

ORIGINAL RESEARCH ARTICLE



Greenlandic norms for the parent-report and self-report versions of the Strengths and Difficulties Questionnaire (SDQ)

Trine Banzon ^{a,b} and Ask Elklit ^a

^aThe Danish National Center for Psychotraumatology, Department of Psychology, University of Southern Denmark, Odense, Denmark;

^bLD research group, Department of Psychology, University of Southern Denmark, Odense, Denmark

ABSTRACT

The Strengths and Difficulties Questionnaire (SDQ) is a brief screening questionnaire of child behaviour, used to evaluate mental health. It is applicable for children 2–17 years, available to both parents and professionals, and exists in a self-report version available from the age of 11 years. This paper aims to generate Greenlandic norms on the self-report and parent-report versions of the SDQ. In 2023, the self-report version was translated, and a representative sample of children and adolescents completed the SDQ ($N = 641$). In 2008, the parent-report version was translated into Greenlandic and used in a study of children's well-being ($N = 939$). Data from both samples were analysed, generating normative scores. Results show significant differences between genders (effect sizes of .006–.145), and discrepancies between parent and self-report. Parents report higher total problems for boys, while self-reporting indicate higher total problems for girls. Cut-off values are higher for self-report norms than parent-report norms. Mean scores on the SDQ total score and subscales differ across age, area of living, caregiver constellation and caregiver's educational level (effect sizes of .011–.064). With the availability of Greenlandic norms, we anticipate further use of the SDQ in clinical practice and research settings, strengthening screening and assessment of children and adolescents.

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Greenlandic children and adolescents

An increasing focus has emerged on the well-being, mental health, psychosocial problems, and potentially traumatic experiences (PTEs) of Greenlandic children and adolescents [1,2]. In a national survey from 2011 with 481 Greenlandic students from 9th and 10th grade (15–17 years), 74% reported very good or good mental health [3]. Of the remaining children and adolescents, 22% experienced reasonable mental health, while 4% experienced poor mental health [3]. A study investigating 16–19-year-olds from Nordic countries found similar results [4]. Compared to the rates from Denmark (77.4%) and Finland (79.1%), fewer Greenlandic children report very good or good mental health. The rate is however comparable to rates from Iceland (73.8%) and The Faroe Islands (74.6%), higher than the rate from Åland Islands (71.2%), and only slightly lower than other Nordic countries (ranging from 75.8%–75.1%) [4].

The life satisfaction of children and adolescents in Greenland has also been subject to investigation [5]. Among children aged 11, life satisfaction was comparable to other countries (87% Greenlandic girls and 93%

Greenlandic boys reported high life satisfaction, average rate was 88% for both girls and boys), but at the age of 15 years, the rate was lower than the average rate of life satisfaction across all countries (75% Greenlandic girls and 85% Greenlandic boys reported high life satisfaction, average rate was 79% for girls and 86% for boys) [1,5].

In addition to mental health and life satisfaction, loneliness and bullying among Greenlandic adolescents have been examined. A national survey from 2012 found that most adolescents reported having experienced loneliness [3]. Some of the adolescents (8%) reported that they often felt unwanted and alone, while 28% girls and 16% boys sometimes felt unwanted and alone. These adolescents more often reported not having a trusted adult to confide in, compared to adolescents who did not feel unwanted and alone [3]. It is difficult to compare these results directly with results from other countries, as Pedersen & Bjerregaard [3] did not use a known questionnaire to investigate loneliness. Despite these reservations, it seems that the experience of loneliness may be comparable to

CONTACT Trine Banzon  tbanzon@health.sdu.dk  The Danish National Center for Psychotraumatology, University of Southern Denmark, Campusvej 55, 5230 Odense M, Odense, Denmark

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a Danish sample, where 8% of 16–19-year-old boys and 16% girls experience severe loneliness [6]. In the Danish study, loneliness was investigated with the Three-Items Loneliness Scale (T-ILS), and severe loneliness was defined as answering “often” on minimum one question and “sometimes” on two questions [7]. In a recent Health Behavior in School-aged Children (HBSC) study from 2018, 35% of Greenlandic children and adolescents reported having been bullied physically, with an additional 19% having experienced digital bullying [8]. This is a higher number than among Danish children and adolescents, where 22.6% report experiences of bullying [9].

Greenlandic children and adolescents seem to be particularly vulnerable to experiencing PTEs (e.g. sexual or physical abuse, attempted suicide or illness) [7]. In 2012, Karsberg et al. [7] found that 86% of Greenlandic students between 12–18 years had been directly exposed to at least one PTE, while 74.3% of Greenlandic students had been indirectly exposed to at least one PTE (signifying that a person close to them had experienced the PTE). The estimated lifetime prevalence of PTSD was 17.1%, with another 14.2% reaching a subclinical level of PTSD, only missing the full PTSD diagnosis by one symptom.

Several studies have found an exceptionally high lifetime prevalence of sexual abuse, with the majority occurring in childhood [3,10,31]. According to a recent population survey [2], one in four Greenlandic children (26%) had been exposed to sexual abuse before they turned 18 years old. Approximately 20% reported alcohol abuse among their parents, while one third of Greenlandic children (37%) had grown up with alcohol problems at home or in their closest family [2,3]. In Denmark, it is estimated that 19.3% of adults as a child or adolescent has lived with someone with an alcohol problem [11]. Alcohol abuse thus seems to be a bigger problem in Greenland.

Exposure to violence in the childhood home is also very prevalent among Greenlandic children and adolescents, as evident by a recent population study reporting that 30% and 40% of the population had been exposed to domestic violence [12]. Comparable estimates can be found in the national survey from 2012 [3], where 35% of the Greenlandic youth reported having witnessed their mother getting beaten, 6.9% their father getting beaten and 9.7% a sibling getting beaten. The study by Pedersen & Bjerregaard [3] found one in six students had been exposed to violence from their parent at some point. Violence is not just experienced in the childhood home; one in four students moreover reported prior exposure to violence outside the family [3].

