SFI THE DANISH NATIONAL CENTRE FOR SOCIAL RESEARCH

Angelo R. Andersen
Mette Deding
Mette Lausten

06:2010 WORKING PAPER

SDQ AND QUASI-SDQ FOR CHILDREN IN THE DANISH LONGITUDINAL SURVEY OF CHILDREN (DALSC)

RESEARCH DEPARTMENT OF CHILDREN AND FAMILY

SDQ AND QUASI-SDG FOR CHILDREN IN THE DANISH LONGITUDINAL SURVEY OF CHILDREN (DALSC)

Angelo R. Andersen
Mette Deding
Mette Lausten

Research Department of Children and Family
Working Paper 06:2010

The Working Paper Series of The Danish National Centre for Social Research contain interim results of research and preparatory studies. The Working Paper Series provide a basis for professional discussion as part of the research process. Readers should note that results and interpretations in the final report or article may differ from the present Working Paper. All rights reserved. Short sections of text, not to exceed two paragraphs, may be quoted without explicit permission provided that full credit, including ©-notice, is given to the source.

Working paper:

SDQ and Quasi-SDQ for children in the Danish Longitudinal Survey of Children (DALSC)

Angelo R. Andersen, Mette Deding and Mette Lausten
Danish National Centre for Social Research

1. Introduction

Using data from the first three waves of the Danish Longitudinal Survey of Children (DLSC), this working paper develops measures of child well-being with the aim of allowing comparisons in time. These measures are inspired by the SDQ-index[1] (from the Strengths and Difficulties Questionnaire), a relatively easy-to-use index enabling a grouping of children into three groups – normal, borderline, and abnormal – according to levels of psycho-social problems. The SDQ-questions were part of the third wave of the DLSC-survey in 2003 and will continue to be so in the future.

The first two waves of the DLSC, in 1996 and 1999, used different questions to describe the children's well-being. Consequently, the issue in this working paper is whether it is possible, on the basis of the questions in the early questionnaires, to construct measures of child well-being, similar to SDQ, allowing analysis of developments in well-being in time. We construct different potential measures and evaluate their usefulness as indicators of child well-being. In this process, we also discuss different questions in relation to the measurement of child well-being, e.g. the level of problems deemed to be normal or abnormal. The use of the term "well-being" is convenient because it is a familiar concept to most people but because the definition of well-being is very individual it is also a vague concept. Here, well-being is defined as absence of particular problems, and although it is plausible that children with many of these problems have low well-being, there is no way to be sure that children without these specific problems have high levels of well-being.

[1] The SDQ-index in this paper is what Goodman (1997, 1999) refers to as "the total difficulties score".

Section 2 of the working paper describes some of the measures of child well-being used in the literature, particularly the SDQ-index. Section 3 describes the DLSC and proposes different measures of child well-being based on factor-analysis of selected questions in the 1996 and 1999 DLSC-questionnaires. Section 4 roughly describes developments in time and section 5 discusses the measures.

2. Measures of child well-being

Within the field of psychology, check-lists and questionnaires are commonly used in the screening for psychiatric or developmental disorders and behavioral problems. In this section, we only present a subset of measures of particular relevance to the DLSC, i.e. the Child Behavior Check List which inspired the DLSC-questions used in 1999, the Rutter-scale which inspired the SDQ-index, and the SDQ-index which is to be used in DLSC from 2003 on. Other scales exist but are not presented here as they are not strictly relevant in relation to the DLSC.

Epidemiological psychiatric studies with a focus on children and adolescents began in the 1960's with the Isle of Wight study to which Michael Rutter developed separate questionnaires to children's parents and teachers to construct a screening instrument (Heyerdahl, 2003). The Rutter questionnaires have been popular and respected research instruments for a long time and can be used to generate scores for school-aged children in the areas: total deviance, conduct problems, emotional symptoms and hyperactivity, and to predict the presence and type of psychiatric disorder (Goodman, 1994). The questionnaires are relatively short – 31 questions to the parents and 26 to the teachers each with three answers. On the basis of these questions, it is possible to construct a scale, which has been widely used throughout the world, identifying children with emotional and behavioral problems. The children's own perception of current circumstances is not taken into account as there is no questionnaire for self-completion. The questionnaires have been criticized for leading to unnecessary low response rates because they only probe undesirable traits about the children (Goodman, 1994) and for covering a somewhat dated range of behavioral items (Goodman, 1997). This critique of the Rutter questionnaire has inspired the development of the SDQ-index.

In the US, in the 1980's, Thomas Achenbach employed a questionnaire with the purpose of mapping psychic well-being of children and adolescents. Through continuous development this has evolved into ASEBA (Achenbach System of Empirically Based Assessment) – see www.aseba.org. Part of this system is the CBCL-questionnaire (Child Behavior Check List) to parents, which is one of the most used tools of assessment of children's behavioral and emotional difficulties in recent years. It gives a broad behavioral description of the children in eight areas: withdrawn/depressed, somatic complaints, anxious/depressed, social problems, thought problems, attention problems, rule-breaking behavior and aggressive behavior. According to this, the children are categorized as being either internalized or externalized. The CBCL is quite large (100 questions about the 1½-5 year-olds) which is a potential drawback[2]. Some of its advantages are that it gives a broad description of the children and that it, in spite of its length, is relatively easy to complete. Also, it covers a longer period (2-6 months) where the Rutter-questionnaire covers only the preceding three days. The CBCL have been translated into more than 50 languages; in Denmark, the translation and standardization of the CBCL was done by head doctor Niels Bilenberg of Børne- og Ungdomspsykiatrisk Hospital in Risskov in 1996-1999.

