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Ethnic density in school classes and adolescent mental health

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Abstract

Objective The present study set out to examine the association between ethnic composition of school classes and prevalence of internalising and externalising problem behaviour among ethnic minority and majority students.

Methods Data were derived from the Dutch 2002 Health Behaviour in School-aged Children (HBSC) survey, a nationally representative cross-sectional study with a total of 5,730 adolescents, aged 11–18 and attending secondary school, of which 931 belong to ethnic minority groups. The data were analysed using a multilevel regression model.

Results The study revealed that, after taking individual characteristics like age, gender, educational level and family affluence into account, ethnic minority students on average report higher levels of externalising but not internalising problems. Ethnic density on the level of school classes modified this difference, as a negative association between the proportion ethnic minority students in class and externalising problem behaviour was found, but only for ethnic minority students. No effect of ethnic composition was found with respect to internalising problem behaviour.

Conclusion The data revealed that ethnic minority students report higher levels of externalising problem behaviour, but only in classes with a minority of ethnic minority students and not in classes with a culturally diverse

composition. This points towards a possible beneficial effect of a more culturally diverse environment for minority students. Majority students appeared to be insensitive for the ethnic density effect. Future studies should investigate the role of the ethnic composition of the school class more in-depth.

Keywords Internalising problems · Externalising problems · Ethnic density · School-related context · Multilevel

Introduction

The multicultural society is a much-debated topic in contemporary Western Europe. The challenge to accommodate large numbers of immigrants with a variety of cultural and religious backgrounds has received a great deal of attention in politics, media and science. With respect to the psychological well-being of immigrant and ethnic minority adolescents, the number of large scale studies in Europe is limited [3, 14, 28–30]. Furthermore, little attention is paid to the relation between contextual factors and mental health among these adolescents. The central question in the present study was whether the presence of other ethnic minority youth in the direct social context is related to the prevalence of internalising and externalising problem behaviour among ethnic minority students.

Several studies have revealed that ethnic minority youth in the Netherlands is at higher risk for the development of internalising and externalising problems [18, 24, 31]. However, as several studies on the ethnic density effect have successfully argued, the use of ethnicity as a risk factor confounds ethnic group membership with minority status [20]. The ethnic density hypothesis suggests that

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there is a negative correlation between the incidence of mental illness and the size of an ethnic group relative to the total population [4, 10, 23]. This hypothesis is based on the assumption that living among members of one's own ethnic group can work as a buffer against some of the negative influences related to being a member of a minority group. One may feel more accepted and secure, and experience a stronger support network in an environment that includes a sufficient number of other in-group members. A more general form of this hypothesis has been put forward by some authors [11, 36], who stated this could be a 'group density' rather than an 'ethnic density' effect, since evidence has been found for similar effects of characteristics other than ethnicity, given that these group characteristics are experienced as important. For example, group density effects have been found for religious affiliation [6, 25] and occupational grouping [36].

The ethnic density effect has mainly been studied in terms of the ethnic composition of neighbourhoods. Overall, studies on the effect of ethnic density largely confirm the hypothesis that the risk of developing mental health problems in ethnic minorities decreases when the proportion of ethnic minorities in the neighbourhood increases [5, 10, 15, 17, 19, 20, 23, 32] while for majority members the reverse effect is found, i.e. their risk increases as the proportion ethnic minorities increases. Results of the early study of Farris and Dunham [10], conducted in the United States showed that while whites in general had lower psychiatric admission rates than blacks, the opposite was true in a largely black neighbourhood. In this area, with an extremely high concentration of black people, the admission rates of whites were unusually high while at the same time the admission rates of blacks were below average. These results were confirmed by several other studies in the United States [15, 17, 23]. Research on the incidence of schizophrenia [5], deliberate self-harm [20] and suicide rates [19] among ethnic minorities in London also showed an effect of ethnic density, as well as a recent study on the incidence of schizophrenia in the city of The Hague, the Netherlands [32]. In the study of Boydell et al. [5], ethnic density was conceptualised as minority density, rather than specific ethnic density, thus underlining the assumption that the notion of similarity within more encompassing groups (like non-Western migrants) may be more important than the exact matching of ethnic groups.