The rate of committed suicides per capita in Greenland is one of the highest in the world [1]. Between 2011–2015, the number of deaths from suicide per 100,000 inhabitants in Greenland was 99.8 for males and 35.6 for females. This number is more than 7 times higher than the number of deaths from suicide for men in Denmark in 2015 (13.8) and more than 5 times higher than that of Danish women in 2015 (6.1) [13]. The prevalence is particularly high among young people aged 10–24 years. Furthermore, Larsen et al. [2] found that one in four children (22%) have had suicidal thoughts in the recent year. Also, approximately 18% of young people in Greenland have attempted suicide [3]. In contrast to the male predominance in committed suicides, more young females than males report having attempted suicide.

Given the extent of mental health problems, psychosocial problems and experienced PTEs among Greenlandic children and adolescents, it is important to be able to identify the children most in need of support or treatment, to prevent long-term psychopathological problems.

The Strengths and Difficulties Questionnaire

The Strengths and Difficulties Questionnaire was developed by the British psychiatrist Robert [14,14]. The SDQ is a brief screening questionnaire of child behaviour, including 25 items. The questionnaire is used to evaluate a child’s or young person’s mental health and can be used with children and young people in the age range of 2–17 years [15]. Today, the questionnaire is used worldwide and regarded one of the most popular measures of child mental health [16].

The SDQ addresses both psychosocial problems, distress, and problematic behaviour, as well as strengths and resources in children and young people [14]. To get a nuanced picture of the child’s strengths and difficulties in different arenas of life, the SDQ is available to both parents and professionals (teachers or pedagogues), who know the child or young person. From the age of 11 years, children and adolescents can report on their own difficulties and strengths. The 25 questions are subdivided into five scales, with five questions each, measuring; emotional symptoms, conduct problems, hyperactivity-inattention, peer problems and prosocial behaviour. The first four subscales measure psychosocial problems and can be combined to a total difficulties score. The last subscale, prosocial behaviour, measures the child or young person’s strengths [14].

Each question is phrased as a statement about the child or young person’s behaviour over the past six months. For each question, the child, parent, or

teacher/pedagogue is instructed to answer on a three-point Likert-scale whether the statement is “Not true” (= 0), “Partially true” (= 1), or “Certainly true” (= 2) [17]. The questions are asked in mixed order, as to not bias the informant by his or her previous answers in the same scale [18].

Additionally, clinicians and researcher can choose to include an SDQ impact supplement, comprised of eight questions [19]. This supplement asks whether the informant thinks the child or young person has a problem, and if so, addresses chronicity, distress, social impairment, and burden for others, in the following questions. The responses to these questions can then be divided into three dimensions; perceived difficulties, impact score, and a burden rating [19].

The SDQ has been validated in Denmark and other Nordic countries with children and adolescents [17,20–28], and the overall reliability and validity of the SDQ have been found to be satisfactory [24,29]. Danish norms are available [15].

The current study

Unfortunately, no Greenlandic norms are available. Norms are important in the interpretation of scores, as it serves as a baseline for how far a specific score deviates from the average. In the absence of Greenlandic versions of the self-report and parent-report SDQ, as well as Greenlandic norms on the SDQ, the Danish versions of the SDQ have been employed for children, adolescents, and parents in Greenland. Score values are then compared to the Danish norms. This poses a problem, as 1) many Greenlandic children do not possess good Danish language skills and 2) cultural and social differences between the two countries may make normative evaluations invalid. Thus, using both new and secondary data, the aim of this project is to generate a comprehensive set of Greenlandic norms on the self-report and the parent-report versions of the SDQ. The self-report version uses new data, while the parent-report version uses secondary data. As a full, well-collected, and representative set of data on the parent-report SDQ was collected in 2008, this was included in the current study, where both datasets were analysed. It is our ambition that the availability of Greenlandic versions of the SDQ and their related norms will stimulate further use in clinical practice, and greater confidence and reliability in the results of the tools, to the benefit of children and adolescents in need of support. The norms will be compared to the Danish norms. Because of the higher rate of psychosocial problems among Greenlandic youth, and the higher percentage of children and adolescents exposed to

potential traumatic events in Greenland, we expect the Greenlandic norms on the SDQ to be higher than that of their Danish counterparts.

Methods

The self-report version of the SDQ

Participants

A total of 704 children and adolescents were administered the SDQ. Since the psychologist and the respective teachers at some of the schools did not record 1) how many parents declined participation, 2) how many children and adolescents were not attending school on the day of the administration of questionnaires, and 3) how many children and adolescents declined participation, the possible response rate is not known. Of the participating children and adolescents, 548 (77.8%) completed the full self-report SDQ. An additional 93 participants had answered a partial self-report version of the SDQ (13.2%). Partial responses were included if a full subscale score could be computed. The mean numbers of questions answered for the partial responses were 21.7. Most participants missed only 1, 2 or 3 answers (77.3%). For the rest of the partial responses, between 4 and 19 answers were missing. This amounts to a final 641 (91.1%) partial or full responses ($M=13.5$ years, $SD=1.8$). Boys and girls were evenly distributed in the sample with 332 (51.8%) girls, 304 (47.4%) boys, and 5 (0.8%) who did not disclose their gender. Most respondents were 13 years ($n=119$, 18.6%) and 14 years ($n=111$, 17.3%), while fewest respondents were 16 years ($n=37$, 5.8%) and 17 years ($n=48$, 7.5%). Further demographic information of the participants can be found in Table 1.

Procedures

The study was approved by the Research and Innovation Organization (RIO), the Data Protection Agency at the University of Southern Denmark (RIO: #11.400). The self-report SDQ was translated into Greenlandic (kalaallisut) and subsequently back-translated and revised, and thereupon accepted by the international organisation (www.sdqinfo.org). A representative sample of children and adolescents were chosen from administrative lists from the Department of Education in Greenland, covering all towns and settlements. The selection of schools was based on a school directory comprising all schools in Greenland. The number of schools contacted in each district corresponded to their relative population size. Furthermore, the sample was constructed to have an

Table 1. Demographic sample characteristics on the self-report sample ($N = 641$)*.

