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Immigrant Preadolescents and Risk of Emotional Distress

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Abstract

Background: The question of whether immigrants have more emotional problems than their non-immigrant peers has yielded mixed results. In Norway, there has been a tendency toward immigrant youth reporting higher rates of emotional problems. In addition to studying levels of emotional problems across those with immigrant backgrounds, there is a need to investigate whether the phenomenology of these problems is comparable across ethnic groups.
Objectives: We used latent class analysis (LCA) to identify subgroups of preadolescents with distinct types of emotional problems in a multiethnic sample in Norway and to investigate associations with immigrant status after controlling for other demographic and risk factors related to emotional problems.
Methods: Preadolescents between the ages of 10 and 12 years (n = 1042) completed a questionnaire that assessed emotional problems and sociodemographic factors such as gender, grade level, city, economic hardship, school hassles, and parental achievement values. LCA was used to identify subgroups of preadolescent emotional problems. Multinomial logistic regressions were conducted to assess the relationships between these subgroups and the presence of an immigrant background with four immigrant groups (all backgrounds, Pakistan, Turkey, and Sri Lanka). The reference group was the ethnic Norwegians.
Results: LCA identified three classes according to the severity of the problems; these were labeled healthy, borderline, and distressed. Multinomial logistic regression analyses found the presence of an immigrant background as compared with a non-immigrant background to increase the odds of a person belonging to the distressed class by an approximate factor of 2, depending on the immigrant group. This finding remained consistent after controlling for risk factors.
Conclusions: These findings suggest that, even as early as preadolescence, the presence of an immigrant background may significantly increase the odds of an individual belonging to a subgroup characterized by emotional distress (as compared with belonging to a healthy class). These findings also suggest similarity across ethnic backgrounds with regard to the expression of emotional problems during preadolescence. This is the first study to identify classes of emotional problems among specific preadolescent immigrant groups.

Keywords: internalizing symptoms, ethnic minority, latent class, gender

Background

Configurations of Emotional Symptoms across Ethnic Groups
Emotional problems can be expressed differently across cultures. It is well known that some types of diagnoses and symptom configurations are seemingly more abundant in specific ethno-cultural groups (1;2). An example is the "nerve attack" (ata-que de nervios in Spanish), which is found in Spanish and Hispanic communities but not in other populations (2). Although studies investigating group variations in the factor structure of mental health screening instruments are increasing (3), only a few studies have investigated whether certain ethnic groups are more likely to suffer from specific configurations of emotional symptoms, including related disorders

such as depression, anxiety, and somatization (4-6). It is important to address this research gap, because identifying which symptoms characterize depressive distress in different cultural groups may potentially aid diagnosis. In addition, it may also help with the identification of risk and protective factors for distinct symptom configurations.

Configurations can be studied by identifying distinct subgroups of people with characteristic patterns of emotional symptoms. For instance, Carragher and colleagues (4) found four subgroups based on reported depression in a nationally representative adult population in the United States: severely depressed, psychosomatic, cognitive-emotional, and non-depressed. Hispanics were significantly less likely to report psychosomatic symptoms as compared with their white counterparts, and Native Americans had a decreased risk of reporting depressive symptomatology. The researchers' interpretation was that these minority groups may embed protective aspects, because they report lower levels of depression despite more social adversity (4). Studies comparing immigrant and non-immigrant children and adolescents in terms of levels of emotional problems have yielded inconsistent findings (7;8). For example, adolescents from minority groups with physical appearances that generally differ from that of the dominant ethnic majority have been found to be more vulnerable to emotional problems in some studies (9-11) but not in others (12-14). Moreover, findings vary according to several factors, such as the specific ethnic minority group being studied, the country in which the group lives, and the group's age range (7). The reasons why an immigrant background may be related to more emotional problems have been attributed to minority-related stigma (15;16), characteristics of the family (e.g., low socioeconomic status, strong collectivistic values, more acculturative stress) (7), the presence of war in the environment (13;17), characteristics of the majority society (e.g., social education, integration policies, discrimination) (18;19).

In the research of the mental health of children and adolescents, studies investigating different configurations of emotional or underlying symptoms and diagnoses (including anxiety, mood, and somatoform disorders) are rare. As compared with adults, the comorbidity of emotional problems is higher among children and adolescents, both within emotional problems as well as between emotional problems and behavioral problems (20). The literature includes one study that identified different configurations of combined emotional and behavior symptoms and their risk factors (21), but no studies were found that identified subgroup configurations of isolated emotional symptoms (or underlying

symptoms or diagnoses) in a multi-ethnic young population. Subgroup-specific configurations of emotional problems should be investigated; they may be associated with potential risk and protective factors, and they may demonstrate whether specific ethnic groups are overrepresented in any type of configuration.

