; SD=1,02	
Physical Well-Being	3065	1493	0,76	1572	0,78
Psychological Well-Being	3111	1516	0,81	1595	0,86
Moods & Emotions	3019	1458	0,83	1561	0,88

Table 1. Quality of completion: N total and by school grade for KIDSCREEN-52 dimensions (Cont.)

	N Total	N School grade			
	Mean age= 11,8; SD 1,46	5th grade Mean age= 10,70; SD=0,95		7th grade Mean age= 12,86; SD=1,02	
Self-Perception	3085	1492	0,53	1593	0,62
Autonomy	3082	1490	0,78	1592	0,83
Parent Relation & Home Life	3092	1498	0,78	1594	0,88
Financial Resources	3100	1508	0,87	1592	0,89
Social Support &Peers	3058	1484	0,81	1574	0,86
School Environment	3100	1510	0,82	1590	0,83
Soc. Acceptance (Bullying)	3144	1532	0,73	1612	0,77

The dimension that presented more missing data was "Moods and Emotions" (missing values 176 students, 5,5%) and the dimension that had less missing data was "Social Acceptance/Bullying" (missing values 51 students, 1,6%). There is the same pattern in both school grade groups, but the students from 5th grade presented more missing data than students from 7th grade.

Exploratory Factor analysis

As mentioned earlier, the KIDSCREEN-52 was based on ten theoretical domains, that can be organized in five domains in KIDSCREEN-27 (physical well-being; psychological; autonomy and parents; social support and peers; and school environment) and in only one domain in KIDSCREEN-10 creating the General HRQOL Index.

The data is multidimensions (10 dimensions), was used a unidimensional IRT model because was calibrated each dimension separately.

Exploratory factor analysis was performed using the principal axis factoring (Varimax rotation). Weak items with loading less then 0,3, and items that crossed loaded on two factors but had a loading exceeding 0,3 on the second factor, were deleted from further analysis. In Portuguese version of KIDSCREEN-52 none of the items were deleted, was kipped the original structure. EFA provided no evidence of better model than the one accept in KIDSCREEN-52 structure, except

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for the third item *"have you been happy with the way you are?"* on "Self Perception" domain, that the EFA put this item on "Psychological Well-being" domain. This result could be explain for the translation process or because the meaning of the work *"happy"* could be related to "Psychological Well-being" domain. Analysis of the total population data showed ten factors (eigenvalues > 1, 0) that explained 58, 20% of the variance in the data.

Confirmatory factor analysis

For CFA assessing the model adequacy may be based on various measures. For the present study, it was considered the (1) root-mean-square error of approximation (RMSEA), with values between 0, 06 and 0, 08 indicating an acceptable fit and values below 0, 06 indicating an excellent fit (Bentler & Hu, 1999); (2) standardized root-mean-square residual (SRMR); (3) adjusted goodness of fit index (AGFI); (4) comparative fit index (CFI), in which the values greater than 0,95 indicates a good fit of the model (Bentler, 1999; Browne & Cuddeck, 1993; McDonald, 2002).

Table 2. Confirmatory Factor Analysis with LISREL – Standardized Pattern Coefficients and largest Cross-Loadings (Structure Coefficient). – Portuguese children and adolescents HRQOL – N = 3195

