

## RESEARCH ARTICLE

# Peer Acceptance in the School Class and Subjective Health Complaints: A Multilevel Approach

YLVA B. ALMQUIST, PhD<sup>a</sup> BITTE MODIN, PhD<sup>b</sup> LILLY AUGUSTINE, PhD<sup>c</sup>

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**ABSTRACT**

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**BACKGROUND:** Feeling accepted by peers is important for young people's health but few studies have examined the overall degree of acceptance in school and its health consequences. The purpose of the study was to investigate whether health complaints among Swedish students can be attributed to the acceptance climate in their school class even when the health effects of their own (individual) acceptance score have been taken into account.

**METHODS:** The data used were from the Health Behaviour in School-aged Children (HBSC) study for the years 2001 to 2002, 2005 to 2006, and 2009 to 2010, consisting of 13,902 5th-, 7th-, and 9th-grade Swedish students nested into 742 school classes. The statistical analyses were performed by means of linear regression multilevel analysis.

**RESULTS:** The results indicated that the variation in subjective health complaints could be ascribed partly to the school-class level (boys: 5.0%; girls: 13.5%). Peer acceptance at the individual level demonstrated a clear association with health: the lower the acceptance, the higher the complaint scores. For girls, but not for boys, the overall degree of peer acceptance in the school class demonstrated a contextual effect on health, net of acceptance at the student level. Interaction analyses also revealed an increasingly favorable health among poorly accepted girls as the acceptance climate in the school class declined.

**CONCLUSIONS:** A lower overall degree of peer acceptance in the school class is associated with poorer health among girls. However, girls who themselves feel poorly accepted are not as negatively affected health-wise by a poor acceptance climate, as are well-accepted girls.

**Keywords:** school class; children; peer acceptance; health complaints; multilevel analysis; Sweden.

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The need to feel accepted by others is one of the great forces that drive human behavior.<sup>1</sup> This is perhaps especially true during adolescence, which is a period in life when young people invest much energy in peer relationships.<sup>2</sup> The school class constitutes a central context for peer interaction, where students are required to interact with peers on a daily basis to maintain their social anchorage.<sup>3</sup> It is, therefore, reasonable to assume that students who feel accepted by their classmates enjoy better health and well-being compared to those who do not. The "classroom climate" in terms of overall acceptance toward peers

may also, in itself, be more or less favorable for the well-being of the students constituting the class. While past research has indeed demonstrated associations between peer acceptance and a wide range of health-related outcomes, regardless of whether acceptance has been established using objective<sup>4-6</sup> or subjective<sup>7-9</sup> measures, the majority of these studies have not taken the corresponding role of the school-class context into consideration.<sup>10</sup>

School classes differ in terms of their social climate. The climate of a particular school class emerges from the continuous interaction between its members and,

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<sup>a</sup>Researcher, (yba@chess.su.se), Centre for Health Equity Studies (CHESS), Stockholm University/Karolinska Institutet, SE-106 91 Stockholm, Sweden.

<sup>b</sup>Associate Professor, (bitte.modin@chess.su.se), Centre for Health Equity Studies (CHESS), Stockholm University/Karolinska Institutet, SE-106 91 Stockholm, Sweden.

<sup>c</sup>Researcher, (lilly.augustine@fhi.se), Swedish National Institute of Public Health (FHI), SE-831 40 Östersund, Sweden.

Address correspondence to: Ylva B. Almquist, Researcher, (yba@chess.su.se), Centre for Health Equity Studies (CHESS), Stockholm University/Karolinska Institutet, SE-106 91 Stockholm, Sweden.