Different Ethnic Groups of Preadolescents in Norway
The main body of Scandinavian research concerning emotional problems among immigrant children and adolescents has been conducted in Norway and Sweden (7;8). This study focuses on the Norwegian context. Although the size of indigenous minority groups has been quite stable during the last 40 years in Norway, the size of immigrant minority groups has increased markedly during this period (22). Today, the largest groups of children of immigrants are from Pakistan (13%), Somalia (8%), and Vietnam (7%) (22). There has been particular concern about the mental health of non-Western immigrant students (23;24). These preadolescents are more likely to live in poorer neighborhoods, to attend schools that are more socioeconomically disadvantaged, to achieve lower grades on national examinations (25), and, for minority boys, to drop out of high school (26). By contrast, immigrant girls appear to be more likely to finish high school than their ethnic Norwegian peers (27).

Although the evidence involving emotional distress among immigrant adolescents in Norway is mixed, most studies suggest that immigrant youth are more likely to report higher levels of emotional problems than their ethnic Norwegian peers, although the magnitude of the difference in some studies is small (28). Other studies have stressed the differences in levels of emotional problems across ethnic minority groups (12;29;30). In a large-scale comparative study involving immigrant and non-immigrant youth in thirteen countries, immigrant youth in Norway scored around the grand mean for the total international sample and lower than the ethnic Norwegian reference sample (18). Still other investigators have focused on possible contextual factors in different societies (e.g., Norway and Sweden), which may have differing effects on emotional problems in immigrants from the same national background (19). The included studies have used mean symptom scores to assess the level of mental health problems; this may potentially hide variations in the structuring of symptoms. Identifying different configurations of emotional problem symptoms across different ethnic groups of youth in Norway may provide additional information about the heterogeneity of emotional problems in this group.

Theory-Driven Versus Data-Driven Configurations of Emotional Problems.

The common approach to studying configurations of emotional problems is theory driven. According to the theory, the types of symptoms and configurations of emotional problems (including emotional disorders) are already established before data analysis takes place. For instance, a researcher who is studying emotional disorders may wish to identify whether a specific ethnic group is more likely to endorse depressive versus anxious symptoms. However, the "subgroups" (e.g., anxious, depressed, somatizing) are established a priori and beforehand, in this case (31). By contrast, latent class analysis (LCA) is a data-driven approach in which configurations of emotional problems emerge from the available data. LCA identifies subgroups of people (also known as *classes*) that distinguish themselves in terms of symptom combinations (also called *configurations*), as well as subgroup-specific risk and protective factors. Among young populations, there is also the tendency to analyze emotional problems as one homogeneous phenomenon. LCA allows researchers to test this one-phenomenon assumption by allowing emotional symptoms to cluster into subgroups according to patterns of associations among variables that evolve from the sample (31).

In adults, all LCA studies involving emotional problems have found classes that are, to some degree, based on the severity of emotional problems (e.g., a "low levels of symptoms" class) (4-6;32). In addition, some LCA studies also define classes on the basis of the type of emotional problems (4;6;32). Copeland and colleagues (32) identified five subgroups with distinct configurations of common childhood psychosocial risks: two were low-risk subgroups (the no-risk class and the inter-parental problems class), two were moderate-risk subgroups (the uneducated/poor class, and the stepparent/crime class), and one was a high-risk group. High-risk youth had the highest levels of both emotional and behavioral disorders (32).

The aim of this study is to identify subgroups of children on the threshold of adolescence on the basis of their configuration of emotional problems. When focusing on immigrant-specific configurations, it is important to include variables that could confound the relationship between the emotional symptom classes and the immigrant groups. As such, it has been found that girls are more likely to report emotional problems, at least from puberty onward (7;38). Age is another implicated factor, because emotional problems increase from childhood to adolescence (7;34). Although some studies have shown that children who live in rural settings have lower levels of emotional problems than those who live in urban areas, overall findings are mixed (15).

Moreover, given the importance of school hassles (8;39-42) and parental achievement values for emotional problems in previous studies (42-44), we chose to also include them in this study. School is a major arena in the lives of children and adolescents, and some researchers point to minority parents as being highly invested in the school as a place for social mobility for their offspring in the majority society (42;45;46). As a measure of parental investment in filial school performance, parental achievement values have been associated with positive consequences for child emotional health in some studies (47-49) and with negative consequences in others (42;45;46).