Closer inspection of studies revealed that the level at which the density effect is measured is crucial. A national study in the United Kingdom [7] for example showed no association between the proportion of an ethnic minority living in a particular area and their rates of admission for mental illness. However, as suggested by Halpern [11], this could be due to the level at which the effect of ethnic density has been analysed. In all of the previous studies the

area of analysis was relatively small compared to the study of Cochrane and Bal [7]. Minority members may be distributed unevenly within an area and it is likely that it is especially ethnic density in the direct environment of the person that plays a role in the development and prevalence of mental health problems.

With respect to density effects among adolescents, only few studies have addressed the role of neighbourhood ethnic composition as a relevant factor. For example, Wickrama et al. [38] note that relatively few studies have investigated how factors at different levels (i.e. community, family, race) influence mental health and that research has mainly focussed on economic deprivation of the neighbourhood, rather than other aspects of the social environment. In their study among black adolescents (aged 12–19) in the US, they found that risks of mental distress declined as the ethnic diversity of the community increased, thereby supporting the ethnic density hypothesis. Furthermore, Sampson et al. [26] report a large reduction in risk of perpetrating violence among young adults (aged 18–25) living in neighbourhoods with high versus low concentrations of immigrants, defined as foreign-born residents.

Hence, previous studies on the effect of ethnic density have predominantly focussed on adults rather than adolescents, and have generally taken the neighbourhood as a unit of analysis. In research on the mental health of adolescents, it makes sense to examine the role of the school context, assuming that it is the direct environment of the person that matters. Early and middle adolescents generally spend a large proportion of their time in their classes at school. For example, schools in the Netherlands are obliged to provide at least 1,040 h of class hours on a yearly basis, which averages over 26 h a week when excluding holidays. Additionally, there is much variation in the ethnic composition of schools and school classes. Therefore, the current research set out to examine the possible moderating role of the ethnic composition of school classes in the prevalence of internalising and externalising problem behaviour of ethnic minority and majority students.

The effect of ethnic composition of schools and school classes has been studied with respect to a variety of outcomes, such as well-being at school [21], racist victimisation [34] and alcohol use [2, 16]. In general, these studies find moderating effects for these outcomes, revealing different reactions in majority and minority students that are supportive of the above-mentioned density effects. In their research in Dutch secondary education, Peetsma et al. [21] found that both Dutch majority and ethnic minority students in ethnically mixed classes reported greater well-being at school than students in more homogeneous classes. Verkuyten and Thijs [34] found that for Dutch children (i.e. the majority), a higher proportion of Dutch students

was related to less perceived racist group victimisation among the majority, while it related to more perceived racist victimisation for Turkish and Moroccan children (i.e. ethnic minority groups). Finally, the study by Monshouwer et al. [16] revealed an association between the ethnic composition of the school and alcohol use, but only in interaction with minority status. Ethnic minority students attending schools with a substantial proportion of minorities (10–30%) had less risk of episodic heavy drinking.

Surprisingly, to our knowledge, no study so far addressed the question whether the ethnic composition of school classes influences students' mental health. Hence, the current study aims to add to the knowledge on density effects and mental health by focussing on its importance in the school context of ethnic minority youth. Following the approach of Boydell et al. [5], and considering the large ethnic diversity in classes, we take into account minority status rather than ethnicity. In the present study we focus on the minority status, distinguishing between the dominant majority and (non-Western) minority groups.

Method

Sample and data collection

In 2001/2002, the Netherlands participated in the Health Behaviour in School-aged Children Survey (HBSC), a large cross-national study on health in children and adolescents. In HBSC, a two-stage random sampling frame is used, which is described in the international protocol of the HBSC study [9]. First, out of a list of all schools for secondary education in the Netherlands (a total of 587 schools, excluding schools for special education), a random sample of schools was selected proportionally within urbanisation strata. The response rate at the school level was 45% and this resulted in a total sample of 66 schools. Non-response could mainly be attributed to a lack of time (42%) or other research already going on in the school (37%). Schools in the most urbanised regions were somewhat less likely to participate. As argued by Vollebergh et al. [35] this is understandable due to the fact that universities in the Netherlands are situated in the most urbanised regions of the country and hence it is more likely that research is going on in these areas. No other differences between participating and non-participating schools were found. Within the schools for secondary education, from a list of all classes, one class per grade was randomly selected for participation. Only the first four grades of secondary education were selected. Within each class, all pupils were asked to participate. The response rate of children within the schools was 95%. Absence of children during the data collection was primarily due to sick leave. This procedure

finally resulted in a total sample of 5,730 pupils from the first 4 years of secondary education.