Itemlabels	F1	F2	F3	F4	F5	F6	F7	F8	F9	F10
Physical Well-being										
(…) how would you say your health is?	**0,542**	0.381	0.261	0.304	0.305	0.239	0.182	0.278	0.189	0.171
(…) felt fit and well?	**0,770**	0.541	0.371	0.432	0.434	0.339	0.259	0.395	0.269	0.243
(…) physically active?	**0,672**	0.473	0.324	0.378	0379	0.296	0.226	0.345	0.235	0.212
(…) able to run well?	**0.726**	0.510	0.349	0.408	0.409	0.320	0.244	0.373	0.253	0.229
(…) felt full of energy?	**0.711**	0.500	0.342	0.399	0.400	0.313	0.239	0.365	0.248	0.224
Psychological Well being										
(…) your life been enjoyable?	0.534	**0.534**	0.581	0.572	0.540	0533	0.322	0.492	0.447	0.284
(…) felt pleased that you are alive?	0.486	**0.690**	0.527	0.519	0.490	0.484	0.292	0.446	0.406	0.257
(…) felt satisfied with your life?	0.555	**0.790**	0.604	0.595	0.562	0.554	0.334	0.511	0.465	0.295
(…) been in a good mood?	0.468	**0.665**	0.508	0.501	0.473	0.467	0.282	0.430	0.392	0.248
(…) felt cheerful?	0.559	**0.795**	0.608	0.599	0.566	0.558	0.337	0.515	0.468	0.297
Have you had fun?	0.517	**0.735**	0.562	0.554	0.523	0.516	0.311	0.476	0.433	0.274
Moods & Emotions										
(…) felt that you do everything badly?	0.294	0.467	**0.611**	0.453	0.371	0.382	0.247	0.316	0.322	0.3009
(…) felt sad?	0.377	0.598	**0.782**	0.580	0.475	0.489	0.316	0.405	0.412	0.395
(…) felt so bad that you didn't want to do anything?	0.364	0.578	**0.756**	0.561	0.459	0.473	0.305	0.392	0.398	0.382
(…) felt that everything in your life goes wrong?	0.406	0.645	**0.843**	0.625	0.512	0.528	0.341	0.437	0.444	0.426

Table 2. Confirmatory Factor Analysis with LISREL – Standardized Pattern Coefficients and largest Cross-Loadings (Structure Coefficient). – Portuguese children and adolescents HRQOL – N = 3195 (Cont.)

Itemlabels	F1	F2	F3	F4	F5	F6	F7	F8	F9	F10
(…) felt fed up?	0.375	0.595	**0.779**	0.578	0.473	0.487	0.315	0.403	0.410	0.393
(…) felt lonely?	0.350	0.556	**0.727**	0.539	0.442	0.455	0.294	0.377	0.383	0.367
(…) felt under pressure?	0.327	0.519	**0.679**	0.504	0.413	0.425	0.274	0.352	0.358	0.343
Self Perception										
(…) happy with the way you are?	0.397	0.532	0.524	**0.706**	0.496	0.517	0.328	0.444	0.393	0.371
(…) happy with your clothes?	0.398	0.534	0.526	**0.709**	0.498	0.519	0.329	0.446	0.394	0.372
(…) worried about the way you look?	0.103	0.139	0.136	**0.184**	0.129	0.135	0.086	0.116	0.102	0.097
(…) felt jealous of the way other girls and boys look?	0.323	0.433	0.426	**0.574**	0.404	0.420	0.267	0.362	0.319	0.302
(…) like to change something about your body?	0.325	0.436	0.429	**0.578**	0.407	0.423	0.269	0.364	0.322	0.304
Autonomy										
(…) had enough time for yourself?	0.413	0.522	0.446	0.516	**0.734**	0.504	0.387	0.533	0.359	0.259
(…) able to do the things that you want to do in your free time?	0.435	0.549	0.469	0.542	**0.772**	0.530	0.407	0.561	0.378	0.272
(…) enough opportunity to be outside?	0.409	0.517	0.442	0.511	**0727**	0.499	0.383	0.528	0.356	0.256
(…) enough time to meet friends?	0.394	0.498	0.425	0.492	**0.700**	0.481	0.369	0.509	0.343	0.247
(…) able to choose what to do in your free time?	0.416	0.525	0.449	0.519	**0.739**	0.508	0.390	0.537	0.362	0.260
Parent Relation & Home Life										
(…) your parent(s) understood you?	0.352	0.560	0.499	0.584	0.548	**0.798**	0.439	0.468	0.462	0.281
(…) felt loved by your parent(s)?	0.325	0.517	0.461	0.540	0.507	**0.737**	0.406	0.432	0.427	0260
(…) happy at home?	0.369	0.588	0.524	0.613	0.576	**0.838**	0.461	0.491	0.485	0.295
(…) your parent(s) had enough time for you?	0.356	0.567	0.505	0.591	0.555	**0.808**	0.444	0.474	0.468	0.284
(…) your parent(s) treated you fairly?	0.257	0.409	0.364	0.426	0.400	**0.582**	0.320	0.341	0.337	0.205
(…) able to talk to your parent(s) when you wanted to?	0.333	0.530	0.473	0.553	0.519	**0.756**	0.416	0.443	0.437	0.266
Financial Ressources										
(…) enough money to do the same things as your friends?	0.313	0.394	0.376	0.432	0.491	0.512	**0.931**	0.516	0.327	0.365
(…) enough money for your expenses?	0.281	0.354	0.337	0.388	0.441	0.459	**0.835**	0.463	0.294	0.327
(…) enough money to do things with your friends?	0.300	0.378	0.360	0.415	0.471	0.491	**0.893**	0.495	0.314	0.350
Social Support & Peers										
(…) spent time with your friends?	0.408	0.514	0.412	0.500	0.577	0.466	0.441	**0.795**	0.389	0.334
(…) done things with other girls and boys?	0.381	0.481	0.385	0.467	0.540	0.435	0.412	**0.743**	0.364	0.312
(…) had fun with your friends?	0.456	0.574	0.459	0.558	0.645	0.520	0.492	**0.887**	0.434	0.373