It is important to know more about classes or configurations of emotional problems in young people, especially for immigrant groups in which mental health problems may be considered even more taboo than they are in the majority population. Emotional problems are still related to stigma in Western countries, and their lack of disruptiveness that involves others (as compared with behavioral problems) may contribute to the increased difficulty of identifying these problems in daily life and prolong the suffering of those affected. This study will thus investigate the following two questions:

1. Which types of classes of emotional problems emerge from a multiethnic preadolescent sample in Norway?
2. Is immigrant background (both of specific immigrant groups and in general) more likely to be represented in certain classes than in others?

Methods

Data Collection and Sample

Data was provided by the Youth Culture and Competence (YCC) study undertaken by the Norwegian Institute of Public Health and approved by the Regional Committee for Medical Research Ethics. During 2006 and 2007, the YCC invited preadolescents (age range, 10 to 12 years) from fourteen schools in Oslo and Bergen to participate in the first wave of the study. The proportion of immigrants in Bergen is 11%, which is equivalent to the national average; however, 27% of the population in Oslo is composed of immigrants (i.e., foreign born or Norwegian born with two foreign-born parents). The immigrants come from more than 200 mostly non-Western countries (22). There are a few ethnic enclaves in Norway, and immigrants tend to settle together in areas where housing prices are reasonable. Schools in these areas were targeted during the initial stage of recruitment for this study. In addition, children with Tamil (from Sri Lanka) and Turkish origins from other schools were recruited through collaboration with immigrant non-governmental organizations. Parents were informed of the YCC

study through the preadolescents' school or a non-governmental immigrant organization and asked to provide written informed consent.

The YCC questionnaire was completed by the preadolescents in their respective classrooms during two class hours. For those recruited through non-governmental immigrant organizations, the questionnaire completion was done after school hours. Research assistants were available, if needed, during data collection. Of the children invited, 1042 pre-adolescents in the fifth, sixth, and seventh grades participated in the YCC for a participation rate of 65%. Participants with two foreign-born parents and at least three grandparents born abroad were classified as being of immigrant background; they will be referred to as the *minority* from now on. Similarly, participants with two Norwegian-born parents and at least three Norwegian-born grandparents were classified as ethnic Norwegians; they will be referred to as the *majority* from now on. All preadolescents who were not classified as belonging to the categories "ethnic Norwegian" or "ethnic minority" were excluded from further analyses (9). This yielded a sample of 902 preadolescents who were evenly divided across age and gender.

Measures

Emotional problems were measured with the self-report questionnaire of the emotional problems subscale of the Strengths and Difficulties Questionnaire, Norwegian version (50). The emotional symptoms scale consists of five items that indicate symptoms of somatization, anxiety, and depression (α = 0.68; e.g., "I worry a lot," "I am often unhappy, depressed, or tearful"). Although, a sum score that range from 0 to 10 is typically computed (50), each item was kept separate in our analyses to identify how the different symptoms cluster. Gender (boys = 0, girls = 1), city (Bergen = 0, Oslo = 1), and ethnic status and background (majority group = 0, immigrant/specific immigrant group = 1,) were dichotomized. The three possible grade levels (fifth, sixth, and seventh) that we included in the analyses due to their being a proxy of age were used as dummy variables. The dummy variables were coded as follows: fifth grade (0 = sixth and seventh grades, 1 = fifth grade), sixth grade (0 = fifth and seventh grades, 1 = sixth grade), and seventh grade (0 = fifth and sixth grades, 1 = seventh grade).

School hassles were measured by five items from the General Everyday Hassles scale (8,40). Each question was rated on a scale ranging from 0 ("No, never") to 3 ("Yes, very often"), and then the sum of the rated scores was computed (α = 0.57; e.g., "I am afraid of not doing well enough at school," "Big problems in understanding the teacher when he/she is teaching"). Economic hardship was used as a

proxy for socioeconomic status and was measured with four items from the Adolescent Perceptions of Family Hardship scale (51): "How often do your parents argue with each other about not having enough money?," "How much do you argue with your parents about not having enough money?," "How much of a problem does your family have because your parents do not have enough money to buy things your family needs or wants?," and "How upset or worried are your parents because they do not have enough money?" (α = .65). All four economic hardship items were standardized, and a mean score was computed. The un-standardized scale, which consisted of the first two items, was used when reporting mean differences (α = .48); otherwise, the standardized scale was used. The first two items were rated on a scale that ranged from 1 ("Never") to 5 ("Always"), whereas the latter two items were rated on a scale that ranged from 1 ("Never") to 4 ("Very much").