		% (n)
District ($N = 641$)	North	16.5 (106)
	Disko-area	35.4 (227)
	West	31.2 (200)
	South	3.7 (24)
	East	13.1 (84)
Gender ($N = 641$)	Male	47.4 (304)
	Female	51.8 (332)
Age ($N = 622$)	11 years	15.3 (98)
	12 years	15.4 (99)
	13 years	18.6 (119)
	14 years	17.3 (111)
	15 years	17.2 (110)
	16 years	5.8 (37)
	17 years	7.5 (48)
Area of living ($N = 634$)	City	78.0 (500)
	Settlement	20.9 (134)
Educational level of father ($N = 441$)	Primary or lower secondary education	34.9 (224)
	Upper secondary education	9.5 (61)
	Bachelor's program	19.3 (124)
	Master's program or higher level education	5.0 (32)
Educational level of mother ($N = 504$)	Primary or lower secondary education	28.7 (184)
	Upper secondary education	12.2 (78)
	Bachelor's program	28.1 (180)
	Master's program or higher level education	10.0 (64)
Caregiver constellation ($N = 630$)	Mother	26.1 (167)
	Father	5.9 (38)
	Both parents	47.9 (307)
	Other	9.0 (58)
	Mother + other	4.2 (27)
	Father + other	0.5 (3)
	Both parents + other	4.7 (30)

Note. N = number of respondents, n = number. *The reported demographical information is based on the available child reports. N varies as not all children responded to the full set of demographic questions.

North = Upernavik, Uummannaq.

Disko-area = Ilulissat, Aasiaat.

West = Sisimiut, Maniitsoq, Nuuk, Qeqertarsuaat.

South = Nanortalik.

East = Tasiilaq.

equal representation of boys and girls in the age groups 11–17 years.

Schools were informed about the purpose and objective of the study. The Children's Travel Team travelled to the respective schools to distribute the questionnaires in paper-format to the students, along with other psychologists in the department. The Children's Travel Team is an outgoing team from the Department for Civil Affairs, who covers the whole country and pays visit to all towns and settlements where child maltreatment and traumatic events have been reported. In other cases, the SDQ was sent to the settlements and the teacher was instructed to distribute and collect the questionnaires, or the questionnaire was administered through an online survey in the classroom. Through the school's communication system, the parents were informed about the project and encouraged to consider whether they wanted their children to participate in the study. If the parents did not want their children to partake in the project, they were able to decline participation at any given time. The children and adolescents were asked to complete the self-report version of

the Greenlandic SDQ and were informed that their answers were anonymous and their participation voluntary. The children and adolescents also had the opportunity to answer the questionnaire in Danish. Mainly the Greenlandic version was used (83%). The questionnaires were completed in the classroom, and the teachers of each class (and the psychologist, if they were present) assisted with translations or explanations, if the students asked for their help. The questionnaires were collected in the period March 2022 to February 2023.

The parent-report version of the SDQ

Participants

Of the 1,300 children who were selected for the study, 1160 parents participated in the study (response rate: 89.2%). The caregivers of the youngest children (0–2 years) were not included in further analysis, as the SDQ is validated from the age of 3 years [15]. This yielded a sample of 942 respondents. Of these, 652 had answered the full parent-report version of the SDQ (69.2%). An additional 287 participants had answered

a partial parent-report version of the SDQ (30.5%). The mean numbers of questions answered for the partial responses were 23.0. Most participants missed only 1, 2 or 3 answers (85.5%). For the rest of the partial responses, between 4 and 10 answers were missing. This amounts to a final 939 (99.7%) partial or full responses on the SDQ ($M = 9.1$ years, $SD = 3.15$). Of the final sample who participated in the study, 436 (46.4%) are girls and 503 (53.6%) are boys. Most children of respondents were born in 1997 (9–10 years, $n = 108$, 11.5%) and born in 1993 (13–14 years, $n = 96$, 10.2%), while fewest were born in 2000 (6–7 years, $n = 72$, 7.7%) and born in 1998 (8–9 years, $n = 74$, 7.9%). Further

demographic information of the participants can be found in Table 2.

Procedures

In 2008, a study on the general well-being of Greenlandic children and families was published by the Danish Center for Social Science Research (VIVE) in collaboration with the Greenlandic Home Rule and authorised by the Danish Data Protection Agency [30]. The study procedures have been described elsewhere [31]. A random sample of 1300 children were drawn by Statistics Greenland [32]. The children were identified by their unique personal identification number. The

Table 2. Demographic sample characteristics on the parent-report sample ($N = 1160$)*.

		% (n)
District ($N = 1160$)*	North	14 (164)
	Disko-area	23 (261)
	West	44 (510)
	South	12 (144)
	East	7 (81)
Gender ($N = 939$)**	Male	53.6 (503)
	Female	46.4 (436)
Age/birthyear ($N = 939$)**	3–4 years/2003	8.3 (78)
	4–5 years/2002	9.3 (87)
	5–6 years/2001	8.3 (78)
	6–7 years/2000	7.7 (72)
	7–8 years/1999	10.0 (94)
	8–9 years/1998	7.9 (74)
	9–10 years/1997	11.5 (108)
	10–11 years/1996	9.8 (92)
	11–12 years/1995	8.2 (77)
	12–13 years/1994	8.8 (83)
Area of living ($N = 1160$)*	13–14 years/1993	10.2 (96)
	City	84 (975)
	Settlement	16 (185)
Respondent's relation to the child ($N = 939$)**	Mother	88.7 (833)
	Father	4.8 (45)
	Stepmother	1.0 (9)
	Private foster parent	2.1 (20)
	Official foster parent	2.9 (27)
	Other	0.5 (5)
Educational level of respondent ($N = 929$)**	9th grade or less	18.8 (177)
	10th grade	11.7 (110)
	11th grade without an exam	6.2 (58)
	11th grade with an exam	34.5 (324)
	General upper secondary education without an exam	3.7 (35)
	General upper secondary education with an exam	13.0 (122)
	Other	10.9 (102)
	Do not know	0.1 (1)
Educational level of the other parent ($N = 719$)**	9th grade or less	19.9 (187)
	10th grade	5.0 (47)
	11th grade without an exam	2.0 (19)
	11th grade with an exam	21.7 (204)
	General upper secondary education without an exam	2.2 (21)
	General upper secondary education with an exam	6.4 (60)
	Other	11.4 (107)
	Do not know†	7.9 (74)

N = number of respondents, n = number. *The reported demographic information is based on the 1160 parents who participated in the study, including parents of the 0–2-year-olds. **The reported demographic information is based on the 939 participants with full or partial SDQ responses. The number of respondents vary, as not all parents responded to the full set of demographic questions. †Some respondents did not know the educational level of the other parent, potentially due to very limited contact with the other parent after the birth of the child.

North = Qaanaaq, Upernavik, Uummannaq.

