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Self-efficacy and social competence reduce socioeconomic inequality in emotional symptoms among schoolchildren

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Abstract

Background

Many adolescents experience mental health problems which may have serious consequences for short and long-term health and wellbeing. This study investigates socioeconomic inequality in emotional symptoms, self-efficacy and social competence. Further, whether self-efficacy and social competence reduce socioeconomic inequalities in emotional symptoms.

Methods

Data stem from the cross-sectional Danish Health Behaviour in School-aged Children Methodology Development Survey 2012. Data was collected among all schoolchildren in grades 5-9 (11-15-year-olds) in 23 public schools in two municipalities. Participation rate was 76.8% (n=3,969). Analyses of the associations between daily emotional symptoms, occupational social class, self-efficacy and social competence, were performed through logistic regression analyses using SAS version 9.3. Multilevel logistic regression analyses were used to study effect modification.

Results

Schoolchildren from lower socioeconomic positions have higher odds for daily emotional symptoms and lower levels of high self-efficacy and high social competence compared to schoolchildren from higher socioeconomic positions. High self-efficacy and high social competence buffer the association between socioeconomic position and emotional symptoms, i.e. they seem to protect children and adolescents from lower socioeconomic strata against the higher risk of daily emotional symptoms.

Conclusions

High self-efficacy and high social competence buffer the negative effects of low socioeconomic status on emotional symptoms among schoolchildren. Self-efficacy and social competence can be promoted e.g. through school-based initiatives and may be an effective way to improve mental health and reduce socioeconomic inequality in emotional symptoms among children and adolescents.

Keywords: Mental health, Emotional symptoms, Self-efficacy, Social competence, Effect modification

Introduction

Many children and adolescents experience mental health problems¹. For example, the Danish national board of health estimates that 20.6% of girls and 16% of boys aged 11-15 experience at least one emotional symptom every day². Mental health problems may have serious consequences for health and wellbeing^{3,4} and track into adulthood⁵. Mental health problems affect cognition and ability to learn, which in turn influences educational attainment and employment later in life¹. Children and adolescents from lower socioeconomic positions have a higher burden of mental health problems⁶⁻⁸ and may be more prone to those adverse effects. It is therefore important to identify factors that protect against the effects of lower socioeconomic position on mental health problems^{9,10}.

A systematic review by Reiss⁶ showed that socioeconomically disadvantaged children and adolescents had a two-to-threefold higher risk of developing mental health problems compared to adolescents from more advantaged families. Holstein et al.¹¹ showed that across many countries, emotional symptoms were more frequent among adolescents from less affluent families compared to those from affluent families. In addition, Bøe et al.⁷ found socioeconomic status to be a significant predictor of mental health problems. There is a lack of research on factors which buffer this social patterning of mental health problems. Identification of such factors may inform efforts to reduce the prevalence and socioeconomic inequality in mental health problems.

According to Due et al.¹² understanding underlying patterns and mechanisms of social inequalities is important to find appropriate ways of promoting health. One of the challenges is to identify factors that protects against the high risk of ill health among adolescents from lower socioeconomic groups. From a salutogenic perspective the focus is on what keeps people healthy and resilient to stressors of everyday life. According to Lindström & Eriksson¹³ the salutogenic framework comprises a range of competences e.g. self-efficacy and social competence. In accordance with this perspective, these personal competences may have the potential to reduce the socioeconomic inequality in mental health problems¹⁴. The mechanisms by which social competences may buffer mental health problems are not known but personal competences like self-efficacy and social competence are important aspects of good mental health and may be crucial for protecting against emotional symptoms¹⁵. Therefore, these personal competences may be resources for

sustaining good mental health when facing difficult or challenging demands of everyday life. To our knowledge no studies have addressed this issue.

A few studies suggest that children and adolescents from lower socioeconomic positions are at higher risk of lacking personal competences. Iversen & Holsen¹⁶ studied 1,153 Norwegian adolescents aged 11-12 and found that adolescents with higher socioeconomic position measured by family affluence, books in the home and perceived wealth, had higher social competence than adolescents from lower socioeconomic positions. A study among 600 13-year-old Polish adolescents, found that higher levels of mother's education and material conditions were associated with higher levels of self-efficacy¹⁷. While many studies show socioeconomic inequalities in mental health problems, research on the relationship between socioeconomic background, mental health and personal competences such as self-efficacy and social competence among children and adolescents is scarce^{9,10,18}.