SDQ

The SDQ-scale is inspired by – or a modification of – the Rutter-scale. An important reason behind the development of the SDQ-scale was Goodman's view of the Rutter-scale as being somewhat dated, illustrated by the fact that it generally focused on children's undesirable traits (Goodman, 1997). The aim with the SDQ was a short questionnaire (one page) which could be used on children aged 4 to 16 years. The same version of the questionnaire can be used to parents and teachers, and a similar version can be self-completed by older children and adolescents. The SDQ have been tested and validated by many researchers in other fields of science, e.g. developmental psychopathology, epidemiology, and medical sciences. Goodman (1997) compared the ability of the SDQ and the Rutter questionnaires to discriminate between children

[2] The description of CBCL in this section relies on work comparing the (then new) SDQ to the (established) CBCL. This means that the information concerning CBCL in this section is not exactly what you will find at www.aseba.org because in 2001 the CBCL changed from being one questionnaire aimed at 4-18 year olds (CBCL/4-18) into two questionnaires: one aimed at 1½-5 year olds (CBCL/1½-5/LDS) and one aimed at 6-18 year olds (CBCL/6-18).

attending psychiatric clinics and children attending a dental hospital and found that the SDQ performed at least as well as the Rutter questionnaire (though, in most cases the differences were insignificant). Goodman and Scott (1999) compared the SDQ and the CBCL and found that the two were equally able to discriminate between the children attending the psychiatric clinics and the dental hospital.

A slightly edited version (the alphabetization is not in the original questionnaire) of the 25 questions of the Strengths and Difficulties Questionnaire in English is shown in table 1 for reference while the Danish translation is shown in appendix A. The translation of the QSD-questionnaire into Danish was done in 2001 by four psychologists who first did individual translations of the questionnaire, which were later cross validated (Obel, Dalsgaard, Stax & Bilenberg, 2003). In addition to the 25 questions, the SDQ also includes an eight item impact supplement but these items are not shown here because they are not used in the computation of the SDQ-index. For a complete description of the questionnaire – and for approved translations of the questionnaire in more than 50 languages – see www.sdqinfo.com.

Table 1. The SDQ-questions

For each item, please mark the box for Not True, Somewhat True or Certainly True. It would help us if you answered all items as best you can even if you are not absolutely certain or if the item seems daft! Please give your answers on the basis of the child's behaviour over the last six months.

A	Considerate of other people's feelings
B	Restless, overactive, cannot stay still for long
C	Often complains of headaches, stomach-aches or sickness
D	Shares readily with other children (treats, toys, pencils etc.)
E	Often has temper tantrums or hot tempers
F	Rather solitary, tends to play alone
G	Generally obedient, usually does what adults request
H	Many worries, often seems worried
I	Helpful if someone is hurt, upset or feeling ill
J	Constantly fidgeting or squirming
K	Has at least one good friend
L	Often fights with other children or bullies them
M	Often unhappy, down-hearted or tearful
N	Generally liked by other children
O	Easily distracted, concentration wanders
P	Nervous or clingy in new situations, easily loses confidence
Q	Kind to younger children
R	Often lies or cheats
S	Picked on or bullied by other children

T Often volunteers to help others (parents, teachers, other children)
U Thinks things out before acting
V Steals from home, school or elsewhere
W Gets on better with adults than with other children
X Many fears, easily scared
Y Sees tasks through to the end, good attention span

The questions are answered by checking whether one believes the statements to be: not true, somewhat true, or certainly true. Afterwards they are scored 0, 1, or 2 were higher values are associated with higher prevalence of problems. In contrast to the CBCL, for example, the SDQ-questions are both positive and negative which means that for scoring purposes the positive questions (G, K, N, U, Y) are reversed. The questions fall within five subscales: *Emotional symptoms*: C, H, M, P, X; *Behavioral problems*: E, G, L, R, V; *Hyperactivity*: B, J, O, U, Y; *Peer problems*: F, K, N, S, W; *Prosocial behavior*: A, D, I, Q, T. Because the subscales are calculated as the sum of five questions, each with a score between 0-2, they take on values between 0-10, where higher values indicate more problems. Only the first four subscales – all indicating problems – are added together to form the total SDQ-index taking values between 0-40, where again, higher values indicate more problems. Children with a total score of 0 have none of the problems while children with a score of 40 have massive problems in all areas.

One advantage of the SDQ is that the four subscales contain the same number of questions. This means that the subscales automatically contribute to the total SDQ-index with equal weight and, consequently, that the SDQ-index is very easy to work with. Further, the SDQ-index is assumed to have some potential advantages: First, it is assumed that parents are more willing to answer the questionnaire because it does not focus solely on weaknesses but also on strengths (Goodman, 1994). Second, because it mixes positive and negative questions, it reduces halo-effects, i.e. that a long row of answers in the same end of the scale tend to "rub off" on following answers.

As previously mentioned, the scores on the four difficulties subscales emotional symptoms, behavioral problems, hyperactivity and peer problems are added up to a total difficulties score. Because the prosocial behavior subscale is not incorporated in the total SDQ-index, the index focuses on weaknesses rather than strengths. The reason for

this is 1) that the original purpose of the SDQ was to diagnose children with problems demanding treatment, and 2) the absence of prosocial behavior is conceptually different from the presence of psychological difficulties (Goodman, 1998). However, it is still an open question whether it would not be more appropriate to include all the SDQ-questions when the overall purpose is to evaluate the vaguer term well-being rather than to diagnose problems.

