

New Danish standardization of the Child Behaviour Checklist

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ABSTRACT

INTRODUCTION: In child mental health services, the Child Behaviour Checklist (CBCL) and related materials are internationally renowned psychometric questionnaires for assessment of children aged 6-16 years. The CBCL consists of three versions for different informants: the CBCL for parents, the Teacher's Report Form (TRF) and the Youth Self-Report (YSR) for 11-16-year-old children.

MATERIAL AND METHODS: The CBCL was standardized in Denmark in 1996, but a need for renewed standardization has emerged because of an update in 2001 and possible cultural changes. We also wanted to increase the response rate and the validity of the national norms.

RESULTS: A total of 949 children from demographically representative schools and their parents were invited to participate. Response rates were high: CBCL 84% (n = 793), TRF 99% (n = 938) and YSR 89% (n = 434). The mean total problem scores, externalizing and internalizing scores, and diagnose-specific sub-scores are presented. Compared with the 1996 standardization, parents rate their children significantly lower in problem score, and the same pattern is found in teachers' ratings. The young, however, rate themselves higher than previously. Some differences in single-item prevalence have occurred. This may indicate a change in the perception of the problems rather than a shift in psychopathology.

CONCLUSION: New norm scores and cut-off scores have been generated, and the questionnaires are now available for on-line completion.

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In child and adolescent mental health services (CAMHS), the Achenbach System of Empirically Based Assessment (ASEBA) is an internationally renowned set of psychometric questionnaires for assessment of referred patients and for population screening [1-14]. The ASEBA is a screening tool developed to assist the assessment of mental health, and it can be used both by psychiatrists, community-based doctors and psychologists. The forms for school-aged children were introduced in Denmark in 1996 and are currently used in several Danish hospital-based clinics and in a number of child guidance clinics (by educational psychologists).

In this study, the 2001 version of ASEBA for school-

The mother of a child fills in the Child Behaviour Checklist questionnaire.



ORIGINAL ARTICLE

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aged children (6-16 years) was standardized in a Danish population, thus meeting the need for an update of the former 1996 Danish standardization [2].

ASEBA for school-aged children consists of three questionnaires: The Child Behaviour Checklist for 6-16-year-olds (CBCL) with one of the parents serving as an informant, the Youth Self-Report for 11-16-year-olds (YSR) with the child serving as an informant and the Teacher's Report Form for 6-16-year-olds (TRF) for collection of teacher information about the indexed child.

The questionnaires are divided into two main sections. The first part taps into the child's level of social network, school performance and leisure activities. This part is called the "competence section".

The second part consists of 118 problem items. These are statements answered on a Likert scale: zero equals "not true", one equals "partly true or sometimes", two equals "very true or frequently". Summation of all the problem item scores yields a "total problem score". Furthermore, the problem items are divided into two main clusters: "externalizing problems" including conduct, aggressive and antisocial behavioural problems; and "internalizing problems" including withdrawn, depressive, nervous and restrained behavioural problems [1]. Diagnostically meaningful scales, so-called Diagnostic and Statistical Manual of Mental Disorders Version IV (DSM-IV)-oriented scales, have been developed to increase the clinical benefit of the ASEBA material. These scales contain problem items that are frequent among patients with corresponding DSM-IV

diagnoses: affective problems, anxiety problems, somatic problems, attention deficit hyperactivity disorder (ADHD) problems, oppositional defiant problems and conduct problems. Nevertheless, the scales are not sufficient as diagnostic tools.

In the present study, the competence scores have not been analyzed as the study focuses only on the problem items.

The total problem score, the internalizing score and the externalizing scores are calculated and compared with those obtained for the 1996 standards [2]. Also included are normative data on the DSM-IV-oriented scales and a list of the most frequent problem items, including comparisons between the recent dataset and the 1996 standards [2].

MATERIAL AND METHODS

Normative data were collected in an epidemiological cross-sectional design. Two schools were used as sampling sites. One of the schools was urban (Skt. Hans Skole, Municipality of Odense, 730 pupils) and the other rural (Særslev Skole, Municipality of Nordfyn, 219 pupils); at both schools, parent (household) income was close to the Danish mean [15, 16], and both schools are non-outliers concerning the national Danish grade average [17]. Youths aged 11-16 years filled in the YSR at their school. The CBCL was handed out to all children (aged 6-16 years), who passed them on to their parents. The TRF was typed in by the teachers on a website application. Data from the YSR and CBCL paper forms were keyed into the same database by the study team.