The Parental Achievement Values scale measured how preadolescents perceived parental emphasis on achievement and was extracted from the Parental Pressure Questionnaire (52). Four items were rated with the use of a Likert scale that ranged from 1 ("Never") to 5 ("Always") (α = 0.70; e.g., "My parents think that doing well in school is very important," "My parents say that I should work hard at everything I do"). Parental achievement values were included because immigrant parents may emphasize their children's academic success more than non-immigrant parents do (25;43;45). This emphasis may in turn increase preadolescents' pressure to achieve academically and thus contribute to their emotional problems.

Analytic Strategy

Each emotional symptom indicator was included separately in the model to enable heterogeneity in terms of emotional symptoms in the data-driven subgroups. This allowed us to investigate whether certain subgroups of preadolescents were more likely to display distinct patterns of emotional problems than others. Covariates were not used to inform class enumeration, because research suggests this can lead to an overextraction of classes (31). The LCA was accomplished with the use of Mplus version 5, a statistical modeling program that can accommodate complex design methodology (53). Models with one to four classes were estimated to determine the optimal number of classes that best fit the data. With LCA, there are multiple statistical indicators of model fit. The choice of best-fitting model is achieved through a combination of statistical considerations, data, and theory. Both the bootstrapped parametric likelihood ratio test and the Lo-Mendell-Rubin likelihood ratio test assess the im-

provement in fit between competing models. A non-significant value ($P > .05$) suggests that the model with one class less provides a better fit to the data. The Bayesian information criterion (BIC) and the sample-size adjusted BIC (SSABIC) are goodness-of-fit measures that span competing models: the lowest value for each criterion indicates the best-fitting model. In this analysis, we chose the BIC and the Lo-Mendell-Rubin likelihood ratio test as our main indicators; they have been evaluated as the most reliable indicators for determining the number of latent classes (54). Finally, the best number of classes in terms of statistical fit indicators was assessed in terms of theoretical soundness.

The second part of the analyses consisted of examining how immigrant background (for all immigrants and for the three largest specific immigrant groups in the sample) predicted membership in the different classes. We also assessed whether gender, city, grade level, school hassles, economic hardship, and parental achievement values could distinguish among specific class memberships. For this purpose, we used the latent class variable obtained with Mplus to conduct a multinomial logistic regression with PASW Statistics 18 software version 18.0.0 (55). We conducted separate multinomial logistic regressions for each immigrant group: 1) all immigrants; 2) Pakistani background; 3) Turkish background; and 4) Tamil/Sri Lankan background. Ethnic Norwegians were the reference group for all four immigrant groups, and results were reported as odds ratios (ORs) with 95% confidence intervals.

Missing Data

The Mplus software uses a full information maximum likelihood estimation, which is a widely accepted way of handling missing data (56;57). The covariance coverage for all variables ranged from 97.2% to 99.1%, which was well above minimum threshold needed to establish adequate coverage (54). Four subjects were excluded from the analyses because their answers were missing in all indicators. Missing value analysis and an expectation–maximization algorithm were used to impute missing values for covariates with the use of PASW Statistics 18 (55).

Results

An overview of the sample is presented in Table 1, which shows that 47% of the sample had immigrant backgrounds. This means that minorities were over-represented in line with the recruitment strategy of the YCC. The largest minority groups were from Pakistan (14%), which was followed by Turkey (5%) and Sri Lanka (5%). Of those recruited through cultural centers, 18 preadolescents with Turkish backgrounds (40% of the Turkish sample) and 4 with Sri

Lankan (Tamil) backgrounds (9% of the Tamil sample) completed the questionnaire.

TABLE 1. Distribution of categorical variables included in the analyses (N = 898)

Factor	Categories	Frequency	Percentage
Gender	Boys	451	50.2
	Girls	447	49.8
Ethnic status	Immigrant	425	47.3
	Non-immigrant	473	52.7
National background	Norway	474	52.7
	Pakistan	129	14.4
	Turkey	45	5.0
	Sri Lanka	43	4.9
	Other (37 countries)	198	22.9
Grade level (approx. age)	Fifth grade (10 years old	269	30.0
	Sixth grade (11 years old)	336	37.4
	Seventh grade (12 years old)	293	32.6
City	Oslo	713	79.4
	Bergen	185	20.6
Location of data collection	Classroom	876	97.6
	Ethnic center	22	2.4
Immigrant generation	First generation	132	14.7
	Second generation	766	85.3
Latent classes	Healthy	423	47.1
	Borderline	298	33.2
	Distressed	177	19.7

Non-immigrant and ethnic Norwegian groups are identical

Significant immigrant versus non-immigrant differences were observed for all emotional symptoms as well as for school hassles and parental achievement values (Table 2). These were not found for economic hardship.

