Developing an Instrument to Measure Health Promotion in a Youth Environment: A Pilot Study From a Norwegian Context

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Abstract

Due to increased challenges among children and youth, many health-promoting measures have been implemented in Norway. Finding appropriate measuring instruments has been problematic, as most scales measure indicators of mental and physical health, rather than the degree to which an environment promotes health. Existing scales, such as the Sense of Coherence Scale, the Basic Psychological Needs Scale and the General Self-Efficacy Scale were applied in a lower secondary school context as part of a health-promoting project. Many students found these scales somewhat confusing or reacted negatively to their wording. The scales, along with a new scale developed to measure health promotion in the environment, were presented to a group of 10 youths during a workshop organized by a voluntary organization. This workshop was part of a health-promoting project aimed at supporting vulnerable youths through group reflections and paid working activities. Based on the feedback from the workshop, the three validated scales were dismissed, and the new scale was further developed and adjusted into two different versions for the contexts of 1) work or other leisure activities for youth and 2) secondary school. The revised scales were piloted in the voluntary organization's project (n = 107) and in an upper secondary school (n = 267) where a related health-promoting project was implemented. Factor analyses indicate that the scales have good potential, though further validation is needed.

Keywords: health promotion, mental health, motivation, scale development

Introduction

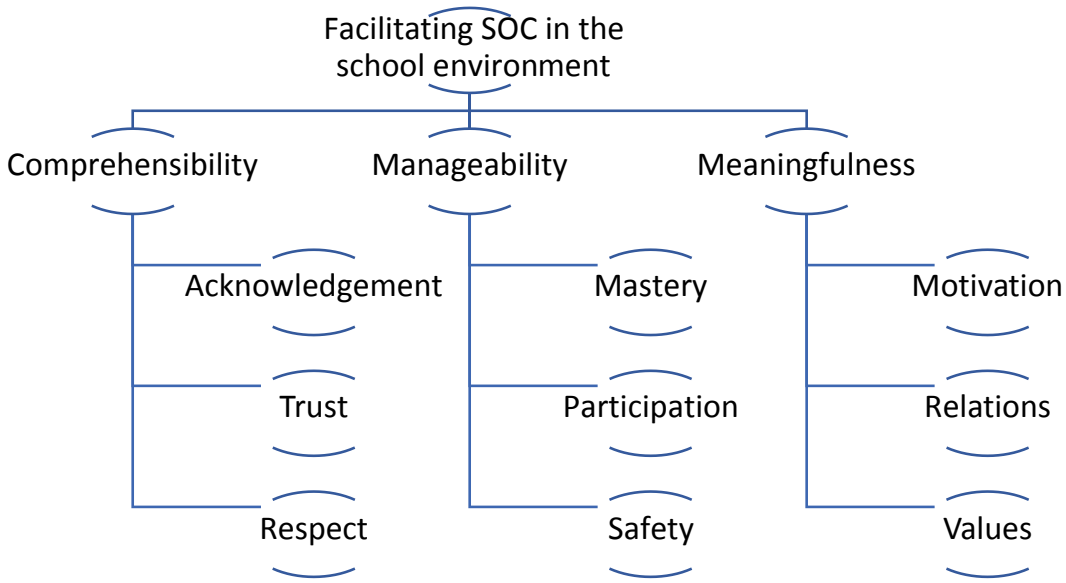
Over years, also before the pandemic, there has been an increase in mental health issues in Norway (Bakken, 2018; Løvgren & Svagård, 2019; Reneflot et al., 2018). As a result of this, several initiatives were started, and a national public health programme was initiated (The Norwegian Directorate of Health, n.d.). Some of the projects included in the programme concerned creating a health promoting environment for children and youth, either in school or in other arenas. Different research approaches such as interviews, observations and self-reported evaluations from students have been applied in the developing phases of the projects (Helmersen & Stiberg-Jamt, 2019; Horverak & Helmersen, 2023; Horverak & Jenssen, 2020; Horverak, 2024, 2023; Horverak et al., 2020; Horverak & Langeland, 2023, 2022a, 2022b). There have been attempts to measure effects (Canrinus & Matre, 2019; Rosef, 2021), but finding a good measuring instrument has proven to be a challenge.