Disko-area = Quqertarsuaq, Ilulissat, Qasigianniguit, Aasiaat, Kangaatsiaq.

West = Sisimiut, Maniitsoq, Nuuk, Paamiut, Ivittuut.

South = Narsaq, Qaqortoq, Nanortalik.

East = Ammassalik, Iltoqqortoormiit.

Table 3. Mean and standard deviation for SDQ subscale scores and SDQ total difficulties score by SDQ version and gender.

Group Gender	Self-report 11–17 years			Parent-report 3–14 years		
	Both genders (<i>n</i> = 614)	Boys (<i>n</i> = 304)	Girls (<i>n</i> = 332)	Both genders (<i>n</i> = 939)	Boys (<i>n</i> = 503)	Girls (<i>n</i> = 436)
	Mean SD	Mean SD	Mean SD	Mean SD	Mean SD	Mean SD
Emotional problems	3.59 2.60	2.51 2.13	4.49 2.60	1.85 1.75	1.98 1.87	1.70 1.60
Conduct problems	2.23 1.72	2.25 1.71	2.31 1.71	1.41 1.62	1.54 1.79	1.27 1.41
Hyperactivity-inattention	3.87 2.12	3.89 2.14	3.82 2.08	1.82 1.86	2.13 2.01	1.48 1.61
Peer problems	3.95 1.67	3.71 1.68	4.18 1.63	1.91 1.46	1.94 1.49	1.87 1.43
Prosocial	6.31 2.20	6.04 2.29	6.53 2.07	8.93 1.37	8.82 1.46	9.05 1.25
Total difficulties	13.60 5.70	12.34 5.57	14.67 5.57	6.81 5.05	7.54 5.59	6.09 4.34

SD = Standard deviation, *n* = number of respondents.

families were contacted by telephone and asked if they would like to participate in the study. A standardised survey questionnaire including the parent-report version of the SDQ was prepared in Danish and subsequently translated to Greenlandic. The questionnaires were administered by telephone and conducted in the period October 2007 to April 2008.

Statistics

Descriptive analyses were conducted to calculate the mean, standard deviation, and normative scores for subscales and the total difficulties score for boys, girls and both genders. Potential differences in age, gender, area of living, caregiver constellation and educational level of the parents were investigated through a one-way analysis of variance (ANOVA) with post-hoc tests, as the sample sizes were considered sufficient for parametric analyses. We investigated potential interactional effects between age and gender with a two-way between groups ANOVA. A significance level of .05 was used for these tests. Eta squared effect sizes were calculated. We did not impute missing data, but partial responses on the SDQ were included if a full subscale score could be computed. The statistical analyses were conducted using the Statistical Package for the Social Sciences (SPSS) version 28.

The norms are presented as raw score values in defined percentile intervals as recommended by the international SDQ association, where values above the 95th percentile represent a very high risk score, values between the 90th and the 94th percentile represent a high risk score, and values between the 80th and the 89th percentile represent a slightly raised risk score. Values below the 80th percentile represent scores close to the average. The prosocial scale is reversely scored, where higher scores reflect strengths, contrary

to the other four subscales, where higher scores represent difficulties. Therefore, for the prosocial scale scores, values below the fifth percentile represent a very high-risk score, values between the sixth and tenth percentile represent a high risk score and values between the 11th and the 20th percentile represent a slightly raised risk score. Values above the 20th percentile represent scores close to the average. In addition to raw score values, the exact percentage distribution of score values are presented in the tables.

Results

Sample demographic characteristics of the 614 children or adolescents who completed a partial or full self-report SDQ can be seen in Table 1, while sample demographic characteristics of the 939 children whose parents completed a partial or full parent-report SDQ are presented in Table 2. The means and standard deviations for SDQ subscale scores and SDQ total difficulties score are reported in Table 3. The results are presented for both the self-report and parent-report versions of the SDQ and split by gender. In Tables 4 and 5, respectively, the self-report and parent-report SDQ norms can be found for both genders combined and separated. Lastly, Table 6 shows the norms for the parent-report SDQ separated by age groups.

Gender differences

For questionnaires completed by the children and adolescents, there was a significant difference between boys and girls on the SDQ total difficulties score, Brown-Forsythe's $F(1, 533) = 23.8, p < .001$, Cohen's $d = .042$, with girls scoring higher ($M = 14.67$) than boys ($M = 12.34$). The threshold for being in the average range on the total difficulties scores is also higher for

Table 4. Norms for the full self-report sample (11–17 years)*.

Scale scores	Close to average	Slightly raised/lowered†	High/low†	Very high/low†
Both genders				
Emotional problems (<i>n</i> = 605)	0–6 (84.0%)	7 (7.2%)	8 (4.3%)	9–10 (4.5%)
Conduct problems (<i>n</i> = 593)	0–3 (77.6%)	4 (11.1%)	5 (6.7%)	6–10 (4.6%)
Hyperactivity (<i>n</i> = 599)	0–5 (77.3%)	6 (11.2%)	7 (7.3%)	8–10 (4.2%)
Peer problems (<i>n</i> = 588)	0–5 (82.0%)	6 (12.0%)	-	7–10 (6.0%)
Total difficulties (<i>n</i> = 548)	0–18 (78.8%)	19–20 (9.9%)	21–23 (6.2%)	24–40 (5.1%)
Prosocial (<i>n</i> = 598)	5–10 (80.3%)	4 (10.7%)	3 (3.7%)	0–2 (5.3%)
Girls				
Emotional problems (<i>n</i> = 319)	0–6 (75.2%)	7–8 (18.2%)	-	9–10 (6.6%)
Conduct problems (<i>n</i> = 311)	0–3 (77.2%)	4 (9.9%)	5 (8.4%)	6–10 (4.5%)
Hyperactivity (<i>n</i> = 316)	0–5 (78.8%)	6 (10.1%)	7 (7.9%)	8–10 (3.2%)
Peer problems (<i>n</i> = 305)	0–5 (80.0%)	6 (13.1%)	-	7–10 (6.9%)
Total difficulties (<i>n</i> = 289)	0–19 (78.5%)	20–21 (11.1%)	22–24 (5.6%)	25–40 (4.8%)
Prosocial (<i>n</i> = 310)	5–10 (83.1%)	4 (9.4%)	3 (3.2%)	0–2 (4.3%)
Boys				
Emotional problems (<i>n</i> = 281)	0–4 (81.9%)	5 (8.5%)	6 (4.3%)	7–10 (5.3%)
Conduct problems (<i>n</i> = 277)	0–3 (78.7%)	4 (12.3%)	5 (4.7%)	6–10 (4.3%)
Hyperactivity (<i>n</i> = 278)	0–5 (75.9%)	6 (12.2%)	7 (6.9%)	8–10 (5.0%)
Peer problems (<i>n</i> = 279)	0–5 (83.9%)	6 (11.1%)	-	7–10 (5.0%)
Total difficulties (<i>n</i> = 255)	0–17 (80.8%)	18–19 (7.8%)	20–21 (7.1%)	22–40 (4.3%)
Prosocial (<i>n</i> = 283)	5–10 (76.0%)	4 (12.4%)	3–2 (8.1%)	0–2 (3.5%)