TABLE 2. Mean scores, standard deviations, and effect size of mean group differences

Variable	Immigrant Background Mean (SD)	Ethnic Majority Mean (SD)	Partial Eta-Squared
Somatic	.69 (.73)**	.55 (.71)	.01
Worries	.91 (.76)***	.63 (.71)	.03
Unhappy	.50 (.66)*	.39 (.62)	.01
Clingy	.87 (.72)**	.72 (.65)	.01
Afraid	.61 (.73)***	.42 (.62)	.02
School hassles	1.63 (.51)*	1.55 (.45)	.01
Parental achievement values	4.40 (.65)***	3.96 (.68)	.10
Economic hardship	1.21 (.41)	1.29 (.49)	.001

The five emotional problem symptoms are listed first in the table. Among all listed variables, only economic hardship showed no significant group difference. Partial eta-squared is the proportion of the variance in variables that is explained by immigrant background (as compared with ethnic majority background). *$P < .05$; **$P < .01$; ***$P < .001$.

Latent Class Analysis of Emotional Symptoms

The solutions with latent classes 1 through 4 were estimated and evaluated for fit indices, which are shown in Table 3. The solution with three latent classes had the best fit. It yielded the lowest BIC, SSABIC, Akaike information criterion, and log-

likelihood values while simultaneously maintaining significant Lo-Mendell-Rubin likelihood ratios and bootstrapped parameter likelihood values. Moreover, the three-class solution was theoretically sound, because the classes clearly indicated symp-

tom severity. The classes were accordingly denominated as "healthy," "borderline," and "distressed."

TABLE 3. Model fit indices for one to four class solutions of emotional symptoms (N = 889 preadolescents)

Model	Log-Likelihood	Bayesian Information Criterion/Sample-Size Adjusted Bayesian Information Criterion	Akaike Information Criterion	Entropy	Lo-Mendell-Rubin Likelihood	Boot-strapped Parameter Likelihood
One class	-4255	8578/8546	8530	-	-	-
Two classes	-3991	8125/8058	8024	**0.67**	0.000	0.00
Three classes	-3942	**8102/8000**	7984	0.62	**0.004**	**0.00**
Four classes	**-3928**	8149/8013	**7942**	0.66	0.110	0.07

Bold text indicates the best fit. The solution with three latent classes had best fit

Although the entropy (0.62) of the three-class solution was modest, the average diagonal values between the fitted classes and the class assignments suggest that the classifications of healthy (0.87) and distressed (0.90) were good (53). This means that those assigned to the healthy and distressed classes had a respective probability of 87% and 90% of actually belonging to their assigned classes. For the borderline class, the probability of correct classification assignment was lower (73%) than that of the two other classes.

Characteristics of the Classes
The healthy class comprised a group of children with few emotional problems and represented 47% of the sample (Figure 1). These preadolescents had the lowest probabilities of fully endorsing somatic complaints or worries (both 7%) and feeling unhappy (1%). The borderline class represented 33% of the total sample. The response patterns of these participants were characteristic of a partial endorsement of emotional symptoms. This class had moderate probabilities with regard to falling into the bottom quartile for emotional symptoms; these ranged from a probability of 44% of being afraid to a probability of 18% for being clingy. On a general basis, however, the borderline class had low probabilities of fully endorsing emotional symptoms, which ranged from 12% for somatic symptoms to 0% for being clingy.

The distressed class represented 20% of the total sample and had the highest probabilities for falling into the top quartile on all emotional symptoms; this ranged from a probability of 55% for being worried and clingy to a 29% probability of feeling unhappy. In light of these results, the main distinction of these classes was the severity rather than the type of emotional problem (i.e., depression vs. anxiety). Because the contrast between the distressed

and healthy subgroups is both clinically relevant and statistically robust (due to the lower probability of correct class assignment in the borderline subgroup), the next section focuses on the comparison between the distressed and healthy subgroups.

Predictors Associated With Each Class
Table 4 presents the OR estimates and confidence intervals for class membership in relation to predictors as derived with latent class multinomial logistic regression models. The OR indicates the estimated odds of belonging to the distressed class relative to the healthy class (the reference class).