SDQ-thresholds

There are SDQ-questionnaires to parents, to teachers and to the children/adolescents themselves, all resulting in indices with a minimum of 0 points (no problems) and a maximum of 40 (many problems). According to sdqinfo.com[3], it is possible to use the SDQ-index as a continuous variable but often, it will be convenient to group the children into three groups: *normal, borderline* and *abnormal* according to their SDQ-score. The bandwidths of these groups are different depending on which of the three questionnaires (parents, teachers or children) have been answered as seen in table 2. In the questionnaire to the parents, a score in the interval 0-13 is considered normal, 14-16 is considered borderline while 17-40 is abnormal. The thresholds are slightly higher in the self-assessment and slightly lower in the teacher assessment.

Table 2.

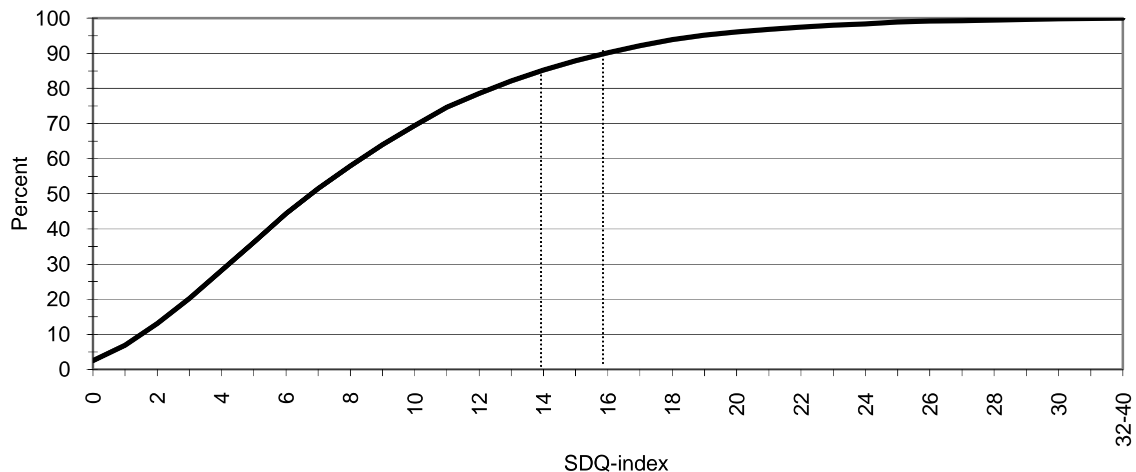
Questionnaire answered by…	Normal	Borderline	Abnormal
…parents	0 – 13	14 – 16	17 – 40
…teachers	0 – 11	12 – 15	16 – 40
…children	0 – 15	16 – 19	20 – 40

Of course, the classification of the children into these groups depends crucially on the thresholds between them which are statistical rather than psychological constructs, i.e. they are determined in consideration of various percentiles. This means that whether children are categorized as being normal, borderline or abnormal depends solely on their relative place in the distribution and not on an objective evaluation of level of maladjustment.

[3] http://www.sdqinfo.com/ScoreSheets/e1.pdf

Figure 1 is constructed on the basis of a table[4] showing the SDQ-scores of British 5-15 year olds and shows that the cut-off between the normal and the borderline category and between the borderline and abnormal category corresponds exactly to the 85 and 90 percent percentiles.

Figure 1. Total SDQ, British children between 5 and 15 years old



In Goodman (1997) the bands are chosen so that roughly 80 pct. of the children are normal, 10 pct. are borderline, and 10 pct. are abnormal. It is allowed to adjust the boundaries, upwards for example, if it is important to avoid that children without problems are categorized as having problems[5]. Because children are often relatively critical towards themselves, this may be one reason why the boundaries is higher on the self-reported SDQ-scale compared to the parent and teacher-reported scales.

The fact that the SDQ-index describes relative levels of problems – the 10 percent of children with the most problems are abnormal – in stead of objectively defined levels of problems is not necessarily disqualifying. For example, Mathai, Anderson & Bourne (2002) understand the use of SDQ as a screening "*...before admission to a specialist service.*" This means that when diagnosing children with special problems, the SDQ is one of several tools, which is also why the exact value on the index is of less importance.

[4] http://www.sdqinfo.com/bba5.pdf
[5] http://www.sdqinfo.com/ShoreSheets/e1.pdf

In some previous Danish analyses (e.g. Christensen, 2004) it was decided to use the same boundaries as in figure 1, i.e. normal: 0-13, borderline 14-16 and abnormal 17-40. Alternatively, new intervals could have been constructed on the basis of percentiles in the data, which is the procedure in for example Woerner et al. (2004). However, analysis of SDQ from a well-being perspective does not require this categorization but can be performed on the continuous version of the scale.

Missing answers

Missing answers – which is not uncommon in questionnaires – warrants special interest. Apart from a general interest in retrieving answers to as many questions as possible, this interest is related to a risk of getting biased results because parents with few resources are hypothesized to be more reluctant to answer the questionnaires.

In the case of SDQ[6], the way missing values are dealt with is by prorating, i.e. by assuming that missing values in any question in a particular subscale can be replaced by the mean value of the non-missing values in that subscale. This process is done separately for each of the four subscales in the SDQ-index, and only if there are at least three non-missing values on the relevant subscale.