Measures

Internalising and externalising problem behaviour of pupils was measured using the Youth Self-Report [1]. The YSR is a questionnaire designed to be completed by adolescents, ages 11–18 years, and contains a total of 101 problem items. These items are scored as follows: 0 = not present, 1 = somewhat or sometimes true, 2 = very true or often true, on the basis of the preceding 6 months. The YSR can be scored on the total problem scale, the sum of all problem scales and eight syndrome scales. This research focusses only on the broad dimensions of internalising and externalising problem behaviour, each consisting of the sum of all items in respectively three and two syndrome scales. The dimension of internalising problem behaviour consists of the scales, Withdrawn, Somatic Complaints and Anxious/Depressed. The externalising problem behaviour consists of the scales, Delinquent Behaviour and Aggressive Behaviour. The reliability and validity of the YSR are documented by Achenbach [1] and translated and validated for the Netherlands by Verhulst et al. [33]. In the current sample, the scales of internalising and externalising problem behaviour displayed a satisfactory internal consistency, with Cronbach's α of respectively 0.891 and 0.862 for the Dutch majority group and 0.890 and 0.867 for the ethnic minority students.

Minority status was assessed by asking the pupils to indicate their own and both of their parents' country of birth. Those reporting that either she/he or one of his/her parents was born in a foreign country belonging to the category of non-Western nations were scored as non-Western minorities, according to the Dutch definition [27]. The ethnic background of these minorities varied. In the total sample (including majority students), 2.9% were Turkish, 3.4% Moroccan, 3.6% Surinamese and 1.1% Antilleans, which together represent the four major non-Western immigrant groups in the Netherlands. Additionally, 5.4% came from a large number of other non-industrialised countries.

Furthermore, as a measure of ethnic density, the proportion of pupils in class with ethnic minority status was calculated. Table 1 shows the distribution of students over classes with different proportions of minority students.

Finally, individual level variables were added for gender, age, educational level, family affluence and class size. For gender, a dummy variable was used with 0 = male and 1 = female. Age ranged from 11 to 18 ($M = 13.9$, $SD = 2.10$). In the Netherlands, pupils are on average 12 years of age when they start secondary education, and 16 years old by the end of the fourth grade. However, as pupils

Table 1 Distribution of students over classes varying in the proportion minority students

	Proportion <0.10	Proportion 0.10–0.30	Proportion 0.30–0.50	Proportion 0.50–0.70	Proportion 0.70–0.90	Proportion >0.90
<i>N</i> majority	2,703	1,427	298	80	36	3
<i>N</i> minority	109	278	189	98	136	121
Total <i>N</i>	2,812	1,705	487	178	172	124

may have skipped a grade in primary school or repeated a year in either primary school or high school, the sample includes also 11- and 18-year-olds. It should be noted though that the number of students in these age categories is neglectable. Education level was assessed by asking the pupils about the type of school they were enrolled in. Considering the Dutch educational system the possible answers ranged from lower general secondary education (1) to the highest level of secondary school (7). A higher score indicates a higher level of education. Class size refers to the number of students in class. Family wealth is assessed with the Family Affluence Scale (FAS) that is specifically developed for use in research on adolescents, as it is difficult to assess parental occupation or family income through the eyes of children. The FAS consists of four questions reporting on the presence of material goods in the family: number of cars, pupil having a bedroom of his/her own, number of computers in the home and number of times per year the family goes on holiday. The FAS has been validated in earlier research [8].

Missing values

To minimise non-response on problem scores of the YSR, regression imputation was used to estimate missing values. This was done only for pupils who had 8 or less missing on all 101 items of the YSR, as this is considered a maximum number of missing items for computation of a total problem score [33]. This resulted in a final sample of 4,563 respondents ($N_{\text{majority}} = 3,790$, $N_{\text{minority}} = 773$).

Data analysis

By using the SPSS Mixed modelling procedure, we examined two types of effects. First, the random effect of minority status—that is, does the relation between minority status and problem behaviour differ between classes. Second, we examined class and individual fixed effects—that is, does the proportion of minority students in classes make these students differ in their level of internalising and externalising problem behaviour, when controlling for individual-level factors. Hence, a multilevel regression analysis was carried out to test for cross-level interactions between ethnic minority status at the individual level and the proportion of ethnic minority students at the class level.