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in turn, influences the behaviors and attitudes of the students.<sup>11,12</sup> While some classes enjoy a positive climate where students are supportive, devoted, and contribute to the functioning of the class, others are characterized by a negative climate with higher levels of peer pressure and comparison processes. Previous studies also have shown that bullying and victimization are more common in the latter type of school class.<sup>13</sup> A negative climate may indicate that students are less tolerant and permissive toward each other, resulting in a low degree of overall peer acceptance in the class. The hypothesis put forward in this study is that such school classes impose negative feelings and poor well-being onto all its members, regardless of the individual student's own experiences of acceptance by his or her classmates. However, the magnitude of these effects may differ between well-accepted and poorly accepted individuals. The adequate statistical method to use when one wants to separate individual from contextual effects is multilevel modeling. It takes account of data that are hierarchically structured, which, in the present case, means students nested within school classes. An important reason for separating individual from contextual effects is that they are likely to reflect different types of social processes. Thus, a student who develops health problems because he or she does not feel accepted by the classmates can be seen as an individual-level effect; the lack of acceptance gives rise to health consequences for the directly exposed student. However, a poor level of acceptance in school is also likely to affect the overall social climate in the class with possible health implications for those students who are not directly subjected to poor peer acceptance.

On the basis of an approximate sample of 14,000 5th-, 7th-, and 9th-grade students in Sweden distributed over more than 700 classes, this study seeks to investigate the link between peer acceptance and health complaints. First, the association between students' own acceptance by classmates and health is investigated. Second, we examine whether the influences of the overall degree of acceptance in the school class on students' health act over and above the individual students' experience of acceptance. Finally, this study looks at the interaction between student-level and school-class level peer acceptance to explore whether the assumed health consequences of overall class acceptance strike differently across students.

## METHODS

The data set used is from the Health Behaviour in School-aged Children (HBSC) study. The HBSC is a cross-national study conducted in collaboration with the World Health Organization (WHO), which has

been carried out in a growing number of countries every 4th year since 1985 to 1986. The target population is school children aged 11, 13, and 15. To boost the number of analytical units at the contextual level (ie, school classes) this study uses the Swedish data from 3 waves of data collection (2001 to 2002, 2005 to 2006, and 2009 to 2010). A cluster sampling approach was used in all countries. First, a random sample of schools per age group was generated; second, one school class per school was selected at random (which, in reality, means that the school-class level empirically corresponds to the school level). A total of 230 classes were chosen to participate in 2001 to 2002, of which 194 agreed ( $N=3926$ ). In 2005 to 2006, a total of 271 Swedish school classes were invited to participate. Of these, information was recorded for 216 classes ( $N=4415$  students). In 2009 to 2010, 400 classes were invited to participate, of which 353 accepted ( $N=6879$  students). Attrition at the school-class level is primarily due to school principals declining to participate; further causes are loss of questionnaires and students being engaged in out-of-school activities at the time of the data collection. The questionnaire contains questions about demographic characteristics, health-related behaviors, health, psychosocial adjustment, peer relations, and perceptions of school.

## Variables at the Student Level

Information about peer acceptance was based on the statement: "*Other students accept me as I am.*" Response options were "strongly agree"; "agree"; "neither agree nor disagree"; "disagree"; "strongly disagree". In previous studies, this item has been used as part of the classmate subscale in "The teacher and classmate support scale."<sup>14,15</sup> It has been found to be correlated with items indicating for example, that the students in the class enjoy being together and that students are supportive toward each other. However, in this study it is argued that peer acceptance is to some degree a different phenomenon from social support. While social support involves a type of resource that emerges out of actual friendships with classmates, acceptance is more likely also to reflect the extent to which students perceive themselves as liked and respected by their peers.<sup>10</sup>

Subjective health complaints were measured by the Health Behaviour in School-aged Children Symptom Checklist, which includes 8 health complaints (headache, stomach ache, backache, depressed mood, irritable, nervousness, sleeping difficulties, and dizziness). Students were asked: "*In the last 6 months: how often have you had the following?*" and the response options were: "rarely or never" (0 points); "about every month" (1 point); "about every week" (2 points); "more than once a week" (3 points); "about