*The *n*-values vary as not all children responded to the full SDQ. Partial responses on the SDQ are included if a full subscale score can be computed.

†Scoring is reversed for the prosocial subscale.

Table 5. Norms for the full parent-report sample (3–14 years)*.

Scale scores	Close to average	Slightly raised/lowered†	High/low†	Very high/low†
Both genders				
Emotional problems (<i>n</i> = 808)	0–3 (83.0%)	4 (9.4%)	5 (4.8%)	6–10 (2.8%)
Conduct problems (<i>n</i> = 872)	0–2 (81.3%)	3 (9.7%)	4 (4.1%)	5–10 (4.9%)
Hyperactivity (<i>n</i> = 783)	0–3 (84.3%)	4 (6.6%)	5 (4.6%)	6–10 (4.5%)
Peer problems (<i>n</i> = 860)	0–3 (86.9%)	-	4 (6.9%)	5–10 (6.2%)
Total difficulties (<i>n</i> = 652)	0–10 (81.9%)	11–13 (9.1%)	14–16 (4.1%)	17–40 (4.9%)
Prosocial (<i>n</i> = 844)	8–10 (87.8%)	7 (5.6%)	6 (4.1%)	0–5 (2.5%)
Girls				
Emotional problems (<i>n</i> = 386)	0–3 (84.7%)	4 (9.1%)	-	5–10 (6.2%)
Conduct problems (<i>n</i> = 417)	0–2 (83.7%)	3 (9.6%)	-	4–10 (6.7%)
Hyperactivity (<i>n</i> = 382)	0–2 (78.8%)	3 (11.3%)	4 (3.9%)	5–10 (6.0%)
Peer problems (<i>n</i> = 406)	0–2 (72.7%)	3 (15.7%)	4 (5.7%)	5–10 (5.9%)
Total difficulties (<i>n</i> = 326)	0–9 (81.9%)	10–11 (9.8%)	12–13 (4.0%)	14–40 (4.3%)
Prosocial (<i>n</i> = 403)	9–10 (72.5%)	8 (17.9%)	7 (3.5%)	0–6 (6.4%)
Boys				
Emotional problems (<i>n</i> = 422)	0–3 (81.5%)	4 (9.7%)	5 (4.8%)	6–10 (4.0%)
Conduct problems (<i>n</i> = 455)	0–2 (79.1%)	3 (9.9%)	4–5 (6.8%)	6–10 (4.2%)
Hyperactivity (<i>n</i> = 401)	0–3 (78.8%)	4 (9.2%)	5–6 (8.0%)	7–10 (4.0%)
Peer problems (<i>n</i> = 454)	0–3 (85.5%)	4 (8.1%)	-	5–10 (6.4%)
Total difficulties (<i>n</i> = 326)	0–11 (81.0%)	12–14 (8.6%)	15–19 (5.5%)	20–40 (4.9%)
Prosocial (<i>n</i> = 441)	8–10 (85.5%)	7 (7.5%)	6 (3.9%)	0–5 (3.1%)

*The *n*-values vary as not all children responded to the full SDQ. Partial responses on the SDQ are included if a full subscale score can be computed.

†Scoring is reversed for the prosocial subscale.

girls than for boys, reflecting this difference between the genders (Table 4). Girls had higher ratings on emotional problems, Brown-Forsythe's $F(1, 595) = 104.1$, $p < .001$, Cohen's $d = .145$, girls ($M = 4.49$) versus boys ($M = 2.51$) and on peer problems, Brown-Forsythe's $F(1, 573) = 11.6$, $p < .001$, Cohen's $d = .020$, girls ($M = 4.18$) versus boys ($M = 3.71$). Girls also demonstrated a significantly higher mean on the prosocial scale ($M = 6.53$) than boys ($M = 6.04$), reflecting more prosocial behaviour in girls, Brown-Forsythe's $F(1, 570) = 7.5$, $p = .006$, Cohen's $d = .013$. There were no significant differences between genders on the hyperactivity-

inattention scale or the conduct problems scale for the self-report version of the SDQ.

For questionnaires completed by the parents, there was a significant difference between boys and girls on the SDQ total difficulties score, Brown-Forsythe's $F(1, 612) = 13.70$, $p < .001$, Cohen's $d = .021$, but in this instance, boys scored higher ($M = 7.54$) than girls ($M = 6.09$). This difference is reflected in higher threshold values for being in the average range for boys than for girls on the total difficulties score (Table 5). Boys had higher ratings on hyperactivity-inattention, Brown-Forsythe's $F(1, 758) = 25.43$, $p < .001$, Cohen's $d = .031$,

Table 6. Norms for the parent-report SDQ differentiated by age groups \times .