Results

Since the data file has a hierarchical structure, preliminary to our analysis it was examined whether there is any variation at the class-level. An intercept-only model with only the student level was compared to an intercept-only model with two levels, including the class level. For both internalising and externalising problem behaviour, the two-level model fitted the data significantly better (internalising $\chi^2(1) = 42.26$, $P = 0.000$, externalising $\chi^2(1) = 93.14$, $P = 0.000$), indicating that next to variation at the individual level, also class level variation exists. The intra-class-correlation of 0.039 for internalising problem behaviour is rather low, and somewhat higher for externalising problem behaviour (0.061). The intraclass correlation refers to the expected correlation between two randomly chosen students within the same class [13]. The multilevel regression models of internalising and externalising problem behaviour without covariates both showed a significant random effect of ethnic minority status (internalising $\chi^2(1) = 4.324$, $P = 0.04$, externalising $\chi^2(1) = 9.676$, $P = 0.002$), indicating that minority students differ between classes with respect to their levels of internalising and externalising problem behaviour.

Table 2 shows the effects of the explanatory variables on the two dimensions of problem behaviour at individual and class level. No difference is found between the Dutch majority and ethnic minority students with respect to their level of internalising problem behaviour. However, we do find a significant positive relation between ethnic minority status and externalising problem behaviour. Hence, ethnic minority students on average report higher levels of externalising problem behaviour, even when we take into account other factors such as age, sex, educational level and class size.

In the next step, cross-level interactions between minority status and the proportion of minority students in class were tested. With respect to internalising problem behaviour, we did not find evidence for a moderating effect of ethnic composition. The earlier reported random effect of minority status could not be attributed to differences in the proportion of minority students in class ($\chi^2(1) = 0.832$, $P = 0.181$). However, with respect to the level of externalising problem behaviour, we did find a significant negative interaction between ethnic minority status at the

Table 2 Multilevel regression analyses on internalising and externalising problem behaviour

	Internalising problem behaviour		Externalising problem behaviour		
	Model 1	Model 2	Model 1	Model 2	Model 3
Fixed part predictor					
Intercept	4.728 (1.936)*	4.634 (1.939)*	1.213 (1.814)	1.064 (1.809)	7.588 (1.881)**
Ethnic minority status	0.521 (0.412)	0.895 (0.596)	1.002 (0.420)**	1.915 (0.601)**	1.872 (0.583)**
Proportion minority students	0.711 (0.848)	1.281 (1.078)	−0.119 (0.843)	0.983 (0.994)	0.648 (0.988)
Minority status × proportion		−1.377 (1.596)		−3.469 (1.641)*	−3.163 (1.584)*
Class atmosphere					
Female	3.968 (0.241)***	3.973 (0.241)***	−0.682 (0.219)**	−0.673 (0.219)**	−0.655 (0.216)**
Age	0.239 (0.109)*	0.238 (0.109)*	0.710 (0.102)***	0.707 (0.101)***	0.624 (0.099)***
Educational level	−0.336 (0.072)***	−0.334 (0.072)***	−0.380 (0.068)***	−0.376 (0.068)***	−0.350 (0.066)***
Family affluence	−1.328 (0.188)***	−1.340 (0.189)***	0.132 (0.171)	0.111 (0.121)	0.198 (0.170)
Class size	0.017 (0.038)	0.020 (0.038)	0.086 (0.036)*	0.089 (0.036)**	0.091 (0.035)**
Random part					
Variance intercept	62.163 (1.365)	62.171 (1.365)	50.556 (1.120)	50.602 (1.121)	49.675 (1.102)
Variance class level	1.363 (0.505)	1.359 (0.503)	1.391 (0.438)	1.358 (0.432)	1.243 (0.417)
Slope variance minority status	3.176 (2.883)	2.946 (2.855)	8.841 (3.486)	7.803 (3.352)	7.093 (3.142)
Covariance	0.671 (1.011)	0.724 (1.010)	0.439 (0.948)	0.503 (0.920)	−0.193 (0.890)
Deviance	31837.828	31837.090	30962.180	30957.814	30795.266

Coefficients are unstandardized. Standard errors are reported between parentheses