3. The Danish Longitudinal Child Survey (DLSC)

The data used in this analysis are from the Danish Longitudinal Survey of Children (DLSC). This survey follows children born between September 15 and October 31 1995, representatively drawn from all children born in that period by mothers with Danish citizenship. Three waves of the survey – in 1996, 1999 and 2003 – have been completed, a fourth wave will be ready in 2007, and subsequent waves are intended every 3-4 years in the future.

The DLSC study is mainly concerned with the children’s physical and mental development, along with the need for basic information on the children’s development, their family background and their daily family life. The questionnaires were answered by the children’s mothers (or by the father if the mother was not present).

---

[6] SAS and SPSS scoring programs are available at http://www.sdqinfo.com/b4.html

As of the third wave, in 2003, the DLSC-questionnaire contains the 25 questions of the SDQ-questionnaire and thus it contains a measure of child well-being, which have been tested and validated by many researchers in other fields of science. This was not the case in the 1996 and 1999 – which is why we have to develop these measures here. The reason the SDQ was not part of the questionnaires is, naturally, that it did not exist, but even if it had existed, the children were not old enough to be assessed by it at that time.

In general, missing values is not a major problem in the DLSC dataset because the questionnaires are filled in through interviews. This is particularly true about the SDQ questions because the introduction to them contained a note to the interviewers stressing the importance of getting answers to all 25 questions.

The 1999-survey

In 1999 the questionnaire included questions on development psychology inspired by, among other things, some of the questions from the Child Behavior Check List. According to Christensen (2004) the 1999-questions performed satisfactory although they were – like the questions in the CBCL – criticized of primarily being negative. The negatively formulated questions about the children could lead to a flawed description because they were answered by the mothers.

Three groups of questions (42 questions in total) are relevant when we wish to construct an index of well-being á la SDQ. 24 of these were found among – or inspired by – questions in the pre-2001 Child Behavior Check List (CBCL/4-18). Trembley The 42 Danish questions are shown below for reference in an English translation[7] together with questions from the CBCL/1½-5 which has approximately the same interpretation.

[7] The items in question 11, 12, and 13, in Danish, as used in the 1999 DLSC-questionnaire, are shown in appendix B.

Table 3. Comparison between questions from the DLSC and the CBCL

Questions from questionnaire to mothers in 1999 (question 11,) Prosocial behavior		Questions from CBCL/1½-5	
11.a	Initiates contact to other children in order to play?		
11.b	Decides what to play?		
11.c	Will only join a game if he/she can decide him/her self?		
11.d	Pushes others to get what he/she wants?		
11.e	Takes things from others?		
11.f	Starts discussions/quarrels with other children?		
11.g	Teases other children?		
11.h	Hits other children?	40,	Hits others
11.i	Is hit by other children?		
11.j	Is teased by other children?		
11.k	Cries often/regularly because of other children's harassment/bullying?	13	Cries a lot
11.l	Is a child that other children want to play with?	25	Doesn't get along with other children (reverse)
11.m	Is helpful towards other children?		
11.n	Comforts other children?		
11.o	Tries to encourage and commend other children?		

Children's temperament	Questions from questionnaire to mothers in 1999 (question 12, translated)		Questions from CBCL/1½-5
12.a	Is impulsive, act without thinking?		
12.b	Has difficulties waiting for his/her turn when playing with other children?	8 16	Can't stand waiting, wants everything now Demands must be met immediately
12.c	Is inattentive?	23	Doesn't answer when people talk to him/her
12.d	Can't sit still, rushes around, or hyperactive?	6	Can't sit still, restless, or hyperactive
12.e	Is easily distracted from doings?	5	Can't concentrate, can't pay attention for long
12.f	Is fidgety, restless, or hectic?	6	Can't sit still, restless, or hyperactive
12.g	Can't concentrate on anything for more that a few moments?	5	Can't concentrate, can't pay attention for long
12.h	Has hysterical fits?	85	Temper tantrums or hot temper
12.i	Is very hot-tempered?	85	Temper tantrums or hot temper
12.j	Doesn't care about scolding or punishment?	58	Punishment doesn't change his/her behavior
12.k	Doesn't seem to feel bad after misbehaving?	27	Doesn't seem to feel guilty after misbehaving
12.l	Is good at occupying him/her self?		
12.m	Is able to concentrate on listening to stories for 10-15 minutes or more?		
12.n	Is able to concentrate on children's programs on TV for 10-15 minutes or more?		

Emotional behavior	Questions from questionnaire to mothers in 1999 (question 13, translated)		Questions from CBCL/1½-5
13.a	Is too fearful or anxious?	87 73	Too fearful or anxious Too shy or timid
13.b	Seems sad or unhappy?	90	Unhappy, sad, or depressed
13.c	Seems worried?	99	Worries
13.d	Gives up easily when encountering difficulties?		
13.e	Withdraws into him/her self?	98	Withdrawn, doesn't get involved with others
13.f	Stares into thin air?	77	Stares into space or seems preoccupied
13.g	Seems nervous or tense?	47	Nervous, highstrung, or tense
13.h	Is afraid of new situations?	3	Afraid to try new things
13.i	Lack of self-confidence or belief in own abilities		
13.j	Doesn't want to sleep alone?	22	Doesn't want to sleep alone
13.k	Has difficulties getting to sleep?	38	Has trouble getting to sleep
13.i	Wakes up at night?	94	Wakes up often at night
13.m	Has nightmares?	48	Nightmares

The questions could be answered by “Not true”, “Somewhat true”, “Certainly true” or “Don’t know”, and all answers were re-coded 0, 1 or 2 (higher values corresponding to higher prevalence of problems) like the ones used in SDQ.