Aim

The study focuses on one specific area of mental health problems, namely emotional symptoms.

The aims of this study are therefore 1) to investigate the socioeconomic pattern of emotional symptoms, self-efficacy and social competence and 2) to investigate if the association between socioeconomic position and emotional symptoms among adolescents is modified by self-efficacy and social competence.

Methods

Study design and population

Data stem from the Danish Health Behaviour in School-aged Children Methodology Development Survey 2012. The survey was an interim cross-sectional data collection related to the international Health Behaviour in School-aged Children study (HBSC). The 2012 survey was designed to develop and test new items and included measures of self-efficacy and social competence. Cross-sectional data were collected among all schoolchildren attending grades 5-9 corresponding to ages 11-15 in the 23 public schools in two municipalities (Slagelse and Halsnæs). The participation rate was 76.8% among the 5,165 schoolchildren enrolled (n=3,969).

Measurements

Emotional symptoms were measured by the Health Behavior in School-aged Children Symptom Check List¹⁹ measuring self-reported psychosomatic symptoms by asking the children how often, during the past six months, they experienced the following symptoms: Feeling low, irritable or bad tempered, and feeling nervous. Response options ranged from “about every day” to “rarely or never”. The answers were dichotomised into those experiencing at least one emotional symptom daily versus the rest. Schoolchildren with missing information on emotional symptoms (n=317) were excluded from the analyses and the final dataset included 3,652 schoolchildren. Sensitivity analyses showed that including children with missing information on emotional symptoms in the category without emotional symptoms, did not change the findings substantially.

Socioeconomic position: *Occupational Social Class (OSC)*. We coded the schoolchildren’s information about their parents’ occupation into social classes according to standards of the Danish National Institute of Social Research²⁰. total, 82.1% of the participants provided sufficient information for coding of occupational social class.

Each child was classified by the highest-ranking parent and categorised into OSC I-V (high to low). Further, two additional categories were applied: parents outside the labour market (VI) and unclassifiable. In the first analyses we categorised the responses into high (I and II), medium (III and IV), low (V and VI), and unclassifiable. Children with missing information on OSC were included in unclassifiable. We ran analyses which showed that the group of children with unclassifiable OSC in most cases responded like children from lower OSC categories. In the last analytical step, we categorised the participants into high (I-IV) and low (V+VI+unclassifiable) to strengthen the statistical power and the presentation of our findings. Sensitivity analyses where students with unclassifiable OSC were excluded from the analyses showed a similar pattern of associations.

Effect modifiers: *Social competence*. Social competence is a capacity that enables people to influence their everyday life, engage socially and navigate and participate in the wider society²¹. We developed a short measure including three items to capture social competence among schoolchildren: “I speak my mind when

I think something is unfair" (assertiveness), "I try to understand my friends when they are sad or in a bad temper" (empathy), and "I am good at working with others in a group" (collaborative skills). Response options were: "Almost always", "Often", "Sometimes", "Almost never".

We dichotomised social competence into high ("almost always" or "often" to two or more items) and low ("almost always" or "often" to one item or less).

Self-efficacy. The concept of self-efficacy was defined by Bandura²² as "*the belief in one's capabilities to organise and execute the courses of action required to produce given attainments*"^{22, pp. 3}. While Bandura referred to self-efficacy related to specific behaviours and situations, Schwarzer²³ introduced the concept of general self-efficacy. According to Schwarzer, once established, enhanced general self-efficacy tends to generalise to other situations. Self-efficacy is promoted through success and reductions are a result of failures^{22,23}. Inspired by Schwarzer and Jerusalem²⁴ we used two indicators to measure general self-efficacy: "How often can you find a solution to problems if you try hard enough?" and "How often can you manage the things you set your mind to?" with response options "Always", "Often", "Sometimes", "Rarely" and "Never". We dichotomised responses into high ("always" or "often" to at least one item) and low (all other possibilities).

We performed both qualitative and statistical validations of the two newly developed measures²⁵

. Face validity of social competence and self-efficacy were tested in nine focus group interviews immediately after the children had answered a brief questionnaire¹⁰. The face validity was high, i.e. the children's understanding of the items corresponded to the research group's intention. Schoolchildren in all age groups understood and were willing to answer the questions.