Some of the instruments that have been applied in one of the health promotion projects called SAMM – A Systematic Approach to Mastering Life – the Five-step Motivation Method (https://samm.uia.no/en/frontpage/) are Academic Motivation Scale (Vallerand et al., 1992), Academic Self-Regulation Questionnaire (Oga-Baldwin et al., 2017; Ryan & Connell, 1989), Basic Psychological Needs Satisfaction Scale (Center for Self-Determination theory, n.d.; Ryan & Deci, 2017), General Self-Efficacy Scale (Røysamb et al., 1998), Sense of Coherence Scale (Antonovsky 1987, 2012; Nordkvelle, 2008; Torsheim & Wold, 1998), and the Learning Climate Questionnaire (Hoff, 2016). The challenges with these scales have been either that the language is poorly adapted to youths and a Norwegian context, or that they do not really measure what is intended with the project (Langeland & Horverak, 2021), which is to create a health promoting learning environment that facilitate self-regulation, self-efficacy, intrinsic motivation and a sense of coherence through comprehensibility, manageability and meaningfulness (Antonovsky, 1987, 2012).

When the mentioned scales were applied in lower secondary school, there were several reactions from the students on the wording of the scales, and content, both from students and teachers (Canrinus & Matre, 2019; Rosef, 2021). For example, the Academic Motivation Scale had a question that assumed that the students had chosen the subject, which was not right, as the scale was used in an obligatory subject, the Learning Climate Questionnaire (Hoff, 2016) was by some teachers considered a teacher evaluation rather than a measurement of learning climate, and the General Basic Psychological Needs Scale (Center for Self-Determination theory, n.d.) was considered somewhat personal. There were strong reactions to the language in the Sense of Coherence Scale (Antonovsky, 2012), and there were arguments between researchers and practitioners whether it would be possible to change the language somewhat. Due to much frustration concerning the existing scales, the work with developing a new scale to measure effects of health promotion initiatives was started.

As several health promotion projects in the national public health programme were based on Antonovsky's (1987, 2012) salutogenic theory of sense of coherence (SOC), this theoretical construct was chosen as basis for scale development, and a framework inspired by a description of OAS in the working environment (Bakken, 2012), as well as relating theories in the SAMM-project was developed (Figure 1, see also Horverak et al., 2024). The aim has been to develop a scale that measures how health promotion efforts affect the school environment - more specifically, how youths perceive the school environment, and whether sense of coherence is facilitated.

Figure 1
A Framework for Facilitating SOC in School



Comprehensibility is about understanding one's own situation (Antonovsky, 1987, 2012). Concerning comprehensibility, the three concepts of acknowledgement, trust and respect are included as subcategories. This concerns getting feedback from others, which is central to experience an understanding of one's environment (Bakken, 2012). People mirror themselves in their surroundings, and how they are met influences their perceptions of the situation. Understanding of one's own identity requires acknowledgement from others (Jakobsen, 2013). Acknowledgement means that actions and utterances are declared as valid (Jordet, 2020). This is closely related to respect, which can be understood as seeing other humans with their resources and opportunities (Damsgaard, 2010).

The second category, manageability, concerns identifying resources in oneself or one's surroundings to cope with different situations (Antonovsky, 1987, 2012). Manageability includes the three subcategories mastery, participation and safety. In the description of health promoting learning environments (Bakken, 2012), mastery is about having competence to solve assignments, participation is about having a possibility to influence, and safety means that there is support and predictability in situations. Mastery is also about expecting to handle situations in the future, meaning having self-efficacy (Bandura, 1977), and participation concerns self-regulation and having agency, setting one's own goals and working towards them (Skaalvik & Skaalvik, 2018).