**Table 1. Descriptive Statistics for the Variables Included in the Study**

	N	%	Min	Max	Mean	SD
Boys (N = 6852)						
Subjective health complaints			0	32	7.59	5.67
Peer acceptance						
Strongly agree	2879	42.0				
Agree	3000	43.8				
Neither agree nor disagree	757	11.0				
Disagree	124	1.8				
Strongly disagree	92	1.3				
Girls (N = 7050)						
Subjective health complaints			0	32	10.14	6.41
Peer acceptance						
Strongly agree	2754	39.1				
Agree	3125	44.3				
Neither agree nor disagree	923	13.1				
Disagree	144	2.0				
Strongly disagree	104	1.5				
School classes (N = 742)						
Peer acceptance			1.00	2.71	1.80	0.24
Grade			5	9		
Proportion girls			0.11	1.00	0.50	11.68
School-class size			10	46	20	

every day” (4 points). Based on this information, a scale ranging from 0 to 32 was constructed. This scale has proved to have satisfactory reliability and test-retest reliability (0.7-0.8).<sup>16</sup>

### Variables at the School-Class Level

At the school-class level, the standardized mean score (z-score) of peer acceptance was calculated for each school class (higher scores correspond to poorer peer acceptance). The mean score may not be an appropriate description because school classes with a clustering of very high and very low individual acceptance scores would have the same mean acceptance as school classes where all individuals report an average score. Therefore, alternative ways of calculating class-level peer acceptance were additionally assessed (although based on the same question). One of these measures was the proportion of poorly accepted students in each class. By poorly accepted we refer to individuals who answered “disagree” or “strongly disagree” to the statement of feeling accepted by their classmates. Using this measure of class-level peer acceptance yielded similar results (data not presented).

Two potentially confounding variables at the school-class level were also included—composition by sex and school-class size. Composition by sex was calculated as the proportion of girls in the school class, where higher scores correspond to a larger proportion of girls. Table 1 shows the distribution of all the variables examined in this study.

### Data Analysis

Only individuals for whom there was full information for all variables were included in the statistical analysis. School classes with fewer than 10 students were excluded (so as to be able to construct stable aggregated measures at the school-class level). Overall, 13,902 students nested into 742 classes were eligible for analysis.

The association between peer acceptance and subjective health complaints (Table 2 for boys and Table 3 for girls) was analyzed by means of multilevel modeling, using the xtreg command in Stata SE 11.0 (StataCorp, College Station, TX). Multilevel analysis takes the hierarchical structure of the data into account by allowing the variance in the outcome variable (in this case, subjective health complaints) to separate into 2 components (1 for the student-level and 1 for the class-level). Differences in health between school classes, expressed as percentages, were assessed by means of “rho” estimates (similar to the intraclass correlation).

Because the initial analysis revealed statistically significant sex differences in the studied associations, the decision was made to analyze boys and girls separately. The first model, a random-effects linear model, included peer acceptance at the student level. The second model included standardized mean scores of peer acceptance at the school-class level. This model additionally included the cross-level interaction effect between student-level and class-level peer acceptance. All analyses were adjusted for grade, year of data collection, sex composition, and class size.

### RESULTS

The results of the analyses of peer acceptance and subjective health complaints among boys are shown in Table 2. The “empty” model (or the null model) shows, as expected, that most of the variation in subjective health complaints (95%) can be found at the student level. There is, however, also a statistically significant variation at the school-class level which suggests that approximately 5% of the variation in health complaints among boys is due to differences between school classes. In the subsequent column (Model 1) a clear gradient in subjective health complaints by peer acceptance at the student level is demonstrated: poorer peer acceptance is associated with a larger number of health complaints. For example, boys who report the poorest peer acceptance have, on average, approximately 7 more points on the subjective health complaints index than those who strongly agree that their classmates accept them for whom they are. The reduction of variance at the school-class level, from 5% to 3.3%, is primarily caused by the inclusion of control variables (ie, grade, year, sex composition, and school-class size). Among these variables, neither sex