* $P < 0.05$, ** $P < 0.01$, *** $P < 0.001$

individual level and the proportion of ethnic minorities at the class level ($\chi^2(1) = 4.366$, $P = 0.04$). Since the function of ethnic density may not automatically be assumed to be linear, a quadratic term was added to the model. However, this did not significantly improve the model fit ($\chi^2(1) = 0.857$, $P = 0.178$). Examining the interaction effect, as displayed in Fig. 1, we find that as minority students constitute a smaller proportion in class, on average they report a higher level of externalising problem behaviour. As the proportion increases, their level of problem behaviour draws closer to that of the Dutch majority students, with equal levels reached when approximately two-third of the class is of foreign, non-Western descent. The level of problem behaviour of Dutch majority students is not related to the ethnic composition of the class. Hence, an increase in the number of minority students in class does not lead to higher levels of problem behaviour among the majority students. In sum, the analysis revealed that as the proportion of ethnic minority students in a given class increases, the level of externalising but not of internalising problem behaviour of minority students decreases. With respect to the explained variance, we find that the regression model of externalising problem behaviour including the interaction effect has an R^2 of 0.39, indicating that almost 40% of the variance at the class level is explained by this model.

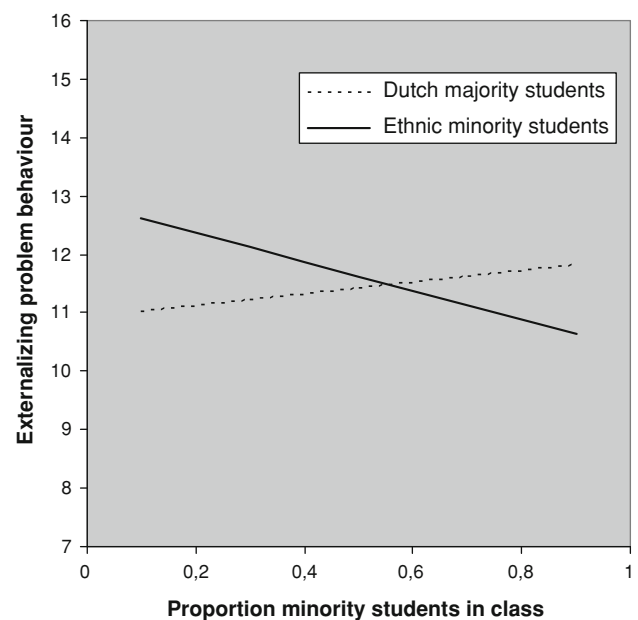


Fig. 1 The effect of class ethnic composition on Dutch majority and ethnic minority students' externalising problem behaviour

Discussion

In this study the 'ethnic density hypothesis' is confirmed with respect to externalising problem behaviour among

adolescents. On average, ethnic minority students report higher levels of externalising problem behaviour than Dutch majority students, but this difference decreases with increasing numbers of other minority students in class. When minority students constitute about two-third of the class, their level of problem behaviour equals that of the Dutch majority group. For Dutch students, no effect is found of the proportion of minority students in class. With respect to internalising problem behaviour, no ethnic density effects were found. The proportion of minority students in class is not related to the level of internalising problem behaviour of either ethnic minority or Dutch majority students. Furthermore, both groups do not differ with respect to their average level of internalising problem behaviour.

It is important to notice that these effects were found while controlling for a large number of individual level variables. In line with former studies, we found that girls are more inclined to reveal internalising problems, while boys are at higher risk for reporting externalising problems. Internalising problems, but in particular externalising problems tend to grow with age. Pupils in the lower educational strata furthermore are more inclined to report both internalising and externalising problems. Likewise, the level of family affluence has a strong effect on internalising problems, adolescents from more affluent families reporting less internalising problems. In addition to these well-known effects, ethnic minority students report higher levels of externalising problems but only when they belong to school-classes where Dutch autochthonous students are in the majority. Thus, the increased risk attributed to a non-Western ethnic background appears to be explained by minority status more than by the ethnic background as such.

It should be noted that whereas we find our hypothesis on the ethnic density effect confirmed for externalising problem behaviour, no effect of the proportion of minority students in class on internalising problem behaviour has been found. This result can be considered rather surprising. It suggests that externalising problem behaviour may be more susceptible to social influences and change according to differences in the social context. The conclusion might be that among migrant youth, externalising problem behaviour, such as aggressive behaviour, is evoked only in situations where they are also in a minority position and not or less so in a social context that is characterised by cultural diversity. This can be considered in line with the results of the study by Monshouwer et al. [16], who observed that a culturally diverse school composition with a majority of ethnic minority students tends to lower alcohol consumption of students, but only in those with a minority background. Hence, they concluded that, within a school-context, peer modelling and reinforcement mechanisms can affect individual students' alcohol use.