Statistical validation of the measures included three steps: (1) analyses of correlation between items (Spearman's rank correlation coefficient) and internal consistency (Cronbach's alpha). For social competence, the correlation between the items ranged from 0.19 and 0.33, and Cronbach's alpha was 0.52. For self-efficacy, the correlation between the two items was 0.52.

(2) Correlation analyses with other mental health measures. The correlations showed the expected directions: good self-rated health (social competence: 0.11, self-efficacy: 0.19), daily emotional symptoms

(social competence: -0.08, self-efficacy: -0.14), loneliness (social competence: -0.09, self-efficacy: -0.16) and life satisfaction (social competence: 0.12, self-efficacy: 0.23).

(3) Test for Differential Item Functioning (DIF) using logistic regression in relation to four sociodemographic variables: sex, age, migration status and OSC. Odds ratios outside the interval 0.53-1.89 were interpreted as an indication of moderate to large DIF as recommended by Petersen et al.²⁶. The items regarding assertiveness and empathy showed a low degree of DIF in relation to sex and migration status. There was a mild degree of DIF on age for both items. None of the measures showed DIF in relation to OSC. The odds ratio estimates for DIF were all within the interval 0.53-1.89, and this low degree of DIF was considered not to be important for the overall function of the measures in line with previous definitions²⁶.

Potential confounder: *Migration status* is based on statistics Denmark's categorisation of native Danes and migrants.

Statistical analyses

The association between daily emotional symptoms, OSC, the effect modifiers self-efficacy and social competence and the covariates migration status and sex, were explored through logistic regression analyses using SAS version 9.3.

The analyses of effect modification were performed as multilevel logistic regression analyses (Glimmix procedure in SAS) to consider the possible cluster effect due to the hierarchical structure of data with schoolchildren (n=3652) nested in school classes (n=204) nested in schools (n=23). The initial analyses of effect modification applied the full range of the OSC variable. In the next step, we applied the dichotomised OSC variable. The use of the dichotomous variable did not disguise any essential observation. We conducted stratified analysis of the association between OSC and emotional symptoms in relation to self-efficacy and again in relation to social competence.

Based on the recommendations of Knol and VanderWeele²⁷ we conducted analyses of effect modification as joint effect analyses applying a common reference group (high general self-efficacy/high social competence and high OSC). Using a common reference group makes it possible to compare risks across strata. In the initial analysis, we adjusted for migration status. This adjustment did not to change the

estimates and migration status was not included in the joint reference analyses. All analyses were performed using SAS version 9.3.

Ethical considerations

The study adheres to all national ethical and data protection requirements. In Denmark, there is no agency for ethical approval of population based surveys. The study was approved by the local governments in Slagelse and Halsnæs. Schoolchildren were informed that participation was voluntary and that the study was anonymous and we did not collect any personal identification information. The study is registered by the Danish Data Protection Agency.

Results

Table 1 Distribution of included variables and proportion with daily emotional symptoms.

	Study population % (n)	Proportion with daily emotional symptoms % (n)	P-value*
General self-efficacy			
High	62.7 (2288)	7.1 (162)	<0.001
Medium	21.7 (791)	11.1 (88)	
Low	15.7 (573)	22.3 (128)	
Social competence			
High	29.3 (1070)	7.8 (134)	<0.001
Medium	56.3 (2057)	10.8 (132)	
Low	14.4 (525)	15.9 (112)	
Migration status			
Native Danes	87.7 (3202)	10.1 (324)	0.220
Immigrants	12.3 (450)	12.0 (54)	
Occupational social class			
High	26.5 (966)	7.9 (76)	<0.001
Medium	32.7 (1193)	8.5 (101)	
Low	23.0 (838)	11.3 (95)	
Unclassifiable	18.0 (655)	16.2 (106)	
Sex			
Boys	49.2 (1796)	6.2 (112)	<0.001
Girls	50.8 (1856)	14.3 (266)	

*Chi2test

Table 1 show that schoolchildren with low self-efficacy were more likely to experience daily emotional symptoms compared to children with medium and high self-efficacy and that decreasing social competence was associated with a higher level of daily emotional symptoms. There was no statistically significant

difference in daily emotional symptoms in relation to migration status. Schoolchildren from low and unclassifiable OSC were more likely to experience daily emotional symptoms compared to children from high and medium OSC. More than twice as many girls as boys experienced daily emotional symptoms.

Table 2 OR (95% CI) for daily emotional symptoms, low self-efficacy, and low social competence by OSC.