Christensen (2000) presents results of the DLSC in 1999 in six themes: 1) health resources, 2) the parents’ perception of the child, 3) peer relations, 4) social relations, 5) attention, and 6) anxiety. In terms of construction of a type of SDQ-index, our interest is mainly in theme 3, 4, 5 and 6 while questions regarding theme 1 and 2 are not included in the SDQ-index.

In contrast to Christensen (2000) our interest is in compiling all relevant information about the children’s well-being into *one single scale* describing the children’s well-being. Therefore, rather than to use a thematic approach, we do factor analysis on the questions presented above. The factor analysis is done in SAS with the following options: method=ml, priors=smc, rotation=varimax. The result of this analysis is a solution with four factors: 1) poor relations to other children, 2) restless child, 3) anxiety/low self esteem, and 4) considerate child. Of course, these factors are not identical to the SDQ-subscales (this is also the reason why we use different names) but conceptually they are not very different as seen in table 4 which compares our factors to the five subscales of the SDQ.

Table 4. Factors in the DLSC compared to the SDQ subscales

DLSC	**SDQ subscale**
Poor relations to other children	Peer problems
Restless child	Hyperactivity
Anxiety/low self esteem	Emotional problems
-	Behavioral problems
Considerate	Prosocial behavior

The only SDQ-type subscale we are unable to find in the DLSC data is the one describing behavioral problems.

On the basis of the factors from the 1999-questionnaire, we have calculated two

different measures of well-being – or quasi SDQ – one with and one without the consideration factor. We reverse the score of positively formulated questions in order to make higher values of the quasi SDQ equivalent to more problems i.e. lower child well-being. When the quasi SDQ is calculated with the three problem factors only, we reweigh each factor to have 1/3 weight. When the quasi SDQ is calculated with all four factors, we reweigh each factor to have 1/4 weight. Because the number of questions in each factor is different, this is done to ensure that all factors are equally important in the final measures. The two scales measure different things; the scale containing three factors describe only weaknesses while the scale with four factors describes weaknesses as well as strengths. Because of this, we expect some discrepancies regarding the individual child's place on the two scales. The degree of this discrepancy is seen in table 5 showing a cross tabulation of the two measures using the categories normal (<85 pct.), borderline (85-90 pct.) and abnormal (>90 pct.). We see that 87 pct. of the children are placed in the same category regardless of the scale used. Even though the majority of children are placed within the same categories on the two scales, we prefer the scale focusing on problems because it has the same interpretation as the SDQ and thus is easier to compare to the SDQ.

Table 5. Quasi-SDQ in 1999 when including or excluding the positive factor

		Quasi-SDQ excl. positive factor			
		Abnormal	Borderline	Normal	Total
Quasi-SDQ incl. positive factor	Abnormal	6.63	1.14	2.26	10.03
	Borderline	1.42	0.82	2.75	4.99
	Normal	2.13	3.72	76.69	84.98
	Total	10.18	5.12	84.70	100.00

The 1996-survey

In 1996 the questionnaire to the mothers asked questions about health/well-being but because the children were only between 4 and 6 months old, the questions were quite different from to the ones in 1999 and 2003. A search for questions relevant to a factor analysis, as the one done in 1999, resulted in the following candidate questions:

Table 6. Questions regarding child well-being from the 1996 DLSC-questionnaire

15A	When your child is fed, how often is it calm?
15B	When your child is fed, how often does it cry?
15C	When your child is fed, how often is it impatient?
19A	How often is your child crying in the morning?
19B	How often is your child crying in the afternoon?
19C	How often is your child crying in the evening?
19D	How often is your child crying at night?
35A	Is the child active, eager?
35B	Is the child calm, trusting?
35C	Is the child curious?
35D	Is the child keen on contact?
35E	Is the child stubborn?
35F	Is the child demanding?
35G	Is the child content, happy?
35H	Is the child quiet, cautious?
35I	Is the child gentle, accommodating?
35J	Is the child timid?
35K	Is the child difficult to comfort?
35L	Is the child irritable?
36	During the day, is your child mainly in good, varying or poor mood?
37	How is your child's temperament in general? Very temperamental, ordinary or not very temperamental?

The factor analysis on the 1996-questions is done parallel to the one in 1999 (the same SAS procedure and options). Questions 15A-19D has the following four answers: always, often, sometimes, and rarely/never. The possible answers to questions 35A-35L are: fits completely, fits more or less, fits badly, and does not fit at all. Because these categories are different from the ones in 1999, they have been transformed to fit the 0 1 2 coding. The new coding of question 15 and 19 is: rarely/never (0), sometimes and often (1), and always (2). The new coding of question 35 is: fits completely (0), fits more or less (1), and fits badly and does not fit at all (2). Where necessary, the questions have been reversed to make higher values correspond to worse outcomes.

There are fewer candidate questions in 1996 than in 1999 and they do not describe quite as many aspects of the children. Consequently, the factor analysis results in only two factors: *Temperament* (15A, 15B, 15C, 19A, 19B, 19C, 35B, 35F, 35G, 35K, 35L, 36) and *extroversion* (35A, 35C, 35D). These factors do not resemble the SDQ as much as the factors from the 1999 questionnaire. This is not surprising because compared to the 1999 and 2003 questionnaires – in which the children are seen as subjects – the 1996 questionnaire perceives the children (infants) more as objects. The fewer questions as

well as the different developmental stages of infants and 7 year-olds makes a direct comparison of well-being in the period 1996-2003 infeasible. But still, we believe that the 1996 factors give some insight into early child well-being and that they may work in a comparison of relative child well-being at different points in time.