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Table 2. Confirmatory Factor Analysis with LISREL – Standardized Pattern Coefficients and largest Cross-Loadings (Structure Coefficient). – Portuguese children and adolescents HRQOL – N = 3195 (Cont.)

Itemlabels	F1	F2	F3	F4	F5	F6	F7	F8	F9	F10
(…) you and your friends helped each other?	0.359	0.452	0.362	0.439	0.507	0.409	0.387	**0.698**	0.342	0.293
(…) able to talk about everything with your friends?	0.323	0.407	0.325	0.395	0.457	0.368	0.349	**0.628**	0.308	0.264
(…) able to rely on your friends?	0.334	0.420	0.337	0.409	0.472	0.381	0.361	**0.650**	0.318	0.273
School Environment										
(…) happy at school?	0.271	0.457	0.409	0.431	0.380	0.449	0.273	0.380	**0.776**	0.164
(…) got on well at school?	0.218	0.367	0.328	0.346	0.305	0.361	0.219	0.305	**0.623**	0.132
(…) satisfied with your teachers?	0.263	0.443	0.396	0.418	0.368	0.436	0.265	0.368	**0.752**	0.159
(…) able to pay attention?	0.249	0.420	0.376	0.397	0.350	0.413	0.251	0.349	**0.714**	0.151
(…) enjoyed going to school?	0.267	0.450	0.403	0.425	0.374	0.442	0.269	0.374	**0.764**	0.162
(…) got along well with your teachers?	0.265	0.447	0.400	0.422	0.372	0.439	0.267	0.372	**0.759**	0.161
Social Acceptance & Bullying										
(…) afraid of other girls and boys?	0.199	0.236	0.319	0.331	0.222	0.222	0.247	0.265	0.134	**0.631**
(…) other girls and boys made fun of you?	0.282	0.334	0.451	0.469	0.315	0.315	0.350	0.375	0.189	**0.893**
(…) other girls and boys bullied you?	0.258	0.306	0.414	0.430	0.288	0.288	0.321	0.344	0.173	**0.819**

Values in bold = standardized pattern coefficients (SE = 0.006 – 0.007) Values in normal = Cross loadings: Structure coefficients (SE = 0.007)

A confirmatory factor analysis was conducted to confirm the KIDSCREEN-52 measurement model encompassing ten domains.

The results were good. As indicates by AGFI, the model accounted for 81% of the variance and covariances in the observed items. The RMSEA value was 0, 06 can be consider a good fit index with values between 0,06 and 0,08 indicating an acceptable fit and values below 0,06 indicating an excellent fit" (Bentler & Hu, 1999).