TABLE 1

Total problem score, externalizing score and internalizing score for the 1996 and 2010 study. The Wilcoxon rank test was used.

	Total problem score			Externalizing score			Internalizing score		
	1996	2010	p value	1996	2010	p value	1996	2010	p value
Boys, CBCL									
<i>6-10 years</i>									
Mean score (SD)	20.9 (17.3)	15.8 (14)	0.001	8.2 (6.6)	4.5 (5.0)	0.000	5.1 (5.8)	4.1 (5.0)	NS
n	146	202		146	202		146	202	
<i>11-16 years</i>									
Mean score (SD)	19.9 (17.0)	17.1 (15.0)	NS	7.0 (6.7)	4.7 (5.4)	0.000	5.4 (5.5)	5.0 (4.5)	NS
n	141	210		141	210		146	210	
Boys, TRF									
<i>6-10 years</i>									
Mean score (SD)	20.7 (23.4)	16.0 (18.8)	0.032	6.5 (9.4)	6.5 (8.9)	NS	5.5 (6.8)	2.8 (3.6)	0.001
n	123	228		123	228		123	228	
<i>11-16 years</i>									
Mean score (SD)	20.0 (20.5)	22.7 (23.1)	NS	6.5 (8.1)	5.9 (8.4)	NS	4.2 (5.2)	4.4 (5.0)	NS
n	119	274		119	274		119	274	
Boys, YSR									
<i>11-16 years</i>									
Mean score (SD)	30.0 (19.6)	34.3 (19.8)	0.016	11.0 (6.8)	11.9 (8.5)	NS	7.7 (6.6)	8.5 (6.3)	0.033
n	140	224		140	224		140	224	
Girls, CBCL									
<i>6-10 years</i>									
Mean score (SD)	15.6 (11.8)	13.7 (11.6)	NS	5.5 (4.9)	3.6 (4.2)	0.000	4.2 (3.8)	3.9 (3.7)	NS
n	153	176		153	176		153	176	
<i>11-16 years</i>									
Mean score (SD)	16.4 (15.1)	17.2 (17.0)	NS	5.5 (5.4)	4.9 (6.1)	0.037	5.0 (4.8)	6.0 (5.9)	NS
n	195	205		195	205		195	205	
Girls, TRF									
<i>6-10 years</i>									
Mean score (SD)	12.1 (14.5)	10.5 (12.7)	0.049	2.8 (4.9)	2.7 (4.5)	NS	5.3 (6.1)	3.2 (3.9)	0.001
n	131	195		131	195		131	195	
<i>11-16 years</i>									
Mean score (SD)	16.1 (19.3)	16.8 (21.7)	NS	4.7 (7.4)	4.5 (8.0)	NS	4.6 (5.2)	5.3 (6.2)	NS
n	174	241		174	241		174	–	
Girls, YSR									
<i>11-16 years</i>									
Mean score (SD)	31.7 (18.6)	35.1 (21.6)	NS	9.7 (5.9)	9.8 (7.4)	NS	9.8 (7.2)	9.8 (7.1)	0.014
n	195	210		195	210		195	210	

CBCL = Child Behaviour Checklist; NS = non-significant; SD = standard deviation; TRF = Teacher's Report Form; YSR = Youth Self-Report.

To achieve the highest possible completion rate, gift certificates at a value of 50 DKK for each pupil were handed out to the involved teachers. In appreciation of their valuable efforts, secretaries at the schools were also given a gift. Furthermore, parents who did not return questionnaires were contacted, and the two classes with the highest CBCL answering rate were awarded soft drinks and candy.

Data processing and statistics was done in SPSS for Windows.

Trial registration: not relevant.

RESULTS

A total of 949 children aged 6-16 years (508 boys/441 girls) and their parents were invited to participate. Response rates were high; CBCL 84% ($n = 793$), TRF 99% ($n = 938$), YSR 89% ($n = 434$).

Mean values \pm standard deviations (SD) for total problem score, externalizing score and internalizing score are shown and compared with the 1996 normative data [2] below (**Table 1**).

Comparisons of the mean scores from the 1996 standardization study with the 2010 normative data showed a different pattern, although with the same tendency in gender and age variation for all three questionnaires.