TABLE 4. Odd ratios and confidence intervals for predictors comparing the distressed and healthy subgroups, controlled for risk factors

Distressed Versus Healthy Subgroup	Groups			
	All Immigrants vs. Ethnic Norwegians $R^2 = 0.16$	Pakistani Background vs. Ethnic Norwegians $R^2 = 0.19$	Turkish Background vs. Ethnic Norwegians $R^2 = 0.16$	Sri Lankan Background vs. Ethnic Norwegians $R^2 = 0.18$
Immigrant group vs. ethnic Norwegians	1.82** (1.18-2.81)	2.26* (1.18-4.34)	2.62* (1.02-6.68)	3.19* (1.25-8.15)
Girls vs. boys	2.22*** (1.49-3.31)	2.36*** (1.41-3.97)	2.68*** (1.53-4.70)	2.50** (1.42-4.38)
School hassles	2.54*** (2.07-3.13)	3.06*** (2.33-4.01)	2.51*** (1.90-3.33)	2.93*** (2.19-3.93)
Fifth and sixth grades vs. seventh grade	1.74* (1.05-2.88)	1.50 (0.79-2.83)	1.37 (0.69-2.70)	1.65 (0.81-3.34)
Economic hardship	1.25* (1.03-1.52)	1.20 (0.94-1.53)	1.18 (0.92-1.51)	1.18 (0.92-1.51)

Predictors implicated in distinguishing between the distressed and healthy classes are similar in the three largest immigrant groups. City, parental achievement values, and the other dummy variables for grade level (fifth and seventh grades) did not reach significance in any of the immigrant group comparisons and were excluded from the table. Significance was vertically tested within groups. *P < .05; **P < .01; ***P < 0.001
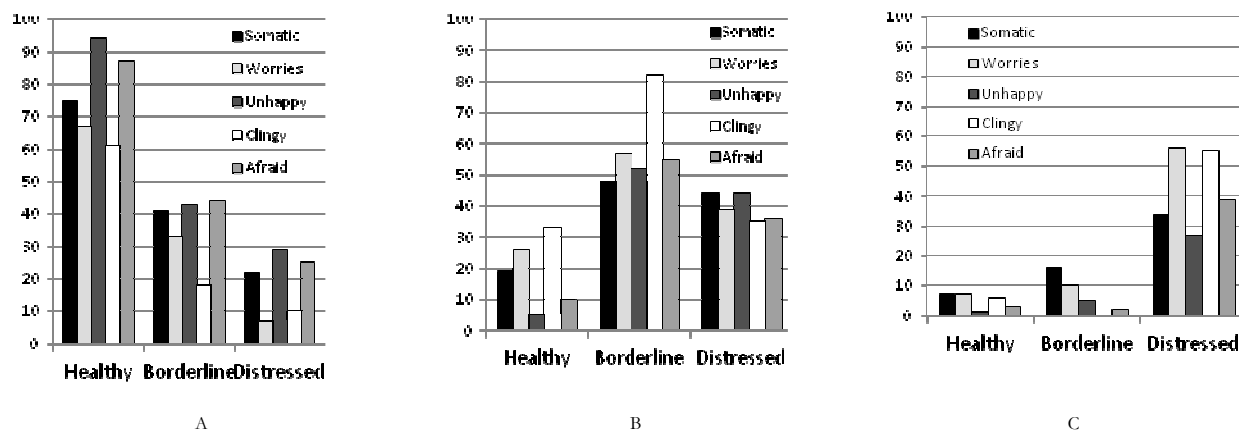
Figure 1. Class probability of endorsing each of the three alternatives ("Not true", "Partly true, and "Not true at all") for each of the five emotional symptoms.
A, Probability of symptom absence. **B,** Probability of some symptom presence. **C,** Probability of strong symptom presence

When collapsing a population as heterogeneous immigrants into one group, the question of whether findings are representative across immigrant groups arises. Accordingly, findings were tested across the three largest national groups in the sample (those with Pakistani, Turkish, and Sri Lankan backgrounds), whereas ethnic Norwegians were kept as the reference group. As seen in Table 4, analyses of specific minority groups are coherent in terms of OR sizes and the statistical significance of values with findings that apply to immigrant groups in general, with two exceptions. These exceptions are grade level and economic hardship, which are only significant in the collapsed immigrant group. The reason seems to be the small sample sizes of the separate immigrant groups. Apart from these exceptions, immigrant-group–specific findings support the results.