	OR (95% CI) for daily emotional symptoms	OR (95% CI) for low self-efficacy	OR (95% CI) for low social competence
Occupational social class			
High	1	1	1
Medium	1.08 (0.79;1.48)	1.80 (1.36;2.39)	1.23 (0.98;1.56)
Low	1.50 (1.09;2.06)	2.56 (1.92;3.40)	1.57 (1.23;2.01)
Unclassifiable	2.26 (1.65;3.09)	3.65 (2.74;4.87)	2.32 (1.81;2.98)

All analyses were adjusted for migration status

Schoolchildren in low and unclassifiable OSC had significantly higher odds for emotional symptoms compared to children in high OSC (Table 2).

There was a social class gradient in odds for low general self-efficacy, with higher odds of low self-efficacy among children from lower social class backgrounds. Schoolchildren with unclassifiable OSC had the highest odds for low self-efficacy. There was also a socioeconomic gradient showing that lower OSC increased the odds for low social competence, although odds for low social competence among children from medium OSC were not statistically significantly different from high OSC.

Table 3 OR (95% CI) for daily emotional symptoms by combinations of general self-efficacy and occupational social class (OSC).

Joint effect of self-efficacy and OSC	OR (95% CI) for daily emotional symptoms
High self-efficacy + High OSC	1
High self-efficacy + Low OSC	1.52 (1.17;1.97)
Low self-efficacy + High OSC	3.10 (2.15;4.48)
Low self-efficacy + Low OSC	4.53 (3.32;6.18)

Table 3 shows that the lowest odds for daily emotional symptoms are found among children with high self-efficacy regardless of OSC. Schoolchildren with low self-efficacy and low OSC had the highest odds for daily emotional symptoms compared to schoolchildren with high self-efficacy and high OSC.

Table 4 OR (95% CI) for daily emotional symptoms by combinations of social competence and occupational social class (OSC).

Joint effect of social competence and OSC	OR (95% CI) for daily emotional symptoms
High social competence + High OSC	1
High social competence + Low OSC	1.63 (1.27;2.10)
Low social competence + High OSC	1.78 (1.23;2.57)
Low social competence + Low OSC	2.91 (2.12;4.01)

Table 4 shows that the lowest odds for daily emotional symptoms are found among children with high social competence regardless of OSC. The highest odds for daily emotional symptoms were found among children with the combination of low social competence and low OSC.

Discussion

This study's main findings are: 1) The prevalence of daily emotional symptoms, low self-efficacy and low social competence increases by decreasing OSC and 2) High self-efficacy and high social competence modifies the association between OSC and emotional symptoms. E.g. children with a combination of low OSC and high self-efficacy have 1.5 higher odds for emotional symptoms than the reference group. In comparison, children with the combination of low OSC and low self-efficacy have four times higher odds for daily emotional symptoms than children with high OSC and high self-efficacy.

The findings of socioeconomic inequalities in emotional symptoms are consistent with several other studies demonstrating socioeconomic inequalities in mental health problems^{18,28}. Further, a systematic review by Reiss et al.⁶ showed that children from low socioeconomic backgrounds experience higher levels of mental health problems e.g. emotional symptoms.

A few studies have suggested inequalities in personal competences. Nielsen et al.¹⁰ find that children from low socioeconomic backgrounds have higher prevalence of low social competence and low self-efficacy. Iversen and Holsen¹⁶ find that individuals in high socioeconomic positions, measured by three different indicators, have higher social competence than those in lower positions. The findings in our analyses are consistent with this research.

To the best of our knowledge this is the first study to focus on the protective effects of social competence and self-efficacy in relation to socioeconomic inequality in emotional symptoms. In line with the salutogenic perspective we perceive self-efficacy and social competence as protective factors for mental

health. High levels of social competence and self-efficacy will keep individuals mentally healthy when confronted with stressors. According to Geyer¹⁴ autonomy and decision making are preconditions for developing e.g. self-efficacy. Children and adolescents learn from their parents; parents with more resources may offer their children better opportunities for developing competences and positive beliefs in managing their life. This may lead to higher levels of self-efficacy and social competence among children and adolescents from higher socioeconomic positions.

According to Marmot²⁹ one of the mechanisms behind socioeconomic inequalities in health lies in the feelings of autonomy and perceived control of one's life as well as in a sense of social connectedness rather than in financial resources, access to medical services and social position in itself. Individuals at the lower end of the social hierarchy are more likely to be in jobs with lower levels of autonomy and experience reduced control over their life. Self-efficacy is an aspect of personal control which may be an important factor in explaining and reducing socioeconomic inequalities in emotional symptoms.