For the CBCL, the 2010 survey produced a significantly lower total problem score for boys aged 6-10 years and a lower externalizing score for both genders and age groups compared with the 1996 data.

For the TRF, we found significant differences between the two surveys as the 2010 survey yielded a lower score on total problem and internalizing behaviour for the age group 6-10 years and in both genders. For the YSR, both genders – in contrast to their parents and teachers – rated themselves higher in the 2010 sample than in the 1996 sample. The following increases in problem score were statistically significant: total problem scores for boys and internalizing score for both genders.

Thus, in the recent dataset, the parent (CBCL) and the teacher (TRF) rating show a decrease in problem load compared with the sample made 14 years earlier, while the youths themselves (as expressed by the YSR) report more problem behaviour now than in 1996.

An overall review shows the same tendency in both surveys: girls score higher on internalizing problems, and boys score higher on externalizing problems. Teachers score boys higher than girls on total problems in both surveys; and in the self-report, girls report more problems themselves than same-aged boys do in both surveys.

The parent-rated (CBCL) DSM-IV-oriented problem

TABLE 2

The parent-rated CBCL DSM-IV-oriented problem scales and mean scores, 93rd and 97th percentiles.

	Affective problems	Anxiety problems	Somatic problems	ADHD problems	Oppositional defiant problems	Conduct problems
Boys, 6-10 years						
Valid, n	202	202	202	202	202	202
Missing, n	26	26	26	26	26	26
<i>Scores</i>						
Mean	1	0.8	0.6	2.1	1.7	1.3
93rd percentile	4	3	2	7	5	5
97th percentile	6	5	4	9	6	7
Boys, 11-16 years						
Valid, n	211	211	211	211	211	211
Missing, n	67	67	67	67	67	67
<i>Scores</i>						
Mean	1.6	0.8	0.8	2.4	1.8	1.5
93rd percentile	5	4	3	7	5	6
97th percentile	7	4	3	9	6	8
Girls, 6-10 years						
Valid, n	178	178	178	178	178	178
Missing, n	19	19	19	19	19	19
<i>Scores</i>						
Mean	1.1	0.7	0.9	1.8	1.5	0.8
93rd percentile	4	2	3	5	4	3
97th percentile	5	4	5	8	6	4
Girls, 11-16 years						
Valid, n	205	205	205	205	205	205
Missing, n	39	39	39	39	39	39
<i>Scores</i>						
Mean	1.9	0.8	1.3	1.7	1.8	1.2
93rd percentile	7	3	4	5	5	5
97th percentile	10	4	5	7	7	8

ADHD = attention deficit hyperactivity disorder; CBCL = Child Behaviour Checklist; DSM = Diagnostic and Statistical Manual of Mental Disorders Version IV.

scales were analyzed and mean scores, 93rd and 97th percentiles are presented in **Table 2**.

The most frequently reported single problem items of the CBCL in the two standardization samples were isolated, ranked and compared. The most important differences in ranking within the 14-year time interval are the items concerning “lack of concentration”, “use of foul language”, “shy” and “headache”, which are all ranked as relatively more frequent in the 2010 study sample.

The items concerning “destroying belongings of family members or others” and “self-conscious” are ranked lower in the new study (**Table 3**).

To evaluate the impact of the lower response rate among parents, we compared the teachers’ ratings of CBCL responders and non-responders (**Table 4**)

DISCUSSION

The aim of this study was to standardize the revised ASEBA 2001 forms for school-aged children in a Danish population-based sample.

 TABLE 3

Most frequent problem items.

Item no.	Short text	2010		1996	
		rank	mean	rank	mean
3	Argues a lot	1	0.92	1	1
4	Does not finish things	2	0.5	–	–
32	Needs to be perfect	3	0.48	2	0.52
87	Moody	4	0.39	3	0.45
31	Fears impulses	5	0.39	4	0.41
44	Bites fingernails	6	0.37	5	0.39
74	Showing off	7	0.35	8	0.38
8	Cannot concentrate	8	0.34	17	0.34
90	Swearing	9	0.33	12	0.37
17	Daydreams	10	0.33	6	0.39
93	Talks too much	11	0.31	9	0.37
19	Demands attention	12	0.3	16	0.34
75	Shy or timid	13	0.28	18	0.32
86	Stubborn	14	0.28	15	0.35
41	Impulsive, acts without thinking	15	0.27	11	0.37
78	Inattentive, easily distracted	16	0.27	–	–
56b	Headaches	17	0.25	31	0.23
7	Bragging	18	0.25	21	0.28
29	Fears	19	0.25	15	0.36
5	Very few things (s)he enjoys	20	0.24	–	–