The effect of immigrant background on membership in the distressed class as compared with the healthy class remained quite stable in the ORs that were not adjusted for other factors (Figure 2). The ORs adjusted for ethnic background as it relates to distressed latent class membership are presented in Table 3 after having been adjusted for gender, grade level, economic hardship, school hassles, city, and parental achievement values. The significance of ORs was calculated vertically in Table 3 in four vertically adjusted models (i.e., all immigrants, Pakistani immigrants, Turkish immigrants, and Sri Lankan immigrants).

Briefly, the main findings were as follows: 1) minority preadolescents are about twice as likely as ethnic Norwegians preadolescents to belong to the distressed class as compared with the healthy class; 2) school hassles increase the odds of belonging to the distressed subgroup by about 2.5 times; and 3) these results were robust across three specific immi-

grant groups in the sample: those from Pakistan, those from Turkey, and those from Sri Lanka.
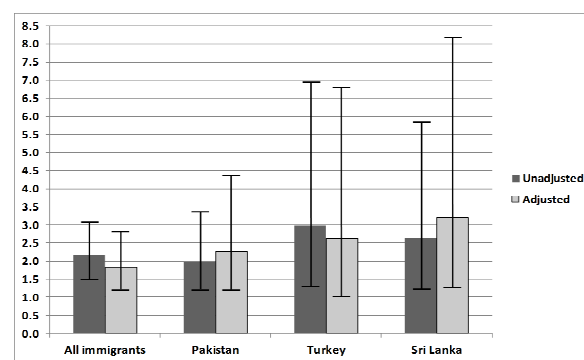
Figure 2. Odd ratios and confidence intervals for membership in the distressed class as compared with the healthy class for different immigrant groups

Discussion

The identification of the healthy, borderline, and emotionally distressed classes implies that there are primarily quantitative rather than qualitative differences in emotional problems, at least when they are measured by the emotional symptoms scale during preadolescence. This finding also suggests that the expression of emotional problems may be similar across ethnic status. However, it is possible that there would be different latent classes with an older sample, because emotional problems tend to differentiate during adolescence and adulthood from emotional problems into more specific depression, anxiety, or both. Hence, this is a relevant question to investigate in future studies.

The classes found in this study are in line with comparable LCA studies of adults that have found classes based on the severity of the emotional symptoms or disorders being investigated (4-6). In addi-

tion to severity, some of these studies have found specific classes on the basis of the type of symptoms (4;6). LCA studies of children's emotional problems and disorders are scarce, although a recent study did investigate depressed mood among adolescent psychiatric outpatients (58). There are also LCA studies related to children's emotional problems, such as adolescent life events and post-traumatic stress disorder (58), as well as to psychosocial risks and psychiatric disorders (32;60). Many of the identified classes in these studies were characterized by symptom severity, as they were in the present study. In addition, at least one of the classes in these other studies was characterized by symptom type; this did not occur in the present study. This contrast may be a result of the measure used to identify emotional problems in the present study not being sensitive enough to distinguish between classes, or it may be because the other LCA child studies were not truly comparable to the present study (i.e., because of different phenomena being investigated or the psychiatric sample).

The effects of school hassles and economic hardship appear to be rather consistent in terms of ORs across immigrant groups. This suggests that children of immigrants -- and probably those of non-Western immigrants in particular -- may be prone to similar risks for emotional problems. The causes of these risks are unknown at this stage, although they may be associated with lower socioeconomic status, physical salience from the majority phenotype predisposing these individuals to discrimination, a larger strain on the family due to reduced social network, and lower parental understanding of the resources available in the society and of guiding their children into the majority institutional system, including schools (7;28). The factors involved in these risks raise important questions for future studies.

These findings suggest that during preadolescence, ethnic immigrant minorities are about twice as likely to be among the most emotionally distressed preadolescents. This may have important implications, because emotional problems are often silent, non-disruptive, and likely to go unnoticed by teachers and parents (61). Even when parents and teachers do notice emotional problems, teachers may underreport these problems in minority children as compared with majority children (62). Among traditional non-Western groups with low socioeconomic statuses, there are high levels of stigma concerning mental health issues (63;64). The relatively low likelihood of preadolescents with emotional problems getting help, which is even lower among children of immigrants, calls for special attention from teachers, parents, and other health care workers who are in contact with preadolescents in Norway.