Aggressive and delinquent behaviour as well appear to be susceptible to social norms and peer influence. With respect to anxiety, depression, and somatic complaints, norms and peer pressure are less likely to have such an impact. In addition, the fact that the density effect was controlled for individual background characteristics may explain its insignificance for internalising problems. Henderson et al. [12] found a significant ethnic density effect on depressive symptoms (internalising) in a population sample, but once individual socioeconomic characteristics were taken into account, the significance of neighbourhood characteristics or ethnic density effects disappeared.

Strengths and limitations

In our study, the density effect is operationalised in terms of minority status rather than ethnicity. Students in our sample come from different ethnic backgrounds, a considerable part of them belonging to four of the major ethnic minority groups in the Netherlands (i.e. Turks, Moroccans, Surinamese and Antilleans), but also a relatively large group coming from a large variety of other non-Western countries. However, we cannot assume that relations between different groups are always good, namely, inter-ethnic tensions between minority groups may exist and may complicate the interpretation of our findings. On the other hand, all these minorities share the common characteristic that they do not belong to the ethnic Dutch majority and are culturally different from this group. Being 'allochthonous' (the Dutch term for being of non-Dutch and non-Western origins) often means sharing a relatively marginalised position in Dutch society, revealed by relatively low educational accomplishment and relatively high unemployment rates for migrant youth in the Netherlands [27]. Similarity in this respect may outweigh the match in specific ethnic background, as other authors have also argued [20]. It is possible to argue that only the presence of members of one's own ethnic group may result in more intimate or supportive relations and can increase feelings of acceptance, but it seems equally likely that the presence of other minority students that are not necessarily of the same ethnic group may increase tolerance and acceptance of diversity in general, and of minority students in particular for all students in class.

Regarding the measurement of ethnicity, there are some limitations to the way in which minority status was ascribed in this research. We used the official Dutch definition for non-Western immigrants [27], which includes both first and second-generation immigrants from non-Western countries. Although at this point the third generation in general has not yet reached high school age, future studies could include self-reported ethnicity in addition to using the country of birth of the respondent and his or her parents

to ascribe ethnicity. Furthermore, minorities from other Western countries could also have a relatively marginalized position in society (for example because of their skin colour or language barrier), and could be included in subsequent studies.

Finally, no effects were found for the ethnic Dutch students. Although previous research has indicated that ethnic density effects also exist for the majority group members in contexts where they constitute a minority, it is not surprising that no effects were found. Of all ethnic Dutch students, over 90% were in a class where they constituted a large majority (over 70% Dutch). Furthermore, this pattern will also be similar at the neighbourhood level, with the majority of the ethnic Dutch students living in neighbourhoods where most people share the same ethnic background.

Implications

Based on previous findings of ethnic density effects at the neighbourhood level [5, 10, 15, 17, 19, 20, 23, 32, 37], the present study examined the role of the ethnic composition of school classes on the level of externalising and internalising problem behaviour. The findings of this study do not only contribute to the general knowledge on the effect of contextual factors on adolescents' mental health, but can also contribute to the wider debate on the ethnic composition of schools in the Netherlands [22]. Although in this debate—on 'black' versus 'white' schools—attention is paid to outcomes such as school achievement and integration, students' mental health can be considered of equal importance. Whereas 'black' schools are often equated with poor school achievement and are considered by some as a hindrance to the integration of minority students in mainstream society, our research findings indicate a beneficial effect of such a school or class context on the mental health of students with an ethnic minority background, while negative effects on majority students have not been found. Other studies, such as the ones of Verkuyten and Thijs [34] and Peetsma et al. [21] also point to more positive aspects of schools and school classes with high ethnic density. Students may feel more at home and experience less racism and group discrimination in a more culturally diverse environment. Thus, based on the findings of the present study, an argument could be made on behalf of cultural diversity in schools.