Several developments since the 1996 standardization have made this new study necessary. Firstly, 14 years have passed since the last normative sample was collected, which means that changes in culture, family structure and trends may be influencing the scoring of children's problems. Secondly, ASEBA was updated in 2001, and six problem items in the CBCL and YSR, and three TRF items have been exchanged with new and more relevant problem items. Thirdly, the former standardization suffered from a large non-responder group, a problem this survey has avoided by using a different design, i.e. by sampling children from schools instead of via the Danish Civil Registration System.

The 2010 CBCL and TRF mean scores were all lower than those of the 1996 survey. A possible explanation for this may be a change in second-party informants' perception of problem items. The results in the new study could lend support to a hypothesis often heard that parents and teachers do not know their children/pupils as well as they used to, possibly due to less contact in everyday life. Teachers today have less time per pupil and parents spend less time with their children than before. This is supported by the fact that children score themselves higher at the YSR in the new study sample than in the 1996 sample, which indicates a difference in the perception of problem items rather than a general change in children's psychopathology.

The 2010 sample shows a relative increase in parents' report of the item "lack of concentration". This

may be a consequence of today's society having evolved into a multimedia society with an abundance of inputs that can easily distract especially young people: cell phones, computers, television, portable music devices, etc. These "distractors" were also available in 1996, but not to the same extent.

Another problem reported relatively more frequently in the recent sample is "headache". This might indicate a higher level of stress among schoolchildren, but this is speculative.

The item "shy" is ranked higher, and the item "self-conscious" is ranked lower. These differences could be considered to counteract each other, rather than to represent a general tendency.

A new perspective in the use of ASEBA school-age forms is the diagnostic- (DSM-IV-) oriented problem scales. They facilitate a more clinically relevant use of the CBCL, the TRF and the YSR in the primary health sector and in Danish CAMHS. If implemented in general practice, doctors without special expertise in child psychiatry would be able to screen patients for more specific psychopathology before referring them for specialized assessment. This has the potential of saving unnecessary referrals and could be a subject for further studies.

One of the most important factors when evaluating the quality of the results from this study is to assess the study population's representativeness. There is a close to equal spread when it comes to gender and age. The sample consists of children from an urban (n = 730) and a rural school (n = 219) on the Danish island of Funen. The population of Funen is very similar to the average Danish population in terms of demographic composition [15]. Compared with the 1996 study in which the sample was a random selection from the Danish Civil Registration System, the sample population of the 2010 survey is not randomly selected and should therefore be considered less representative than the 1996 study population. However, compensating for this, the response rate

 TABLE 4

CBCL responders versus non-responders.

	n	Mean	Standard deviation
<i>Responders</i>			
TRF total problem score	794	15.4	18.4
TRF externalizing score	794	4.4	7.2
TRF internalizing score	794	3.7	4.4
<i>Non-responders</i>			
TRF total problem score	151	26.0	27.0
TRF externalizing score	151	7.3	9.8
TRF internalizing score	151	6.1	6.9

CBCL = Child Behaviour Checklist; TRF = Teacher's Report Form.

is considerably higher in the 2010 survey, which diminishes selection bias. As shown in Table 4, the non-responder group scored higher on total problem score, externalizing score and internalizing score than did responders. Non-responding families may be families whose children have a higher problem load. The fact that the non-responding group seems to score differently from the responding group underlines the importance of securing a high participation rate in this type of studies. We have not tried to correct or adjust the CBCL scores based on TRF scores. Instead, we consider normative CBCL scores to be low and recommend that the mean score plus two standard deviations (the 98th percentile) be used instead as the cut-off level for probable cases.

CONCLUSION

After translation and standardization, the ASEBA materials for school-aged children were introduced in Danish CAMHS about 12 years ago. Now new norm scores have been generated, and the questionnaires are available for on-line completion. The materials, including the school-age forms used in this study, the pre-school forms and subscription to the on-line platform, are distributed from the Research Unit at the Child and Adolescent Psychiatric Department in Odense.

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