Scale scores	Close to average	Slightly raised/lowered†	High/low†	Very high/low†
Youngest age group (3–5 years), both genders				
Emotional problems ($n = 146$)	0–3 (81.5%)	4 (9.6%)	5 (6.2%)	6–10 (2.7%)
Conduct problems ($n = 153$)	0–2 (83.0%)	3 (9.2%)	4 (4.5%)	5–10 (3.3%)
Hyperactivity ($n = 133$)	0–3 (82.7%)	4 (8.3%)	5 (3.0%)	6–10 (6.0%)
Peer problems ($n = 142$)	0–2 (76.8%)	3 (10.5%)	4 (6.4%)	5–10 (6.3%)
Total difficulties ($n = 111$)	0–10 (78.4%)	11–14 (12.6%)	15–16 (4.5%)	17–40 (4.5%)
Prosocial ($n = 146$)	8–10 (81.5%)	7 (6.8%)	6 (8.2%)	0–5 (4.5%)
Middle age group (6–10 years), both genders				
Emotional problems ($n = 373$)	0–3 (81.2%)	4 (10.2%)	5 (5.1%)	6–10 (4.5%)
Conduct problems ($n = 395$)	0–2 (79.5%)	3 (10.9%)	4 (4.0%)	5–10 (5.6%)
Hyperactivity ($n = 360$)	0–3 (82.8%)	4 (6.6%)	5 (4.8%)	6–10 (5.8%)
Peer problems ($n = 396$)	0–3 (84.3%)	4 (8.9%)	-	5–10 (6.8%)
Total difficulties ($n = 306$)	0–10 (79.4%)	11–13 (9.8%)	14–19 (4.9%)	20–40 (4.9%)
Prosocial ($n = 386$)	9–10 (71.8%)	8 (17.6%)	7 (4.9%)	0–6 (5.7%)
Oldest age group (11–14 years), both genders				
Emotional problems ($n = 289$)	0–2 (74.7%)	3 (11.5%)	4 (8.3%)	5–10 (5.5%)
Conduct problems ($n = 324$)	0–2 (82.7%)	3 (8.7%)	4 (4.0%)	5–10 (4.6%)
Hyperactivity ($n = 290$)	0–2 (76.2%)	3–4 (16.6%)	5 (5.1%)	6–10 (2.1%)
Peer problems ($n = 322$)	0–2 (76.7%)	3 (13.1%)	4 (4.9%)	5–10 (5.3%)
Total difficulties ($n = 235$)	0–8 (79.1%)	9–11 (11.1%)	12–14 (5.5%)	15–40 (4.3%)
Prosocial ($n = 312$)	8–10 (88.8%)	-	7 (5.8%)	0–6 (5.4%)

*The n -values vary as not all children responded to the full SDQ. Partial responses on the SDQ are included if a full subscale score can be computed.

†Scoring is reversed for the prosocial subscale.

boys ($M = 2.13$) versus girls ($M = 1.48$), conduct problems, Brown-Forsythe's $F(1, 851) = 6.30$, $p = .012$, Cohen's $d = .007$, boys ($M = 1.54$) versus girls ($M = 1.27$) and emotional problems, Brown-Forsythe's $F(1, 802) = 5.13$, $p = .024$, Cohen's $d = .006$, boys ($M = 1.98$) versus girls ($M = 1.70$). As with the self-report version, the girls scored higher ($M = 9.05$) than boys ($M = 8.82$) on the prosocial scale score on the parent-report version, Brown-Forsythe's $F(1, 838) = 6.15$, $p = .013$, Cohen's $d = .007$. No significant difference on the peer problems scale was found.

Age related differences

For questionnaires completed by the children and adolescents, no significant difference was found on the total difficulties score across age groups, although there was some age-related variation in the prosocial scale scores, Brown-Forsythe's $F(6, 450) = 5.54$, $p < .001$, Cohen's $d = .013$, where adolescents aged 17 scored significantly higher ($M = 7.72$) than 11–15 year-olds (11 years $M = 5.80$, 12 years $M = 6.12$, 13 years $M = 5.96$, 14 years $M = 6.19$, 15 years $M = 6.50$), and although higher than the 16 year-olds, not significantly so ($M = 6.78$). For all other subscales, no significant age differences were found.

For questionnaires completed by parents, a significant difference across age groups was found on the total difficulties score, Brown-Forsythe's $F(10, 641) = 2.06$, $p = .026$, Cohen's $d = .031$, although the following post-hoc analysis revealed no significant differences between the individual age groups. The same

applied for the emotional problems scale score, where a significant difference was found, Brown-Forsythe's $F(10, 797) = 2.27$, $p = .013$, Cohen's $d = .028$, but with no significant differences in the following post-hoc analysis. For all other subscales, no significant age differences were found.

Age \times gender differences

A two-way between-groups ANOVA was conducted to explore the interactional effects of age and gender on the total difficulties score as well as the subscale scores. For questionnaires completed by children and adolescents, a significant interaction effect was found on the total difficulties score, $F(6, 515) = 3.05$, $p = .006$, Cohen's $d = .034$. No significant differences were found in post-hoc-analyses. A significant interaction effect was found for emotional problems scale score, $F(6, 569) = 2.52$, $p = .021$, Cohen's $d = .026$. For girls, there was a significant age difference, $F(6, 303) = 2.81$, $p = .011$, Cohen's $d = .053$. Post-hoc analyses revealed that girls aged 17 scored significantly higher ($M = 5.37$) than girls aged 11 ($M = 3.36$). A significant interaction effect was found for conduct problems scale score, $F(6, 557) = 2.52$, $p = .021$, Cohen's $d = .026$. For girls, there was a significant age difference, $F(6, 295) = 2.19$, $p = .044$, Cohen's $d = .043$, although post-hoc analyses revealed no significant differences. A significant interaction effect was found for hyperactivity-inattention scale score, $F(6, 563) = 3.50$, $p = .002$, Cohen's $d = .036$. For boys, there was a significant age difference, $F(6, 263) = 3.00$, $p = .008$, Cohen's $d = .064$. Boys aged 13 ($M = 3.33$)

and 14 ($M=3.43$) scored significantly lower than boys aged 11 ($M=4.81$). No interaction effect was found on the peer problems scale score or the prosocial scale score.

For questionnaires completed by parents, no significant interaction effect was found for the total difficulties score or any subscale scores.

Area of living differences

For questionnaires completed by children and adolescents, no significant differences in the total difficulties score, the emotional problems scale score, the conduct problems scale score and the prosocial scale score were found between children and adolescents living in towns and settlements. For the hyperactivity-inattention scale score, children and adolescents in towns ($M=3.99$) scored higher than children and adolescents in settlements ($M=3.44$), $F(1, 590)=30.46$, $p=.009$, Cohen's $d=.012$. For the peer problems scale score, children and adolescents in settlements ($M=4.28$) scored higher than children and adolescents in towns ($M=3.86$), $F(1, 580)=17.74$, $p=.012$, Cohen's $d=.011$. Differences in area of living could only be investigated in the self-report sample, as this information was only recorded on group-level in the parent-report sample.