4 Development in child well-being in time

Assessment of the development of child well-being in time requires that the different measures are comparable from one wave of the survey to another. Ideally, the measures would be comparable in an absolute sense showing whether the children experiences higher or lower levels of well-being in time. But realistically, the measures developed here are only able to identify relative well-being, i.e. they tell nothing about absolute levels of well-being only about the children's ranking relative to each other on the scale developed to each wave of the survey.

At this point in time, the available data renders a comparison of absolute child well-being in the period 1996-2003 infeasible, mostly because the children's developmental stage, as well as the questions asked, varies from one wave of the survey to another.

Table 7 below shows correlation coefficients between the scales in the three years.

Table 7. Correlations between scales in 1996, 1999 and 2003.

	1999	**2003**
1996	0.190	0.139
1999		0.453

Turning to the developments in time, table 7 below is a cross-tabulation of the children according to level of well-being in the years in which data is available. Had there been no attrition in any years, the sub-tables would have been "symmetric" in the sense that the share of the children who got better would be balanced by the share of children who got worse. The reason this is *not* the case is that the indices each year is formed using *all* information available this year but at the same time disregarding information about well-being in other years. The categorization used in the table is the same in all years,

i.e. all children in the 0-85 pct. interval are in the normal category, children in 85-90 pct. are in the borderline category, and children in 90-100 pct. are in the abnormal category. Off course, these thresholds are only found approximately in the data. The actual share of children in each category in each of the three years is seen in the last column in table 7.

Table 7. Cross-tabulation of Quasi-SDQ's and SDQ

	Quasi-SDQ1999				Pct. in
Quasi-SDQ1996	**Abnormal**	**Borderline**	**Normal**	**Total**	**index**
Abnormal	1.43	0.53	5.92	7.89	8.1
Borderline	0.65	0.42	4.16	5.23	5.4
Normal	7.98	4.33	74.58	86.88	86.6
Total	10.06	5.28	84.66	**100.0**	100.1
	SDQ2003				
Quasi-SDQ1996	**Abnormal**	**Borderline**	**Normal**	**Total**	
Abnormal	1.37	0.56	5.99	7.92	10.0
Borderline	1.10	0.35	3.87	5.31	5.2
Normal	9.51	5.41	71.85	86.77	84.8
Total	11.98	6.31	81.71	**100.0**	100.0
	SDQ2003				
Quasi-SDQ1999	**Abnormal**	**Borderline**	**Normal**	**Total**	
Abnormal	3.45	1.12	5.03	9.60	11.9
Borderline	1.21	0.49	3.47	5.17	6.3
Normal	6.96	4.61	73.66	85.23	81.8
Total	11.62	6.22	82.16	**100.0**	100.0

As seen from the table most children – 75, 72 and 74 percent respectively – are categorized as being normal in any two years.

5. Discussion

In the process of constructing scales comparable with the SDQ, we have encountered a number of questions. The first question is whether it is possible at all – given the data available to us – to construct types of scales which enable comparison of well-being in time. The answer to this question is unambiguous, first of all because we observe the children at three points in time in which they are at very different developmental stages. Because the expected behavioral pattern of infants is very different from the one

expected from three or six year old children, each developmental stage might require different questions to describe child behavior. This means that the scales can not be said to describe *exactly* the same thing and, consequently, that they are unable to detect changes in individual well-being in time, i.e. whether the children have experienced a development towards higher/lower *absolute* well-being from one wave of the survey to the next. However, we were able to construct scales describing child well-being in 1996 as well as in 1999 which enables analysis of the children's *relative* well-being at each survey and of changes in relative well-being between surveys.

All though the SDQ is an integrated part of the DLSC-questionnaires from 2003 on, comparability of absolute levels of well-being in time is not assured. One problem to be expected is an age-effect resulting in lower SDQ-score simply because the children gets 3-4 years older from one wave of the survey to the next (according to Woerner et. al (2004) this affects the hyperactivity sub-scale in particular). Other potential sources of problems are for example different parental standards or tolerances concerning child behavior. The exact nature of these time-effects is to be investigated further as data become available.

Because our original intend was to find scales describing the general well-being of children – rather than diagnosing them – it could be argued that the positive subscales (one of which were found each year) as well as the negative ones could be included. This is not done for two reasons: 1) it ensures a closer connection to the SDQ and 2) there is no obvious reason why exhibition of the exact traits on the positive subscale should counterbalance any of the exact problems identified by the negative subscales – especially since, rather than being scattered on the negative factors, with reverse signs, they constitute a separate positive factor.

Whether to use the categorical or the continuous version of the indices depends on the purpose of the analysis. Regarding the SDQ, many times the categorical version is preferred because the index is intended as a diagnosing and screening tool before admission to a specialist – which requires some kind of threshold value. Because our interest is in the general well-being of children, we can benefit from the continuous

version of the index because it enables us to distinguish – also within the three categories normal, borderline and abnormal – which children have more or fewer problems than others. This means that we are able to use both versions of the indices but most often prefer the continuous version.