Promotion of self-efficacy and social competence among children and adolescents may therefore have potential to reduce socioeconomic inequality in emotional symptoms.

All public schools in Slagelse and Halsnæs municipalities participated in this study. One of the strengths of the study is that it includes a large and diverse study population. A limitation of the study is that it is based on cross-sectional data, which makes it impossible to draw causal conclusions. Although there is a possibility of reverse causality we consider it most likely that the schoolchild's socioeconomic background affects the experience of emotional symptoms. Further, according to the salutogenic approach, it is plausible that lack of social competence and self-efficacy impacts on emotional symptoms rather than the opposite²³.

The participation rate of the study was high (76.8% of students enrolled in the school-classes) but non-participating children may result in selection bias. Non-participation might be caused by absence due to emotional symptoms. If this is the case we may have underestimated the prevalence of symptoms and likely the association between OSC and emotional symptoms. The non-participating children may also have lower levels of self-efficacy and social competence, which may result in an under-estimation of the prevalence of low levels of self-efficacy and social competence. In this case, it is likely that the study underestimated the associations between OSC and competences.

We use self-reported information from the schoolchildren as we are interested in the children's own perception of their emotional symptoms, social competence and self-efficacy, not others' assessment of it. We dichotomized the responses into those experiencing at least one emotional symptom daily versus the rest because we were interested in investigating the children who were most affected by emotional symptoms.

This study allowed us to develop and test a new measure of general self-efficacy with two items. Focus group interviews suggested that the face validity was high since schoolchildren in all age groups understood and were willing to answer the questions¹⁰. The correlation with related measures showed the expected direction and there was low DIF.

We used a measure of parents' occupational social class based on children's information about their parent's occupation. Although there is often a high proportion of missing or insufficient information to code parents' OSC, studies show that children from the age of 11 can provide reliable and valid information about their parents' occupation³⁰. In order to maximise the statistical power we chose to keep the 17.9% schoolchildren with unclassifiable OSC in the analyses. Other measures of socioeconomic status could have been used e.g. the Family Affluence scale (FAS) which is a brief measure of material assets in the family. OSC is strongly related to parental education while FAS may be influenced by social class, i.e. appear later in time. It is even possible that FAS and family well off appear simultaneous with the development of the child's social competences, in worst case even later. Therefore, we perceive OSC to be the most appropriate measure of the background factor SES in these analyses.

Implications for research and practice

The measures used for assessing schoolchildren's self-efficacy and social competence should be tested in other study populations and further validation of the measures should be conducted. Self-efficacy and social competence can be promoted through school-based interventions^{31,32}. Many Danish schools have made important attempts to promote student's mental health through promoting different aspects of competences and preventing bullying³¹. Many of these local initiatives have not been thoroughly evaluated or implemented in other settings and there is still a lack of knowledge and experience on how to promote

schoolchildren's self-efficacy and social competence. Furthermore, knowledge regarding which specific factors to address when planning mental health promotion initiatives is scarce³³.

Being mentally healthy provides social and educational benefits throughout the life course³⁴. To live a mentally healthy life it is important for children and adolescents to manage thoughts and emotions and to build social relationships^{4,32}. It is therefore important to investigate how to reduce emotional symptoms and how to promote self-efficacy and social competence among children and adolescents.

Conclusion

Schoolchildren from lower socioeconomic positions have higher odds for daily emotional symptoms and lower levels of high self-efficacy and high social competence compared to schoolchildren from higher socioeconomic positions. High self-efficacy and high social competence buffer the negative effects of low socioeconomic status on emotional symptoms among schoolchildren. Self-efficacy and social competence can be promoted e.g. through school-based initiatives and may be an effective way to improve mental health and reduce socioeconomic inequality in emotional symptoms among children and adolescents.

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Keypoints:

- The prevalence of daily emotional symptoms, low self-efficacy and low social competence increases by decreasing OSC.
- High self-efficacy and high social competence modifies the association between OSC and emotional symptoms, i.e. seem to protect students from lower socioeconomic strata against emotional symptoms.

- Knowledge about which specific factors to address when planning mental health promotion initiatives is scarce and there is a need for more research about how to reduce emotional symptoms and promote self-efficacy and social competence among children and adolescents.

Conflicts of interest: None declared

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