Differences in relation to caregiver's level of education

For questionnaires completed by children and adolescents, the only significant differences found were for the hyperactivity-inattention scale score, where children and adolescents whose mother had completed a bachelor's programme ($M=3.42$) scored significantly lower than children and adolescents whose mother had completed a master's degree ($M=4.36$), $F(3, 472)=3.77$, $p=.001$, Cohen's $d=.023$, and for the prosocial scale score, where children and adolescents whose mother had completed a primary or lower secondary education ($M=6.00$) or upper secondary education ($M=6.07$) scored significantly lower than children and adolescents whose mother had completed a bachelor's programme ($M=6.96$), $F(3, 471)=7.24$, $p<.001$, Cohen's $d=.044$. For all other groups, no significant differences were found.

For questionnaires completed by parents, significant differences were found only on the peer problems scale score. Children, where the responding parent reported that the other parent had completed a general upper secondary education with an exam ($M=9.16$) scored significantly higher than children where the respondent

did not know the educational level of the other parent ($M=8.82$), Brown-Forsythe's $F(7, 306)=2.81$, $p=.008$, Cohen's $d=.028$.

Differences in relation to caregiver constellations

For questionnaires completed by children and adolescents, ANOVA tests found significant differences across caregiver constellations on the SDQ total difficulties score, $F(4, 532)=3.08$, $p=.016$, Cohen's $d=.023$, and on the hyperactivity-inattention scale score, $F(4, 581)=2.44$, $p=.046$, Cohen's $d=.017$, but post-hoc analyses did not recover any significant differences. Differences in relation to caregiver constellations could only be investigated in the self-report sample, as this information was not recorded in the parent-report sample.

Discussion

The aim of this study was to provide a set of norms on the self-report and parent-report versions of the SDQ. The normative scores are based on two samples from different data collections. This cross-sectional study design with different children in each sample makes comparison between self-report and parent-report norms more difficult and subject to several uncertainties. Namely, the two samples differ in terms of sampling year (2023 versus 2008), age groups (11–17 years versus 3–14 years), and sampling procedures (self-report questionnaire versus telephone interview with parents). Therefore, we cannot directly compare the two sets of norms. Nonetheless, we can observe a difference in the norms' threshold values and means for the self-report and parent-report versions of the SDQ. The parent-reported norms are lower than those of the self-reported norms. Three possible explanations for this discrepancy will now be explored.

First, a possible explanation for this rather big difference in norm values and mean SDQ total difficulties score between the two samples concerns the disparity in sampling years. In a study by [33] cross-informant correspondence was investigated in 25 countries between the year 1985 and 2007. The results showed that samples collected in earlier years tended to have lower problem scores than samples collected in later years, both among self-reports and parent-reports. Hence, the difference might reflect a general development over the years of respondents reporting more problems.

A second explanation for the differences in norms has to do with the different age groups in each sample. Possibly, older children and adolescents experience more problems than younger children. Studies find

that the life satisfaction among Greenlandic children and adolescents decline between the ages 11 and 15 [5]. Children face many challenges when they enter adolescence (e.g. some move to a boarding school far from home and experience a rise in expectations of linguistic skills in Danish, necessary for certain school subjects). These challenges may prompt a decline in life satisfaction and a prior, subsequent, or simultaneous rise in problems, reflecting the higher total difficulties score of the older self-report sample compared to the younger parent-report sample.

A third possible explanation might be found in the different informants contributing the information on the SDQ. Parents might be more inclined than children and adolescents to provide socially desirable responses, consequently reporting less problems for their children. Furthermore, parent-reports require that parents have insight into the children's problems to be able to report them, whereas self-reports simply require children and adolescents themselves know their problems. The reliability of parent-reports is impeded if the parent is unaware of the child's problems, or if the parent is either traumatised themselves or the subject and cause of the child or adolescent's trauma experience [34]. Because of the high exposure to PTE's in the Greenlandic population, we may hypothesise that some of the parents in our sample would either be traumatised themselves or have subjected their child to PTE's, and therefore lack the ability to reliably report on the child's or adolescent's behaviour. This could explain the increased level of total difficulties in the self-report scores.

The discrepancy in SDQ total difficulties score across informants can also be found in the Finnish SDQ mean scores and the Danish norms, alas not to the same extent. For both the Finnish and Danish SDQ scores, self-report and parent-report answers were collected simultaneously. Finnish children and adolescents in grade 3, 5, 7 and 9 rated higher total difficulties scores than their parents, with boys and girls in both primary and secondary school having means of 7.0–9.6 on the total difficulties score, whereas the parents of the same children had mean scores of 5.3–6.7, the highest mean difference being 2.9 [21]. The inter-rater agreement between children and their parents were analysed with Pearson's correlation coefficient and ranged from 0.28–0.40, the highest agreement being 0.40 on the total difficulties scale [21]. In the Greenlandic sample, the mean difference in total difficulties score between the self-report sample and the parent-report sample is 6.79.

Among Danish children and adolescents aged 11–17 years, the norms of children and adolescents scoring

close to average on the total difficulties score ranges from 0–11 for the parent-report, whereas it ranges from 0–14 for the self-report [15]. This suggests that higher total difficulties scores are accepted as still being in the average range among children and adolescents, reflecting higher self-report than parent-report scores in their sample. The same pattern is evident in the Greenlandic sample, where the close to average norms for the total difficulties score ranges from 0–18 for self-report and 0–10 for parent report.

It is however still important to be aware that the self-reports and parent-reports in the Greenlandic sample do not reflect parent-child dyads, but rather two different populations. The differences could consequently just be due to different levels of difficulties in the two samples, with the children in the parent-report sample having fewer problems than the children and adolescents in the self-report sample. However, both samples are representative of the underlying population and should as so not differ. Additionally, studies generally find that parent-child agreement is low, and that parents may tend to report fewer problems than children and adolescents report themselves [33,35].