**Table 2. Peer Acceptance and Subjective Health Complaints Among Boys (N = 6852)**

	Subjective health complaints (high score = more)				
	Empty model	Model 1		Model 2	
		B (SE)	Peer acceptance: Student level		Peer acceptance: Student level and school-class level
	B (SE)	B (SE)	95% CI	B (SE)	95 % CI
Constant	7.58 (0.08)	7.09 (0.49)		7.09 (0.49)	
Peer acceptance					
Strongly agree (ref.)		0.00		0.00	
Agree		1.50	1.22, 1.78	1.50	1.22, 1.78
Neither agree nor disagree		3.92	3.48, 4.35	3.92	3.48, 4.36
Disagree		5.14	4.17, 6.11	5.14	4.17, 6.12
Strongly disagree		7.30	6.18, 8.42	7.30	6.17, 8.44
Mean class peer acceptance (z-scores)				-0.02	-0.56, 0.53
Grade					
5th (ref.)		0.00		0.00	
7th		0.49	0.13, 0.85	0.49	0.13, 0.86
9th		1.15	0.80, 1.51	1.16	0.79, 1.52
Year					
2001/2002 (ref.)		0.00		0.00	
2005/2006		-1.05	-1.44, -0.66	-1.05	-1.44, -0.66
2009/2010		-0.79	-1.15, -0.43	-0.79	-1.17, -0.42
Gender composition		-0.00	-0.02, 0.01	-0.00	-0.02, 0.01
School-class size		-0.02	-0.05, 0.01	-0.02	-0.05, 0.01
Cross-level interactions					
Peer acceptance × mean peer acceptance				-0.30	-0.87, 0.25
Variance components					
Variation at the school-class level	5.0***	3.3	***	3.3	***
Variation at the student level	(95.0)				

Results from random-effects linear models for 2 levels.

\*\*\* p < .001, \*\* p < .01, \* p < .05.

composition nor class size was associated with health complaints, whereas a higher grade was linked to more health complaints. Where year of data collection was concerned, the number of health complaints was generally lower in the 2005 to 2006 and 2009 to 2010 waves than in 2001 to 2002. The next column (Model 2) shows peer acceptance at the school-class level. The results show that boys in classes where the students, on average, experience poorer peer acceptance do not have more health complaints. Furthermore, the cross-level interaction between student-level and class-level peer acceptance was not statistically significant.

Table 3 presents the corresponding results for girls. The “empty model” shows that 13.5% of the variance in health complaints among girls can be attributed to the school-class level. The next column (Model 1) demonstrates a clear and strong gradient in health complaints by peer acceptance among girls also. Here the variance component falls from 13.5% to 5.2%, although, once again, this primarily reflects the inclusion of the control variables. The latter variables display the same pattern as for boys: health complaints are more common in higher grades and less common in the 2 later waves of data collection. The second column (Model 2) includes mean peer acceptance. It shows that girls in school classes where there is a lower degree

of peer acceptance also report more health complaints, net of the observed student-level characteristics: a one standard deviation increase in mean peer acceptance leads to a 1-point increase on the health-complaints scale. The results also demonstrate a statistically significant interaction between peer acceptance at the student level and at the school-class level. A more detailed analysis of this interaction reveals that the unfavorable impact on health of a low degree of peer acceptance in the school class is not as pronounced among the poorly accepted girls compared to the well-accepted girls.

## DISCUSSION

The aim of this study was to examine the link between peer acceptance in the school class and subjective health complaints, particularly in terms of the influence of the overall acceptance climate in the school class on students’ health. A requirement for such analyses is that the outcome varies between the contextual-level units; something which turned out to be the case for both boys and girls. This was especially the case for girls, for whom 13.5% of the variation in health complaints could be attributed to the fact that they were members of a certain school class. Concerning the multilevel analysis, the results

Table 3. Peer Acceptance and Subjective Health Complaints Among Girls (N = 7050)