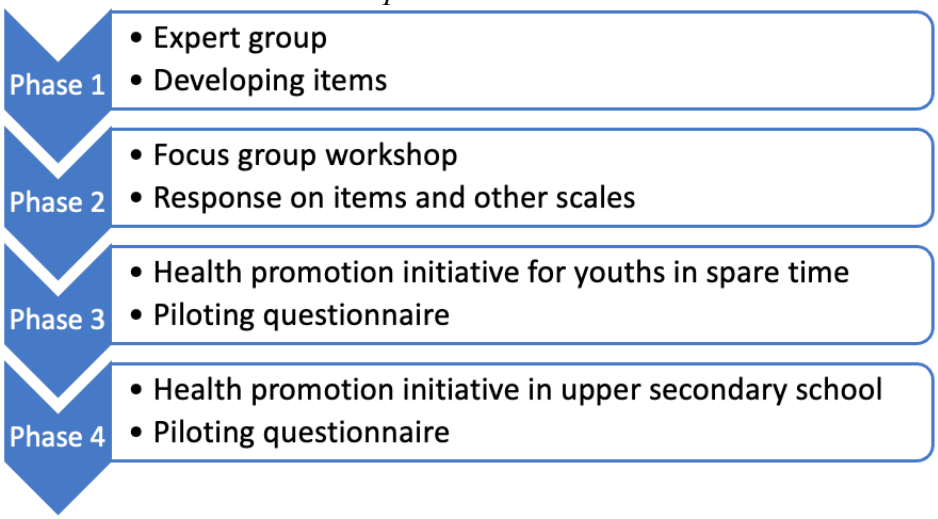
The third category, meaningfulness, concerns seeing a value in one's own contributions (Antonovsky, 1987, 2012). Meaningfulness includes the three subcategories motivation, relations and values, which reflect the description of health promotion in the learning environment (Bakken, 2012). Motivation, or more specifically intrinsic motivation, concerns having a wish to work with something (Ryan & Deci, 2017). According to self-determination theory, intrinsic motivation relies on experiencing 1) competence, which includes mastery, 2) autonomy, which concerns participation and influencing one's situation, and 3) relatedness, which concerns relations. This shows that there are theoretical overlaps in the subcategories, and the subcategories of participation, relations and mastery could be seen as conditions for motivation. Relations concern interaction, or collaboration, with others (Klinge, 2021). There

is a certain theoretical overlap between this and the three subcategories of comprehensibility – interactions include situations where a person experience acknowledgement, trust and respect – so these subcategories say something about the quality of interactions. Hence, relations could be interpreted as a condition for experiencing acknowledgement, trust and respect, rather than a subcategory on its own. Values can be related to justice, ethics, and what is important for a person (Bakken, 2012), which again overlaps with motivation. The framework for health promotion is a theoretical basis for this study investigating the following: How may the effects of health promotion initiatives be measured? As most of the health promotion initiatives in the public health programme were based on Antonovsky's (1987, 2012) salutogenic theory, the process of developing a new scale, as described in the following chapter, was inspired by this theory.

Methodology

The aim of this work has been to develop a scale measuring whether a sense of coherence is facilitated in the environment. The first phases of this process (Figure 2) are presented in this article. The procedure has followed recommendations for scale development (DeVellis & Thorpe, 2022).

Figure 2
Initial Phases in Scale Development



Phase 1 included developing items for a new scale based on the framework for health promotion as presented above (Figure 1). An expert group consisting of an associate professor, two senior researchers and a teacher from upper secondary school discussed the theoretical foundation and developed the framework for health promotion (Figure 1) and the items for the questionnaire.

Phase 2 included a separate workshop with youths taking part in a health promotion project run by a voluntary organization (Blue Cross Kristiansand) - in their spare time, the youths were taking part in paid working activities and discussion groups applying the SAMM-approach (Langeland & Horverak, 2021). There were 10 participants in the workshop, of which seven were boys and three were girls, all aged between 15 and 18 years. In the workshop, the youths were presented with three established scales related to Antonovsky's (1987, 2012) salutogenic theory, Ryan and Deci's (2017) self-determination theory and

Bandura's (1977) self-efficacy theory. In addition, they were presented with the scale developed to measure health promotion in the environment.

