



LETTER TO THE EDITOR

Adolescent Sense of Coherence and Antidepressants Usage 11 Years Later

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To the Editor

Sense of Coherence (SOC) was introduced in 1979 by Aaron Antonovsky as a salutogenic concept that captured the strength and determinants in health [1] from an orientation to life questionnaire [2]. A strong SOC indicates that a person will be likely to cope more successfully with stressful situations and a strong SOC has been found to predict good health and to be related to a high quality of life [3]. SOC-13 (the short version) with 13 items varies with age and gender in cross-sectional population studies [4,5]. In general, men usually have a slightly stronger SOC than women [3]. Studies have found SOC to be negatively correlated with anxiety and depression, positively correlated with optimism and self-esteem, moderately correlated with life events and to be connected with attitudes and behaviour [3]. We have previously shown that especially girls (aged 12-16) with a weak SOC-7 (SOC-13 reduced to seven items) had an elevated risk for receiving social benefits 11 years later [6]. SOC-7 was limited to the items the pupils was considered to be capably answering given their age (questions No 1, 4-6, 8-9, and 13). A few phrases were slightly altered compared with the later Danish version [7]. In this follow-up, we studied if an association also could be found between a weak baseline SOC-7 and later use of antidepressant as a proxy for mental health problems in the same population.

The baseline population is described earlier [6] and only briefly mentioned here. In 1998 the Department of Clinical Epidemiology, Aalborg Hospital, Aarhus University Hospital, Denmark, completed a study describing teenagers use of painkillers [8]. The population consisted of pupils from 15 public schools randomly selected from 13 municipalities in the former North Jutland County, Denmark. A total of 1,178 pupils in 7 and 8th form were invited to fill in a self-administrated questionnaire during a school lesson. The schools returned 802 (68%) individual questionnaires from 433 girls and 369 boys. Data were linked with information of individual bought prescription medicine in 2009 from the Register of Medicinal product Statistics through Statistics Denmark for 794 participants. Two lacked the civil registration number in the 1998 questionnaire and six had died since baseline.

For all Danish residents the National Health Service provides tax supported health care including free access to general practitioners, hospitals, public clinics and partially refunds the costs of most prescribed medicine. From the computerized accounting system, reimbursement data are transferred to the Register of Medicinal product Statistics according to the Anatomical Therapeutic Chemical (ATC) classification system [9]. The outcome of used antidepressants was defined by an ATC code (third level; N06A) and as buying at least one single type of N06A in 2009. In Denmark two studies estimated an equal access to prescribed medicine in Denmark independently of social or economic barriers [10,11]. Consequently the access is not considered as

Table 1: Relative Risk (RR) for using antidepressants (N06A) in young adulthood, N = 794.

		N06A n (%)	RR			
			Crude		Adjusted ^a	
			RR	95% CI	RR	95% CI
Overall		47 (6)				
SOC-7	Strong	24 (4)	1		1	
	Weak	21 (11)	2.60	(1.45-4.67)	1.98	(1.06-3.71)
Use of pain-killers	Seldom	18 (4)	1		1	
	Monthly	13 (6)	1.50	(0.73-3.06)	1.46	(0.70-3.09)
	Weekly	14 (16)	4.03	(2.00-8.10)	3.06	(1.41-6.66)
Sex	Boy	12 (3)	1		1	
	Girl	35 (8)	2.46	(1.28-4.73)	1.59	(0.77-3.31)

^a: RR adjusted for sex and baseline use of painkillers (n = 721). Significant RR is highlighted in bold.

a substantial confounder. The SOC-7 scores from 1998 were dichotomized into first (weak) and second-to-fourth (strong) quartile SOC-7, as several studies have used the lowest 25% of the scores to characterize the weak group [3]. Poisson Regression was used to estimate the risk of antidepressant usage depending on the baseline SOC-7 score. Other variables addressed in the baseline questionnaire were issues about sex, form, spare time, no of siblings, rural living, family arrangements, pain last weak, use of painkillers, wellbeing, friends and self-rated health. Only variables with a significant crude association were included in the adjusted analysis. One of these, the baseline use of painkillers was scaled in three ordinal levels by the frequency of use: i) Seldom (60%), never or 1-2 times each half year; ii) Monthly (29%), about once a month; iii) Weekly (12%), about once each half month to daily. The proportion of weak SOC-7 scores were significantly higher among the 30 participants who ignored the questions regarding their use of painkillers. Recall bias or errors of reported use of painkillers might lead to potential misclassifications. However, Andersen, et al. have shown high correspondence in 11 and 13-year-old. Danes self-report of used painkillers compared to what their parents reported [12].

In 2009 antidepressants were used by 6% (n = 47) recorded as 205 prescriptions. Antidepressants were used significantly more in 2009 among participants with a weak SOC-7 in 1998, those who weekly used painkillers in 1998, and girls (Table 1). In the adjusted analysis, the sex difference disappeared while the SOC-7 (RR 1.98, CI 1.06-3.71) and weekly used painkillers (RR 3.06, CI 1.41-6.66) remained significantly associated with the use of antidepressants 11 years later.

The longitudinal design with almost complete follow-up using registry based information is the main strength of the study. Cross-sectional studies report medicine use associated with bullying at school [13] and a weak SOC [14]. This study verifies that a weak SOC-7 and weekly use of painkillers are likely predictors for later usage of antidepressants that might be a proxy for mental struggles. Together with our prior study according social benefits in the same population [6], SOC-7

now seems to be a useful target for prevention among both boys and girls, though it is to some extent unstable in this age group [6]. A study limitation is the use of SOC-7 as a replacement for the entire official SOC-13 questionnaire which later have been shown to be applicable to children from 12 years [15]. The shortened SOC scale reduce the comparability to other studies in the field. Prospectively it would be very appealing to create an additional follow-up study and supplement with a qualitative part among current adolescents and participants within the 'weak SOC-7' group. We have demonstrated associations, but have a reduced amount of information of possible initiatives to defeat the adolescents difficulties. However, studies have addressed possible interventions as sport activities and salutogenic training programmes [16,17] as ones SOC is formed during childhood and adolescence [7]. The present study might add valuable knowledge to teachers, social workers and policy makers in the future.

Ethical Statement

The study was conducted in accordance with the ethical standards laid down in the 1964 Declaration of Helsinki and its later amendments. In 2010 the North Denmark Region approved and notified the Danish Data Protection Agency about the present study.

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