The CFI value is 0, 97 andNNFI is 0,97 reflecting both an excellent fit index. The SRMR value was less than 0, 05 which indicates a good fit. The chi-square value is 13195, 86, degree of freedom (df) value is 1229 and the p value significant < 0, 001. Due to the large sample size and overwhelming statistical power it was decided not taking into account the p-value when the goodness of fit was evaluated.

The table 2 shows that items revealed acceptable loadings (pattern coefficient) greater than 0, 53, except for the third item in the dimension "Self Perception" that the loading it is 0, 184. The examinations of the cross loadings present relatively high cross loadings, mostly on "Psychological Well-being", "Moods

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and Emotions", "Parent Relation and Home Life" and "Social Support and Peers" dimensions. However, none of the cross-loadings exceeds the coefficient-pattern with the own dimension.

Table 3. Confirmatory Factor Analysis with LISREL – Latent Factor Intercorrelation. – Portuguese children and adolescents HRQOL – N = 3195

Latent Factors	F1	F2	F3	F4	F5	F6	F7	F8	F9
Health and Physical Activity	1.000								
Psychological Well-being	0.703	1.000							
General Mood/Emotions	0.482	0.764	1.000						
Self-perceptions	0.562	0.753	0.742	1.000					
Free Time and Autonomy	0.563	0.711	0.608	0.703	1.000				
Family and Family context	0.441	0.702	0.626	0.732	0.687	1.000			
Money Matters	0337	0.423	0.404	0.465	0.528	0.550	1.000		
Friends and Social context	0.514	0.647	0.518	0.629	0.727	0586	0.555	1.000	
School and Learning	0.349	0.589	0.527	0.556	0.490	0.579	0.352	0.490	1.000
Bullying	0.315	0.373	0.555	0.525	0.352	0.352	0.392	0.420	0.212

SE of Correlation Coefficients = 0.004 – 0.008

The correlations between the dimensions of the measurement model were estimated as model parameters and displayed values between 0, 34 and 0, 76 (See table 3).

Table 3a. Confirmatory Factor Analysis with LISREL –Latent Factor Intercorrelation. – Portuguese children and adolescents HRQOL (Grade 5) – N = 1560

Latent Factors	F1	F2	F3	F4	F5	F6	F7	F8	F9
Health and Physical Activity	1,000								
Psychological Well-being	0,769	1,000							
General Mood/Emotions	0,482	0,769	1,000						
Self-perceptions	0,568	0,765	0,758	1,000					
Free Time and Autonomy	0,575	0,748	0,635	0,728	1,000				
Family and Family context	0,484	0,739	0,661	0,783	0,732	1,000			
Money Matters	0,300	0,391	0,399	0,469	0,561	0,613	1,000		
Friends and Social context	0,547	0,700	0,564	0,699	0,779	0,686	0,576	1,000	
School and Learning	0,413	0,661	0,584	0,638	0,541	0,652	0,445	0,603	1,000
Bullying	0,299	0,385	0,508	0,594	0,434	0,410	0,377	0,447	0,334

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Table 3b. Confirmatory Factor Analysis with LISREL –Latent Factor Intercorrelation. – Portuguese children and adolescents HRQOL Grade 7– N = 1635

Latent Factors	F1	F2	F3	F4	F5	F6	F7	F8	F9
Health and Physical Activity	1.000								
Psychological Well-being	0.656	1.000							
General Mood/Emotions	0.474	0.752	1.000						
Self-perceptions	0.565	0.738	0.724	1.000					
Free Time and Autonomy	0.551	0.673	0.568	0.670	1.000				
Family and Family context	0.405	0.662	0.586	0.684	0.647	1.000			
Money Matters	0.371	0.470	0.428	0.512	0.528	0.536	1.000		
Friends and Social context	0.482	0.604	0.471	0.585	0.683	0.514	0.554	1.000	
School and Learning	0.304	0.513	0.455	0.427	0.411	0.507	0.354	0.392	1.000
Bullying	0.345	0.406	0.547	0.564	0.328	0.360	0.407	0.429	0.212

SE of Correlation Coefficients = 0.004 – 0.008

A repetition of the analyses for Grade 5 and Grade 7 separately revealed similar results (See table 3a and table 3b)

A repetition of the Lisrel analyses for Grade 5 and Grade 7 separately revealed similar AGFI of 0, 78 and 0, 77. The RMSEA value was 0, 07 for both grades, which can be consider an acceptable fit" (Bentler & Hu, 1999).