Demographic factors

A significant difference was found in boys' and girls' total difficulties score on both SDQ versions, but the direction of the relationship was reversed for the self-report and parent-report scores. Girls scored significantly higher than boys in the self-report sample, whereas boys scored significantly higher than girls in the parent-report sample. There are reasons to expect this opposite relationship between self- and parent-reports. In the parent-report sample, boys scored higher than girls on the externalising SDQ scales (hyperactivity-inattention and conduct problems). Studies generally have found that boys exhibit higher levels of externalising behaviour, while girls exhibit higher levels of internalising behaviour [36,37]. Externalising behaviours may be easier for parents to notice due to them being directly observable, contrary to internalising behaviours, that are internally experienced by the child and thus less easily detected by the outside world [34,35]. Correspondingly, in the self-report sample, girls scored higher than boys on emotional problems, which is typically considered internalising behaviours. Thus, the different direction in total difficulties scores between self-report and parent-report samples might be ascribable to the degree of observability of respectively internalising and externalising behaviours.

Overall, when we compare the norms of the oldest age group in the parent-report sample and the corresponding norms in the self-report sample, we find the highest level of discrepancy on the emotional subscale, and the lowest level of discrepancy on the conduct problem subscale. Generally, informant correspondence rates seem to be larger for reports of children's and adolescents' externalising behaviours and smaller for internalising behaviours. This finding is supported by several studies that find high rater agreement for observable, externalising symptoms, and lower rater agreement for internalised symptoms [34,38]. Parents thus seem to be less capable of detecting internalising concerns.

Interestingly, for both the self-report and parent-report, girls scored higher than boys on the prosocial scale, reflecting more prosocial behaviour in girls. This finding is reflected in Dutch [39], Swedish [27,40], Finnish [21], Norwegian [41] and Danish [15] studies on the SDQ, where girls also score higher than boys on prosocial behaviour.

We found few significant age differences on the SDQ scores. For the self-report scores, a significant difference was found on the prosocial scale, with older adolescents scoring significantly higher than younger adolescents and children, reflecting more prosocial behaviour in older adolescents. This finding is comparable to results from Swedish SDQ norms, where older children and adolescents generally score higher on the prosocial scale score than younger children and adolescents [20,27]. Furthermore, the oldest girls had higher scores on the emotional problems scale than the youngest girls, and while there were no significant gender differences in the hyperactivity-inattention scale score, 11-year-old boys scored higher than boys aged 13 and 14 years.

In relation to differences in area of living, we found that children and adolescents from settlements scored significantly higher than those from towns on the peer problems scale. This finding can perhaps be explained by the fact that children and adolescents from settlements live with fewer peers and therefore have a smaller social life with fewer opportunities to develop social skills. Conversely, children and adolescents from towns scored higher than those from settlements on the hyperactivity-inattention subscale. This could possibly be because of greater exposure to different stimuli, with a greater risk of distractions and resulting difficulties in attention and concentration.

We found that children and adolescents from parents with a higher educational level had less prosocial problems. Interestingly, we also found significant results that some children and adolescents from parents with lower educational levels scored significantly

lower on self-reported hyperactivity-inattention and parent-reported peer problems. This finding is contrary to other studies, which show that parental educational level is reversely associated with child behavioural, emotional and peer problems, such that children and adolescents from parents with low educational levels score higher on problem scale scores [42,43]. Perhaps the high degree of psychosocial problems among Greenlandic people has the effect that the educational level of the parents no longer works as a protective factor for the children and adolescents.

A strength of the present study is two rather big representative samples, which approximately corresponds to the general distribution of children and adolescents in Greenland. The children and adolescents are equally distributed among boys and girls, and in the parent-report sample, children are equally divided across ages. In the self-report sample, less adolescents aged 16 and 17 are included in our study. Furthermore, the 16 and 17-year-olds included in our study may be somewhat different from the general population of adolescents in this age group in Greenland. When adolescents in Greenland graduate their primary education, they can choose to continue their secondary education in high schools. Not all adolescents continue school, and many adolescents (25%) drop out of high school during the 3-year period [7]. The academic standard in high school is much higher than in primary school, and most education is conducted in Danish, which is difficult for many Greenlandic people [7]. The children who do not drop out of high school may therefore be better off regarding academic abilities, coping skills and adaptability [7]. Despite considerable efforts to recruit a representative sample, in our study, it has not been possible to recruit adolescents who did not attend school, possibly biasing our sample, deflating the level of difficulties, and inflating the level of strengths, compared to the general population.

In the parent-report sample, the adolescents aged 15–17 were not included. Therefore, we lack norm scores for this age group. Further research on this age group could close this gap. However, with the large discrepancy in informant correspondence rates, the significance of this issue may be small, as the voice of the adolescent should be assigned a higher priority in a clinical assessment. Fortunately, self-report norms for this age group are presented in the current study.

In addition to the lack of parent-report norms for the 15–17-year-olds, other study limitations must be mentioned. Firstly, the parent-report respondents consist of primarily mothers. As systematic differences in

responses between different caregivers cannot be excluded, a more diverse sample in terms of caregivers would improve the generalisability of the results. Further research should also aim to investigate potential differences in caregiver responses.

Secondly, the data collection for parent-reports were done by telephone interview. This comes with a set of difficulties, namely, the exclusion of everybody without a phone; difficulties in gauging whether the respondent has understood the question; and difficulties in establishing rapport with the respondent. Respondents may feel pressured to respond, consequently showing social desirability bias. On the other hand, the anonymity of the telephone interview may prompt respondents to be more honest, exposing the actual conditions in the general population (if they indeed can complete the telephone interview anonymously, without other family members listening). Another advantage of the telephone interview is the flexibility of the method. Telephone interviews can be easier to conduct, time-saving, and economically viable, especially in places where travel might be difficult or otherwise impossible, as Greenland. This helps the representativeness of the study, as well as raises the number of participants in the study.

Finally, this study does not include norms on the teacher/pedagogue-version of the SDQ. Previous research has found that multiple sources provide different, but indispensable information in screening for mental health problems in children [38]. Goodman et al. [44] has found that for the SDQ specifically, greater sensitivity was achieved when both parent-versions and teacher/pedagogue-versions were used, compared to using only one informant. However, as respondent discrepancies exist, information from the child or adolescent must carry the most weight.

With these self-report and parent-report SDQ norms, we hope to contribute to improve the opportunities for help for Greenlandic children and adolescents. Through improved identification of children and adolescents in need of help, professionals in Greenland will be able to offer improved treatments for mental health difficulties.

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ORCID

Trine Banzon  <http://orcid.org/0009-0007-2647-6049>

Ask Elklit  <http://orcid.org/0000-0002-8469-7372>

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