	Subjective health complaints (high score = more)				
	Empty model B (SE)	Model 1 Peer acceptance: Student level		Model 2 Peer acceptance: Student level and school-class level	
		B	95% CI	B	95% CI
Constant	10.09 (0.11)	6.47 (0.59)		6.50 (0.58)	
Peer acceptance					
Strongly agree (ref.)		0.00		0.00	
Agree		1.59	1.28, 1.89	1.50	1.19, 1.81
Neither agree nor disagree		4.20	3.76, 4.64	4.05	3.60, 4.50
Disagree		5.79	4.80, 6.78	5.59	4.60, 6.59
Strongly disagree		6.78	5.62, 7.93	6.52	5.35, 7.68
Mean class peer acceptance (z-scores)				1.03	0.41, 1.64
Grade					
5th (ref.)		0.00		0.00	
7th		2.08	1.67, 2.50	1.94	1.52, 2.36
9th		4.00	3.59, 4.41	3.82	3.40, 4.24
Year					
2001/2002 (ref.)		0.00		0.00	
2005/2006		-0.79	-1.24, -0.34	-0.72	-1.17, -0.27
2009/2010		-0.57	-0.99, -0.15	-0.43	
Gender composition		0.01	-0.00, 0.03	0.01	-0.00, 0.03
School-class size		0.00	-0.03, 0.04	0.00	-0.03, 0.04
Cross-level interactions					
Peer acceptance × mean peer acceptance				-0.72	-1.30, -0.14
Variance components					
Variation at the school-class level	13.5*** (86.5)	5.2	***	5.1	***
Variation at the student level					

Results from random-effects linear models for 2 levels.

\*\*\* p < .001, \*\* p < .01, \* p < .05.

indicated that both boys and girls who experience poor acceptance by their peers also report more health complaints. This is in line with previous studies. Even more interesting was the finding that the overall degree of peer acceptance in the classroom was positively associated with health among girls, but not among boys, over and above the student-level effects. However, the negative health effects of a poor acceptance climate in the school-class were not equally pronounced among all girls: a cross-level interaction of peer-acceptance revealed that poorly accepted girls were less affected health-wise by a poor acceptance climate in the class compared to the well-accepted girls.

The variation in subjective health complaints between school classes may be a result of several simultaneous processes. The hypothesis put forward in this paper includes the relevance of factors related to the social climate in the classroom, specifically highlighting peer acceptance as one of these important factors. While a high degree of acceptance at the classroom level may indicate more cooperation, more affiliation and more effort, a low degree of peer acceptance is likely to be accompanied by other negative factors, such as competitiveness, conflict, and social comparisons. Classes with a low degree of acceptance are moreover likely to be characterized by

poorer integration and poorer mutual support among the students.<sup>17</sup> This may create a greater tendency for students to experience feelings of social inadequacy. It can also increase the perceived threat of victimization and other social sanctions in the classroom.<sup>13,18</sup> Thus, a low overall degree of peer acceptance in the school class could constitute a source of stress, which in turn is known to increase the risk of health complaints.<sup>19</sup> The stress factor may also be the reason why the contextual effects of peer acceptance on health were visible only for girls. Previous studies indicate that there are sex differences in the importance of various stressors. For example, issues linked to relationships with peers and inclusion in social networks are more likely to create stress among girls. This appears to be a fundamental difference between sexes across the life course.<sup>20,21</sup> Furthermore, girls seem to respond more emotionally to the problems of others<sup>22</sup> and also have a greater tendency to blame themselves for peer problems.<sup>23</sup> Thus, compared to boys, girls may be more negatively influenced by a poor acceptance climate, regardless of whether they themselves are well-accepted by peers. Nevertheless, the cross-level interaction analysis showed that the harmful health effects of an overall low degree of peer acceptance were less pronounced among poorly accepted girls. There may be a statistical



explanation for this, because girls who report low peer acceptance already have comparatively high scores on the complaint scale (thus, the possible increase is restrained). This finding may also be interpreted in terms of poorly accepted girls feeling less stigmatized or “singled out” when being part of a school class where overall peer acceptance is low. On the other side of the coin, a low degree of peer acceptance in the school class may be accompanied by other indicators of a poorly functioning classroom climate, such as bullying and victimization, which may even (or perhaps particularly) pose a threat to the more well-accepted girls. In other words, when the stakes are high, the potential fall is even higher.