Appendix A

The SDQ-questions used in the DLSC-questionnaire are shown below. The questionnaire uses the approved Danish translation of the 25 SDQ-questions from www.sdqinfo.com but with a different introduction. This introduction translates into: *Children are different. I am now going to describe different ways of behavior and would like you to tell me to what extent you believe that your child's behavior fits each description. I would like you to answer about the child's behavior during the last 6 months: (Note: Very important that IP tries to answer all questions).*

Danish SDQ questions:

12. Det er forskelligt, hvordan børn er. Jeg nævner nu en række måder at være på og vil bede dig fortælle, i hvilken grad du mener, dit barns måde at være på passer til beskrivelsen. Jeg vil bede dig svare på barnets opførsel indenfor de sidste 6 måneder: *(Meget vigtigt, at IP prøver at svare på alle spm.)*.

A Er hensynsfuld og betænksom overfor andre
B Er rastløs, "overaktiv", har svært ved at holde sig i ro i længere tid
C Klager ofte over hovedpine, ondt i maven eller kvalme
D Er god til at dele med andre børn (slik, legetøj, blyanter)
E Har ofte raserianfald eller bliver let hidsig
F Er lidt af en enspænder, leger mest alene
G Gør for det meste, hvad der bliver sagt
H Bekymrer sig om mange ting, virker ofte bekymret
I Prøver at hjælpe, hvis nogen slår sig, er kede af det eller skidt tilpas
J Sidder konstant uroligt på stolen, har svært ved at holde arme og ben i ro
K Har mindst én god ven
L Kommer ofte i slagsmål eller mobber andre børn
M Er ofte ked af det, trist eller har let til gråd
N Er generelt vellidt af andre børn
O Er nem at distrahere, mister let koncentrationen
P Er utryg og klæbende i nye situationer, bliver nemt usikker på sig selv
Q Er god mod mindre børn
R Lyver eller snyder ofte
S Bliver mobbet eller drillet af andre børn
T Tilbyder ofte af sig selv at hjælpe andre (forældre, lærere, andre børn)
U Tænker sig om, før han/hun handler
V Stjæler fra hjemmet, i skolen eller andre steder
W Kommer bedre ud af det med voksne end med andre børn
X Er bange for mange ting, er nem at skræmme
Y Gør tingene færdig, er god til at koncentrere sig

Appendix B

Danish version of the questions from the 1999-questionnaire used in the construction of the 1999-index of child well-being.

Tekst 3: De næste spørgsmål handler om dit barns måde at være på overfor andre børn.

11. Det er forskelligt, hvilke roller børn har i deres indbyrdes leg. Jeg nævner nu en række måder at være på og vil bede dig fortælle, i hvilken grad du mener, dit barns måde at være på passer til beskrivelsen:

		Passer slet ikke	Passer i nogen grad	Passer i høj grad	Ved ikke
a.	**Tager initiativ til at kontakte andre børn for at lege?**	☐ 1	☐ 2	☐ 3	☐ 8
b.	**Bestemmer hvad der skal leges?**	☐ 1	☐ 2	☐ 3	☐ 8
c.	**Vil kun være med i fælles leg, hvis han/hun selv kan bestemme?**	☐ 1	☐ 2	☐ 3	☐ 8
d.	**Presser andre for at få eller opnå det, han/hun vil?**	☐ 1	☐ 2	☐ 3	☐ 8
e.	**Passer det, at dit barn tager ting fra andre?**	☐ 1	☐ 2	☐ 3	☐ 8
f.	**Starter diskussion/skænderier med andre børn?**	☐ 1	☐ 2	☐ 3	☐ 8
g.	**Driller andre børn?**	☐ 1	☐ 2	☐ 3	☐ 8
h.	**Slår andre børn?**	☐ 1	☐ 2	☐ 3	☐ 8
i.	**Bliver slået af andre børn?**	☐ 1	☐ 2	☐ 3	☐ 8
j.	**Passer det, at dit barn bliver drillet?**	☐ 1	☐ 2	☐ 3	☐ 8
k.	**Græder ofte/jævnligt på grund af andre børns drilleri/ - chikane?**	☐ 1	☐ 2	☐ 3	☐ 8
l.	**Passer det, at dit barn er en, de andre gerne vil lege med?**	☐ 1	☐ 2	☐ 3	☐ 8
m.	**Er hjælpsom overfor andre børn?**	☐ 1	☐ 2	☐ 3	☐ 8
n.	**Trøster andre børn?**	☐ 1	☐ 2	☐ 3	☐ 8
o.	**Forsøger at opmuntre og rose andre børn?**	☐ 1	☐ 2	☐ 3	☐ 8

Tekst 4: De næste to spørgsmål handler om dit barns temperament. Først om aktivitet, impulsivitet og koncentration.