Future research

In conclusion, the present study set out to test the ethnic density hypothesis in the school context. Previous studies on ethnic density effects have been carried out at the neighbourhood level, but given that adolescents spend a

great proportion of their time at school, the ethnic composition of the school class can be expected to have an effect on adolescents' mental health. Indeed, with respect to externalising problem behaviour, this expectation was confirmed. However, more in-depth research into the role of ethnic density effects is warranted. The mechanisms underlying these effects should be addressed. Previous research has indicated that exclusion from local networks, the availability of cultural specific facilities, and experiences with intimidation and discrimination might be relevant factors in explaining the relation between the ethnic composition of the neighbourhood and mental health outcomes [37]. Translating this to the school context, including measures of the perceived social climate in class, of interpersonal relations between students, and measures of (perceived) discrimination could possibly improve our understanding of the density effect. In addition, how schools differing in their ethnic composition cater specifically to minority (or majority) students could be investigated. Furthermore, future research could focus on both the majority–minority distinction, as has been done in the current research, and ethnicity when examining the role of ethnic composition of the class. Finally, it might be interesting to study the role of the ethnic composition of the neighbourhood as well, and compare it to our findings within the school context. Although adolescents spend a large amount of their time at school, that does not disregard the role of other social contexts, such as the neighbourhood. The ethnic composition of the school class and the neighbourhood maybe the same for some individuals, but can be rather different for others.

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References

1. Achenbach TM (1991) Integrative guide tot the 1991 CBCL 4-18, YSR and TRF profiles. Department of Psychiatry, University of Vermont, Burlington
2. Amundsen EJ, Rossow I, Skurtveit S (2005) Drinking pattern among adolescents with immigrant and Norwegian backgrounds: a two-way influence? *Addiction* 100(10):1453–1463
3. Bengi-Arslan L, Verhulst FC, Van der Ende J, Erol N (1997) Understanding childhood (problem) behaviors from a cultural perspective: comparison of problem behaviours and competencies in Turkish immigrant, Turkish and Dutch children. *Soc Psychiatry Psychiatr Epidemiol* 32(8):477–484
4. Bhugra D, Arya P (2005) Ethnic density, cultural congruity and mental illness in migrants. *Int Rev Psychiatry* 17(2):133–137
5. Boydell J, Van Os J, McKenzie K, Allardyce J, Goel R, McCreadie RG, Murray RM (2001) Incidence of schizophrenia in ethnic minorities in London: ecological study into interactions with environment. *Br Med J* 323:1–4