### Limitations

The data used in this study have several strengths. To begin with, the data come from a nationally representative sample of Swedish students in the 5th, 7th, and 9th grade. Furthermore, the 2-level structure made it possible to carry out multilevel analysis. However, the measures used in this study are based on students’ own perceptions of the context. The validity of subjective judgments has been intensively debated in the field of school-climate research and several potential problems should be highlighted. First of all, it has been suggested that negative affectivity may be a source of bias: self-reports from individuals who are predisposed to have a general negative view of the world are likely to be biased in a negative direction.<sup>24</sup> These individuals may perceive their peers as well as their own health more negatively, thereby causing an overestimation of the strength of the associations. Moreover, it has been argued that perceptions may actually not be accurate or at least that they may vary with regard to individual characteristics and nonshared background factors. However, whereas it is possible that perceptual data may be biased in various ways, the prevailing view is that actual circumstances are less important than self-reports because perception is what determines individuals’ responses.<sup>25</sup> For example, one study found that self-reports of acceptance by peers were more predictive of depression than objective measures, even when the reports were erroneous.<sup>26</sup>

Another point that needs to be recognized is the cross-sectional design of the data, which makes temporality of the relationship between the measurement variables difficult to establish. This may especially be the case for the association between peer acceptance and health complaints. Although results from studies of objective peer acceptance and health using longitudinal data are in line with the notion that peer acceptance influences health,<sup>27,28</sup> the reverse association cannot be dismissed. For example, a student who feels sad or has stomach ache may (consciously

or not) withdraw from his or her classmates and, as a consequence, experience a decrease in acceptance. At the school-class level, it is possible that a large proportion of students with poor health (possibly due to other school-related factors or selection processes) could have a generally negative influence on aspects of the classroom climate, including peer acceptance. Thus, although there are strong theoretical reasons for focusing on the impact of peer acceptance on health, these aspects are perhaps best seen as processes which are reciprocal and to some degree overlapping.

There are certainly other components of the classroom climate besides peer acceptance which could contribute to health differences between school classes. Factors at the school level, such as educational strategies, administrative organization, allocation of resources and parental involvement, are likely to influence the classroom climate.<sup>29</sup> Moreover, teacher strategies and work organization as well as other aspects of interaction patterns between students and between students and teachers are assumed to play an important role here. To explain the between-class differences in health, further research into these issues is needed.

### IMPLICATIONS FOR SCHOOL HEALTH

This study started out by highlighting the importance for all human beings of feeling accepted, liked, and appreciated by their peers. As the statistical analysis demonstrates, individuals who perceived themselves as less-accepted by their peers also reported more health complaints. In addition, health complaints among girls were more common in school classes characterized by a low degree of peer acceptance, something which suggests that an increased overall level of peer acceptance in the classroom context would be beneficial for the health of all students. Here, school staff and in particular the teachers play an important role in creating a tolerant climate. This may be achieved through the overarching norms and rules that guide what kind of social behavior that is accepted in the school setting.

On the contrary from what was expected, this study showed that poorly accepted girls seemed to gain somewhat from being a part of a class where the overall acceptance climate was low. This may be interpreted in terms of “safety in numbers”; the lack of acceptance may not be as difficult to cope with if many students share the similar experiences. Certainly, this does not suggest that a poor acceptance climate is desirable in any way but, rather, underlines the importance of eradicating class norms responsible for social stigma. While many existing school-based prevention programs already emphasize matters related to student interaction and school climate,<sup>30</sup> a deeper knowledge about the mechanisms linking school-class climate to

student health may further contribute to the ongoing development of such programs.

### Human Subjects Approval Statement

This study was deemed exempt from human subjects review by the Regional Ethical Review Board in Stockholm, Sweden.

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