12. Jeg vil bede dig fortælle i hvilken grad du synes, det følgende passer på dit barn:

		Passer slet ikke	Passer i nogen grad	Passer i høj grad	Ved ikke
a.	**Er impulsiv, handler uden at tænke?**	☐ 1	☐ 2	☐ 3	☐ 8
b.	**Har svært ved at vente på, at det bliver hans/hendes tur, når han/hun leger med andre?**	☐ 1	☐ 2	☐ 3	☐ 8
c.	**Er uopmærksom?**...........................	☐ 1	☐ 2	☐ 3	☐ 8
d.	**Kan ikke sidde stille, er omkringfarende eller hyperaktiv? ....**	☐ 1	☐ 2	☐ 3	☐ 8
e.	**Har let ved at blive afledt fra det, han/hun er i gang med?**..	☐ **1**	☐ **2**	☐ **3**	☐ **8**
f.	**Passer det, at barnet virker urolig, rastløs eller febrilsk?**	☐ 1	☐ 2	☐ 3	☐ 8
g.	**Kan ikke beskæftige sig med noget i mere end et kort øjeblik?................................**	☐ 1	☐ 2	☐ 3	☐ 8
h.	**Har hysteriske anfald?**	☐ 1	☐ 2	☐ 3	☐ 8
i.	**Har et meget hidsigt temperament?**	☐ 1	☐ 2	☐ 3	☐ 8
j.	**Er ligeglad med at få skæld ud eller at blive straffet?**	☐ 1	☐ 2	☐ 3	☐ 8
k.	**Passer det, at barnet ikke virker som om han/hun har det dårligt efter at have gjort noget forkert?**	☐ 1	☐ 2	☐ 3	☐ 8
l.	**Er god til at beskæftige sig selv? ....**	☐ 1	☐ 2	☐ 3	☐ 8
m.	**Kan koncentrere sig i 10-15 min. eller mere om at få læst en historie?**	☐ 1	☐ 2	☐ 3	☐ 8
n.	**Kan koncentrere sig i 10-15 min. eller mere om en børneudsendelse i TV? ....**	☐ 1	☐ 2	☐ 3	☐ 8

Tekst 5: Det næste spørgsmål handler om hvor forsigtig, stille og indadvendt dit barn kan være.

13. Jeg vil bede dig fortælle i hvilken grad du synes du, det følgende passer på dit barn:

		Passer slet ikke	Passer i nogen grad	Passer i høj grad	Ved ikke
a.	**Er alt for bange eller ængstelig?**	☐ 1	☐ 2	☐ 3	☐ 8
b.	**Virker trist eller ked at det?**..	☐ 1	☐ 2	☐ 3	☐ 8
c.	**Virker bekymret?**	☐ 1	☐ 2	☐ 3	☐ 8
d.	**Giver let op, hvis der er problemer?**......................................	☐ 1	☐ 2	☐ 3	☐ 8
e.	**Trækker sig ind i sig selv?**	☐ 1	☐ 2	☐ 3	☐ 8
f.	**Kan sidde og stirre tomt ud i luften?**	☐ 1	☐ 2	☐ 3	☐ 8
g.	**Passer det, at barnet virker nervøs eller anspændt?**	☐ 1	☐ 2	☐ 3	☐ 8
h.	**Er bange for nye situationer?**	☐ 1	☐ 2	☐ 3	☐ 8
i.	**Har svært ved at tro på sig selv og på at han/hun kan noget?**	☐ 1	☐ 2	☐ 3	☐ 8
j	**Vil ikke sove alene?**	☐ 1	☐ 2	☐ 3	☐ 8
k.	**Har svært ved at falde i søvn?**...	☐ 1	☐ 2	☐ 3	☐ 8
l.	**Vågner i løbet af natten?**	☐ 1	☐ 2	☐ 3	☐ 8
m.	**Har mareridt?**	☐ 1	☐ 2	☐ 3	☐ 8

References

Christensen, Else (2000). *Det 3-årige barn. Rapport nr. 3 fra forløbsundersøgelsen af børn født i 1995.* København, Socialforskningsinstituttet, 00:10.

Christensen, Else (2004). *7 års børneliv. Velfærd, sundhed og trivsel hos børn født i 1995.* København, Socialforskningsinstituttet, 04:13.

Goodman, R. (1994). A modified version of the Rutter Parent Questionnaire including extra items on children's strengths: A research note. *Journal of Child Psychology and Psychiatry,* 35(8), 1483-1494.

Goodman, R. (1997). The Strengths and Difficulties Questionnaire: A Research Note. *Journal of Child Psychology and Psychiatry,* 38(5), 581-586.

Goodman, R., Meltzer, H. and Bailey V. (1998). The Strengths and difficulties questionnaire: A pilot study on the validity of the self-report version. *European Child & Adolescent Psychiatry*, Vol. 7, No. 3, 125-130.

Goodman, R. (1999). The Extended Version of the Strengths and Difficulties Questionnaire as a Guide to Child Psychiatric Caseness and Consequent Burden. *Journal of Child Psychology and Psychiatry,* 40(5), 791-799.

Goodman, R. and S. Scott (1999). Comparing the Strengths and Difficulties Questionnaire and the Child Behavior Checklist: Is Small Beautiful? *Journal of Abnormal Child Psychology*, 27(1), 17-24.

Mathai, J., P. Anderson and A. Bourne (2002). The Strengths and Difficulties Questionnaire (SDQ) as a screening measure prior to admission to a Child and Adolescent Mental Health Service (CAMHS). *Australian e-Journal for the Advancement of Mental Health (AeJAMH)*, 1(3), 1-12.

Nygaard Christoffersen, M. (1997). *Spædbarnsfamilien. Rapport nr. 1 fra forløbsundersøgelsen af børn født i efteråret 1995.* København, Socialforskningsinstituttet, 97:25.

Obel, C., S. Dalgaard, H. Stax and N. Bilenberg (2003). Spørgeskema om barnets styrker og vanskeligheder (SDQ-DAN). Ugeskrift for læger, 165(5), 462-465.

Trillingsgaard, A. (2005). Barnets udvikling og adfærd. *Psykolog Nyt,* Nr. 23, 18-22.

Woerner, W., Becker, A. and Rothenberger, A. (2004). Normative data and scale properties of the German parent SDQ. *European Child & Adolescent Psychiatry*, Vol. 13, Supplement 2.