The CFI value was 0, 97 for both grades, reflecting an excellent fit index. The SRMR value was 0, 05 for both grades indicating a good fit too. The chi-square value is 7518, 21, for Grade 5 and 8914, 67 for Grade 7 (df = 1229) and the p values significant < 0, 001.

In the analyses reported here, no further modifications were performed on the original model to achieve a better fit. This decision was taken because it was considered more important to maintain the theoretical consistency than adjusting the postulated model to improve the fit.

Internal consistency reliability

The scale descriptive, internal consistency and scaling success of KIDSCREEN-52 dimension in Portugal are presented in table 5.

*Table 4. Scale descriptive, internal consistency and scaling success
of KIDSCREEN-52 dimensions in Portugal – N total =3195;
N total 5th grade =1560; N total 7th grade =1635*

Dimensions	No. items	N	Mean	Mean %*	Sd	Cron-bach-á	Cronbach- á range**	Cronbach- á School grade			
								N	5th grade	N	7th grade
Physical Well-Being	5	3065	19,34 (0-25)	71,68	17,58	0,77	0,75 – 0,86	1493	0,76	1572	0,78
Psychological Well-Being	6	3111	25,22 (0-30)	80,08	19,88	0,84	0,85 - 0,91	1516	0,81	1595	0,86
Moods & Emotions	7	3019	28,52 (0-35)	76,86	19,19	0,86	0,80 - 0,89	1458	0,83	1561	0,88
Self-Perception	5	3085	19,72 (0-25)	73,61	18,22	0,60	0,71 - 0,84	1492	0,53	1593	0,62
Autonomy	5	3082	20,29 (0-25)	76,46	20,95	0,81	0,79 - 0,86	1490	0,78	1592	0,83
Parent Relation & Home Life	6	3092	25,22 (0-30)	80,10	19,84	0,84	0,85 - 0,90	1498	0,78	1594	0,88
Financial Resources	3	3100	11,917 (0-15)	4,21	27,15	0,88	0,82 - 0,91	1508	0,87	1592	0,89
Social Support &Peers	6	3058	24,49 (0-30)	77,04	19,73	0,84	0,81 - 0,87	1484	0,81	1574	0,86
School Environment	6	3100	22,71 (0-30)	69,64	20,11	0,84	0,81 - 0,88	1510	0,82	1590	0,83
Soc. Acceptance (Bullying)	3	3144	12,60 (0-15)	79,98	22,05	0,75	0,61 – 0,83	1532	0,73	1612	0,77

* Sumscore transformed into values between 0-100
**Range across countries - European KIDSCREEN Group (Ravens-Sieberer & European KIDSCREEN Group, 2005).

KIDSCREEN-52 instrument analysis regarding the psychometric properties showed a good internal consistency (Cronbach- á) for all 10 subscales, with a lower value for self-perception (á= 0, 60) and the highest for economical issues (á= 0, 88) in children and adolescents version. Analyzing the internal consistency by school grade group we can verify that students from 7th grade present high values of internal consistency than students from 5th grade for all dimensions.

Construct validity

"Psychological Well-being" and "Autonomy" dimensions may not be as independent as the other KIDSCREEN-52 dimensions given a tendency for these

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two sets of item to correlate highly with other dimensions (e.g., "Moods and Emotions" and "Parent Relation and Home Life"). See Table 5.