6. Cairns E (1989) Social class, psychological well-being and minority status in Northern Ireland. *Int J Soc Psychiatry* 35(3):231–236
7. Cochrane R, Bal SS (1988) Ethnic density is unrelated to incidence of schizophrenia. *Br J Psychiatry* 153(6):363–366
8. Currie CW, Elton RA, Todd J, Platt S (1997) Indicators of socioeconomic status for adolescents: the WHO health behaviour in school-aged children survey. *Health Educ Res* 12(3):385–397
9. Currie CW, Samdal O, Boyce W, Smith R (eds) (2002) Health behaviour in school-aged children: a World Health Organization Cross-National Study. Research protocol for the 2001/02 Survey. HBSC, Edinburgh
10. Farris RE, Dunham HW (1939) Mental disorders in urban areas. University of Chicago Press, Chicago
11. Halpern D (1993) Minorities and mental health. *Soc Sci Med* 36(5):597–607
12. Henderson C, Diez Roux AV, Jacobs DR, Kiefe CI, West D, Williams DR (2005) Neighbourhood characteristics, individual level socioeconomic factors, and depressive symptoms in young adults: the CARDIA study. *J Epidemiol Community Health* 59:322–328
13. Hox JJ (2002) Multilevel analysis. Techniques and applications. Lawrence Erlbaum Associates, Mahwah
14. Kvernmo S, Heyerdahl S (2003) Acculturation strategies and ethnic identity as predictors of behavior problems in arctic minority adolescents. *J Am Acad Child Adolesc Psychiatry* 42(1):57–65
15. Mintz NL, Schwartz DT (1964) Urban ecology and psychosis: community factors in the incidence of schizophrenia and manic-depression among Italians in Greater Boston. *Int J Soc Psychiatry* 10(2):101–118
16. Monshouwer K, Van Dorsselaer S, Van Os J, Drukker M, De Graaf R, Ter Bogt T, Verdurmen J, Vollebergh W (2007) Ethnic composition of schools affects episodic heavy drinking only in ethnic minority students. *Addiction* 102:722–799
17. Muhlin GL (1979) Mental hospitalization of the foreign-born and the role of cultural isolation. *Int J Soc Psychiatry* 25(4):258–266
18. Murad SD, Joung IM, van Lenthe FJ, Bengi-Arslan L, Crijnen AA (2003) Predictors of self-reported problem behaviours in Turkish immigrant and Dutch adolescents in the Netherlands. *J Child Psychol Psychiatry* 44:412–423
19. Neeleman J, Wessely S (1999) Ethnic minority suicide: a small area geographical study in south London. *Psychol Med* 29(2):429–436
20. Neeleman J, Wilson-Jones C, Wessely S (2001) Ethnic density and deliberate self harm; a small area study in south east London. *J Epidemiol Community Health* 55(2):85–90
21. Peetsma TTD, Wagenaar E, De Kat E (2001) School motivation, future time perspective and well-being of high school students in segregated and integrated schools in The Netherlands and the role of ethnic self-description. In: Koppen JK, Lunt I, Wulf C (eds) *Education in Europe: cultures, values, institutions in transition*. Waxmann, Münster, pp 54–74
22. Penninx R, Rath J (eds) (1990) De etnisch-culturele samenstelling van scholen: oorzaken en gevolgen. [The ethno-cultural composition of schools: causes and consequences]. *Migrantenstudies* 6:2–61
23. Rabkin JG (1979) Ethnic density and psychiatric hospitalization: hazards of minority status. *Am J Psychiatry* 136(12):1562–1566
24. Reijneveld SA, Harland P, Brugman E, Verhulst FC, Verloove-Vanhorick SP (2005) Psychosocial problems among immigrant and non-immigrant children: ethnicity plays a role in their occurrence and identification. *Eur Child Adolesc Psychiatry* 14:145–152
25. Rosenberg M (1962) The dissonant religious context and emotional disturbance. *Am J Sociol* 68(1):1–10
26. Sampson RJ, Morenoff JD, Raudenbush S (2005) Social anatomy of racial and ethnic disparities in violence. *Am J Public Health* 95(2):224–231
27. SCP (2005) Jaarrapport integratie [Annual report on integration]. SCP, The Hague
28. Steinhausen H-C, Bearth-Carrari C, Winkler Metzke C (2009) Psychosocial adaptation of adolescent migrants in a Swiss community survey. *Soc Psychiatry Psychiatr Epidemiol* 44:308–316
29. Stevens GWJM, Vollebergh WAM, Pels TVM, Crijnen AAM (2005) Predicting externalizing problems in Moroccan immigrant adolescents in the Netherlands. *Soc Psychiatry Psychiatr Epidemiol* 40(7):571–579
30. Stevens GWJM, Vollebergh WAM, Pels TVM, Crijnen AAM (2005) Predicting internalizing problems in Moroccan immigrant adolescents in the Netherlands. *Soc Psychiatry Psychiatr Epidemiol* 40(12):1003–1011
31. Van Oort FVA, Joung IMA, Mackenbach JP, Verhulst FC, Bengi-Arslan L, Crijnen AAM et al (2006) Development of ethnic disparities in internalizing and externalizing problems from adolescence into young adulthood. *J Child Psychol Psychiatry* 48:176–184
32. Veling W, Susser E, Van Os J, Mackenbach JP, Selten J, Hoek HW (2008) Ethnic density of neighborhoods and incidence of psychotic disorders among immigrants. *Am J Psychiatry* 165:66–73
33. Verhulst FC, Van der Ende J, Koot HM (1997) Handleiding voor de youth self-report (YSR). [Manual for the Youth Self Report (YSR)]. Sophia Children's Hospital, Rotterdam
34. Verkuyten M, Thijs J (2002) Racist victimization among children in the Netherlands: the effect of ethnic group and school. *Ethn Racial Stud* 25(2):310–331
35. Vollebergh WAM, Van Dorsselaer S, Monshouwer K, Verdurmen J, Van der Ende J, Ter Bogt T (2006) Mental health problems in early adolescents in the Netherlands: differences between school and household surveys. *Soc Psychiatry Psychiatr Epidemiol* 41(2):156–163
36. Wechsler H, Pugh TF (1967) Fit of individual and community characteristics and rates of psychiatric hospitalization. *Am J Sociol* 73(3):331–338
37. Whitley R, Prince M, Mckenzie K, Stewart R (2006) Exploring the ethnic density effect: a qualitative study of a London electoral ward. *Int J Soc Psychiatry* 42:376–391
38. Wickrama KAS, Noh S, Bryant CM (2005) Racial differences in adolescent distress: differential effects of the family and community for blacks and whites. *J Community Psychol* 33(3):261–282