Table 1

Scales Presented in Workshop

Scales	Description
SOC	Sence of coherence scale (Antonovsky, 1987, 2012)
BPNS	Basic psychological needs scale (Center for Self-Determination Theory, n.d.; Schistad & Bergstøl, 2007)
SE	General self-efficacy scale (Røysamb et al., 1998)
New health promotion	Developed to measure health promotion in the environment, based on Antonovsky (2012) and Bakken (2012)

The youths had several critical responses to the scales, among others, they reacted to the negatively formulated items (reversed items). They said that this could influence how they thought about the topic in a negative way – a negative focus suggested a negative response. In addition, they reacted to the wording in some items, and some were perceived as somewhat invasive. The reactions on the SOC-scale were the strongest, as they perceived this scale as "mean", as there were items there that made them feel like "losers" – they said that reading this made them feel like losers (Table 2).

Table 2

Youths' Responses to Scales (Translated From Norwegian)

Scale, range	Item	Responses
SOC 1–7: "Very rarely or never" to "very often"	1. Do you experience that you do not care about your surroundings?	It's a shame that there's a focus on the negative, this influences how the question is perceived. "Surroundings" is unprecise. It would have been different without "not".
	10. All people can feel as losers sometimes. How often do you feel like this?	This seems mean (3 similar comments) It makes us feel like losers. "Losers" is not an okay formulation.
	12. How often do you feel that the things you do everyday are meaningless?	Strange, it has focus on what is not okay, it shouldn't focus on the negative Where? What kind of things?
	13. How often do you have feelings that you do not know if you can control?	Confusing, what type of feelings and where? This is easy to misunderstand.
BPNS 1-4: "Completely wrong" … "completely correct"	18. It seems like those I spend time with do not like me very much.	A bit too personal for a work context.
	20. I rarely get to decide how things are done	At work, one has to do what the boss decides. One has rules at work.

SE 1-5: "Completely disagree" … "completely agree"	2. If someone works against me, I find ways to get things the way I want.	"Work against" – it is unclear what this means. (3 comments). This could be understood negatively in some contexts, as at work, to think that someone is working against you, this can be misunderstood. The last part can be perceived negatively in a work context, as one defies messages.
	7. I stay calm when faced with difficulties because I trust my ability to cope.	This will vary whether it is small or big difficulties Why is the ability to cope included here? One may stay calm without this being related to one's belief in own ability to cope More specific, what is this about

Note. SOC = Sense of coherence, BPNS = Basic psychological needs, SE = self-efficacy.

There were few critical comments on the scale developed to measure degree of health promotion in the environment, just a couple of small suggestions to make the wording clearer. In general, the responses were positive, and the participants commented that the language was easy to understand, that the questions were okay, and that it was in general well written. Small adjustments according to comments were made.

Phase 3 included piloting the scale in the project run by the voluntary organization, providing youths with paid working activities as well as group gatherings. The questionnaire applied included 18 items (Table 3) with a Likert-scale from 1 "Completely disagree" to 5 "Completely agree". The youths filled in the form anonymously on paper. There were 107 respondents, of which 37 were girls, 55 were boys, and 15 did not report on gender. The respondents are mainly between 15 and 19 years.

Phase 4 included adjusting the scale to a school context, by adding "in school" to items 9, 13, 14, 15 and 16, and making small adjustments to the items. The questionnaire was distributed at one upper secondary school through an anonymous link. This resulted in 267 respondents from both general studies classes and vocational classes.

Principal component analyses with Varimax rotation were applied to reveal underlying factors in the data from phase 3 and 4. IBM SPSS Statistics V.29 was used for the analyses. In line with other studies (Comrey & Lee, 1992; Tabachnick & Fidell, 2007) variables with factor loadings over 0.45 are kept, as this is defined as fair. The results are presented in tables.

Results

The factor analysis of the data from the pilot rounds both revealed five underlying factors (Tables 3 and 4). The items are coded based on the framework presented in Figure 1, for example "I feel seen and heard by others" are coded as "Co – Acknowledgement1", "I listen to others" is coded as "Co-Acknowledgement2", and "I master exercises I get" is coded as "Ma – mastery1" (to get access to the full scale, contact author). The scales were piloted in Norwegian.

The factor structure was somewhat unclear, particularly in the first pilot round (Table 3), and the factors only aligned to a certain extent with the three main factors of the salutogenic theory – comprehensibility (C), manageability (Ma) and meaningfulness (Me). Some items had cross-loadings between factors.