Table 5. Pearson Correlation between KIDSCREEN-52 Dimensions in Portugal

KIDSCREEN-52	1	2	3	4	5	6	7	8	9
Dimension									
1. Physical Well-Being	—								
2. Psychological Well-Being	**0,540****	—							
3. Moods & Emotions	0,361**	**0,630****	—						
4. Self-Perception	0,293**	0,441**	**0,501****	—					
5. Autonomy	0,425**	**0,560****	0,478**	0,387**	—				
6. Parent Relation & Home Life	0,328**	**0,556****	0,497**	0,426**	**0,527****	—			
7. Financial Resources	0,278**	0,349**	0,321**	0,267**	0,438**	0,453**	—		
8. Social Support &Peers	0,391**	0,492**	0,417**	0,326**	**0,574****	0,440**	0,475**	—	
9. School Environment	0,273**	0,480**	0,428**	0,336**	0,369**	0,443**	0,287**	0,365**	—
10. Soc. Acceptance (Bullying)	0,218**	0,265**	0,408**	0,332**	0,244**	0,243**	0,297**	0,330**	0,138**

** Significative correlation 0,01 (2 – tailed)

DISCUSSION

The purpose of this paper was to examine psychometric properties of the KIDSCREEN-52, in order to validate this instrument for Portuguese children and adolescents.

The results show that KIDSCREEN-52 questionnaire is a valid, reliable and sensitive instrument to estimate the perception of quality of life both in children and adolescents in the Portuguese language and in their culture (Gaspar, 2005; Gaspar et al. 2007; 2007; Matos et al. 2006), in the same way at it happened in other countries (Bisegger et al. 2005; Ravens-Sieberer et al., 2001; 2005; Rueden et al., 2006; The KIDSCREEN Group Europe, 2006).

The students in 5th grade presented more missing data than students in 7th grade, probably because 5th grade students are younger, and have less literacy skills and more immature cognitive skills; this is an important feature to consider before using this instrument in Portugal with younger children. The results showed good internal consistency confirmed by the literature, strong correlation between instrument dimensions and exploratory factor analyses and confirmatory factor analyses with a good fit index and with a theoretical consistency.

The instrument shows better internal consistency reliability for 7th school grade than 5th grade in all dimensions; those results added to the higher rate of

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missing values suggest some adaptations are necessary for younger children, e.g. simplifying the question or presenting it in an oral form.

For children and adolescents, the highest correlations occurred between "Psychological Well-being", "Autonomy" and other dimensions.

According to participant's perceptions, "Psychological Well-being" are related with "Parent Relation and Home Life Context", "Social Support and Peers", "Moods and Emotions", "Autonomy" and "Physical Well-being". "Autonomy" is related with both "Parent Relation and Home Life Context" and "Social Support and Peers". These finding supports the assumptions that "Autonomy" is an important feature in children's life, and parents and friends are relevant actors providing emotional, personal and social support (Matos, 2005)

Present findings corroborate with previous research either in the area of health-related quality of life or in the area of developmental psychology. They also corroborate with the general literature on personal and social differences, but also the general gender and age differences beliefs, which suggest that both children and adolescents and their context, are prone to perceive those differences (Caldera & Hart, 2004; Harding, 2001; Matos et al. 2003; Nelson, et al. 2001).

Results also suggest that KIDSCREEN-52 children and adolescents version is tailored and sensitive to developmental and ecological approaches, such as gender, age, socio-economic status, and migrant status and health condition differences.

Data collected through a reliable instrument to assess health-related quality of life allow monitoring the health of children and adolescents. This is one of the key issues in Public health and health psychology (Ribeiro, 1994; 2003; 2005).

CONCLUSIONS

This present study represents an initial effort to assess Portuguese children and adolescents HRQOL. The analyses demonstrated their usefulness for evaluating a multidimensional complex construct.

The KIDSCREEN-52 instrument has several strengths. It is based on a cross-cultural sensitive concept and available in many European countries, including Portugal. It is appropriate for use in multinational collaborative research.

The instrument is able to be used in research involving several interventions, as well for applications in many health and educational settings; that also can be applied with equal relevance in healthy populations and paediatrics populations with specific health conditions.

These results indicate that overall, the KIDSCREEN-52 is a sound, cross-cultural valid assessment of HRQOL for children and adolescents, as reflected by its conceptual and methodological strengths.

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