Limitations

This study provides a relevant contribution to the research on immigrant mental health in Scandinavia, but it has some limitations. First, the outcome of emotional problems and risk factors in terms of school hassles and parental achievement values were measured at the same time. This causes uncertainty regarding whether risk factors in fact temporally preceded emotional problems. The heightened odds of children of immigrants belonging to the distressed class may be the result of unknown factors that were not accounted for in the present study. Second, this study relies only on self-reports from preadolescents, whereas other sources (e.g., parents, teachers) could have provided additional information about the latent classes of emotional problems among preadolescents. Third, we cannot be sure that the same phenomena are underlying the emotional symptoms reported by both children of immigrants and children of non-immigrants. Children of immigrants may report more extreme values, but this does not imply that these values reflect more severe problems. In addition, language problems may influence the reports of immigrant preadolescents, because the questionnaire was administered in Norwegian. Fourth, the sample is not fully representative of the population at either the national level or the municipal level. A sample size of 43 (the size of the Sri Lankan immigrant sample in this study) is small, so we must be cautious before extrapolating conclusions from the sample. Furthermore, these immigrant populations are not ethnically homogeneous. For instance, the Turkish population in Norway consists of a Kurdish ethnic minority. These examples support the need for more knowledge of the emotional health of these groups; however, this study serves as a foundation for and contribution to such studies. It should also be noted that the sample was recruited from urban settings and thus the present results could differ substantially from those obtained in rural areas (37). In addition, factors such as family structure, support, and the ethnic composition of schools and neighborhoods may influence mental health (7;8;28). These variables are not included in the present study.

Alternatively, this study does have some noteworthy strengths. Young immigrants are rarely addressed in LCA studies of emotional problems, if they are represented at all. By contrast, this study employed a sample that included 47% of participants with immigrant backgrounds. Although the size of some immigrant groups was too small to examine separately, conclusions could be drawn for the three largest immigrant groups in the sample. It is important that mental health research includes a diversity of persons, including immigrants, who represent a substantial and growing segment of the

country's population. Researchers who study minorities face additional challenges as compared with peers who do not study a specific population. These include recruitment issues such as translation fees, persuading immigrant parents of the importance and voluntary nature of participating in mental health surveys, and ethical concerns related to potentially stigmatizing findings. These challenges certainly add difficulty to the attaining of knowledge about the mental health of immigrants, but they surely do not alter the importance of including these groups in mental health research. Despite the sole reliance on self-reports being a limitation of this study, self-reports may indeed be the best option for attaining information about preadolescents' emotional problems if only one source can be used (i.e., either teacher report, parent report, or self-report from the preadolescent himself or herself) (61;65;66). However, there are exceptions (67).

Although it may be questioned whether the findings from the current study are nationally representative, they do suggest that certain immigrant preadolescents in multi-ethnic urban neighborhoods in Norway have higher odds of being emotionally distressed. In addition, these findings are supported by other studies of adolescents in Norway (27), although there are some exceptions (14;68). The participation rate appears to have been higher for the ethnic majority in this study, which indicates that a higher rate of participation among immigrants could possibly inflate the latter group's emotional problem scores. This is because non-participation tends to be more common among the most distressed participants, who have a higher likelihood of not attending school during data collection and of not delivering consent forms to parents and teachers (69). When comparing the magnitude of immigrant and non-immigrant ORs of belonging to the distressed class as compared with the healthy class, the clinical relevance of this study is substantial. However, it should be noted that there is substantial variability in the immigrant sample, because the ORs of emotional symptoms in the total immigrant group are lower than those of the three specific immigrant groups. This indicates that, in the adjusted model, the three specific groups are among the most emotionally distressed immigrant groups in the sample. In the unadjusted model, ORs for the total immigrant group seem to reflect the fluctuations in the ORs of the three specific immigrant groups (see Figure 2). In addition, this study's findings indicate that the silent burden of emotional problems may already be more prominent during preadolescence among immigrants and their children than among non-immigrant children in urban multi-ethnic schools. The present results and analysis suggest that future studies should investigate the possible

mechanisms implicated in this overrepresentation of children of immigrants among the emotionally distressed. Meanwhile, parents, teachers, and others who work with preadolescents should join forces with researchers to formulate hypotheses regarding the possible reasons that immigrant preadolescents from as different backgrounds such as Pakistan, Turkey, and Sri Lanka demonstrate a profile of emotional problems and related factors that is so similar compared to non-immigrant preadolescents. In addition, parents, teachers, and health care workers who routinely interact with preadolescents should remain attentive so that they can recognize and advocate for those children who suffer with this silent burden.

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