Table 3

Factor Analysis Pilot Round 1 (n = 107)

Item	Factor 1	Factor 2	Factor 3	Factor 4	Factor 5
1. Co – Acknowledgement1	,478			,499	,491
2. Co – Acknowledgement2			,840		
3. Co – Trust1	,638				
4. Co – Trust2			,498	,479	
5. Co – Respect1	,569				
6. Co – Respect2			,769		
7. Ma – Mastery1				,536	
8. Ma – Mastery2			,534		
9. Ma – Participation1	,736				
10. Ma – Participation2		,828			
11. Ma – Safety1		,674			
12. Ma – Safety2	,471				
13. Me – Motivation1				,758	
14. Me – Motivation2		,476		,516	
15. Me – Relations1					,815
16. Me – Relations2	,827				
17. Me – Values1		,724			
18. Me – Values2	,607				

Note. Co = Comprehensibility, Ma = Manageability, Me = Meaningfulness

The pattern was clearer in the second pilot round (Table 4), with the scale adjusted to the school context and a larger sample. Factor 2 includes items on comprehensibility, factor 3 includes items on manageability, and factor 1 includes factors on meaningfulness, in addition to some items on manageability concerning participation.

Table 4

Factor Analysis Pilot Round 2 (n = 267)

Item	Factor 1	Factor 2	Factor 3	Factor 4	Factor 5
1. Co – Acknowledgement1		,693			
2. Co – Acknowledgement2					,720
3. Co – Trust1		,745			
4. Co – Trust2					,575
5. Co – Respect1		,766			
6. Co – Respect2		,544			
7. Ma – Mastery1			,765		
8. Ma – Mastery2			,615		
9. Ma – Participation1	,525				
10. Ma – Participation2	,592				
11. Ma – Safety1			,779		
12. Ma – Safety2					
13. Me – Motivation1	,609				
14. Me – Motivation2	,675				

15. Me – Relations1			,759
16. Me – Relations2			,781
17. Me – Values1	,703		
18. Me – Values2	,607		

Note. Co = Comprehensibility, Ma = Manageability, Me = Meaningfulness

Discussion

This study examines how effects of health promotion efforts may be measured based on Antonovsky's (1987, 2012) theory on sense of coherence. As the items included in the scale have been evaluated and discussed with a focus group of youths, and adjusted accordingly, there is an increased chance that the youths may relate to the questions, compared with the scales that were criticized. The items included are meant to be sensitive and respectful to the youths, and no reversed items with negative wording are included, as this is something they reacted strongly to. The youths were quite clear that negative wordings would direct their thoughts in a negative direction. Also negatively loaded words, such as "loser", which occurs in the original sense-of-coherence scale, were avoided.

The factor structure in the first pilot round was quite unclear, but some patterns emerged. The second pilot round, which included a somewhat larger sample, showed more promising results, aligning to a certain degree with Antonovsky's theory of sense of coherence (1987, 2012). The three factors of comprehensibility, manageability and meaningfulness are revealed in the analyses, but there is some overlapping between meaningfulness and participation. The reason for this could be that participation and motivation, which is placed under meaningfulness, are two closely related theoretical constructs, as participation in decision-making, or autonomy, is a condition for experiencing intrinsic motivation (Ryan & Deci, 2017). Some items also appear to be separate factors.

However, both samples were rather small, and there is a need for more extensive piloting to validate the new scale, aiming at measuring health promotion in the environment, or to what extent the environment supports a sense of coherence. Tests of concurrent and discriminant validity are also needed. Still, the scale developed is a good starting point to evaluate how secondary school youths perceive their situation, and it has a potential to be further adjusted and investigated.

Conclusion

There is a need to measure effects of health promotion efforts in school, and this study set out to develop a scale to meet this need. More specifically, a scale for measuring sense of coherence support in the environment has been developed and piloted. The preliminary findings from the first phases of the development process shows that the scale developed has potential, though further validation with a larger sample is needed. The scale needs to be tested for correlations in relation to related scales, as well as for reliability over time. Still, according to the responses from the focus group students, this is a scale with appropriate language and content, and depending on further validation, this may provide a useful tool for evaluating health promotion measures in the future.

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