Social Psychiatry and Psychiatric Epidemiology (2019) 54:343–353
https://doi.org/10.1007/s00127-019-01658-1

ORIGINAL PAPER

Psychotic experiences among ethnic majority and minority adolescents and the role of discrimination and ethnic identity

Saliha el Bouhaddani[1] · Lieke van Domburgh[2,3] · Barbara Schaefer[1] · Theo A. H. Doreleijers[3] · Wim Veling[4]

Received: 2 June 2018 / Accepted: 7 January 2019 / Published online: 14 January 2019

Abstract

Purpose Research shows that the prevalence of psychiatric problems is higher in ethnic minority youth compared to native youth. This school-based screening study of early adolescents' mental health in the Netherlands examined differences in prevalence of psychotic experiences in ethnic minority youth compared to their Dutch peers. Moreover, we investigated the association between psychotic experiences, ethnic identity, and perceived discrimination.

Methods A cohort of 1194 ethnic majority and minority adolescents (mean age 13.72, SD 0.63) filled-out questionnaires on psychotic experiences (including delusional and hallucinatory experiences), perceived group and personal discrimination, and ethnic identity.

Results Apart from lower levels of hallucinatory experiences in Turkish–Dutch adolescents, prevalence of psychotic experiences did not differ between ethnic minority and majority adolescents. Perceived personal discrimination was associated with the presence of psychotic experiences (including delusional and hallucinatory experiences) (OR 2.30, 95% CI 1.22–4.34). This association was stronger for delusional experiences (OR 2.94, 95% CI 1.43–6.06) than for hallucinatory experiences (OR 1.65, 95% CI 0.73–3.72). No significant associations were found between perceived group discrimination and psychotic experiences. A weak ethnic identity was associated with higher risk for reporting psychotic experiences (OR 2.04, 95% CI 1.14–3.66), particularly hallucinatory experiences (OR 3.15, 95% CI 1.54–6.44). When looking at specific ethnic identity categories, marginalization, compared to separation, was associated with a threefold risk for reporting psychotic experiences (OR 3.26, 95% CI 1.33–8.03). Both marginalisation (OR 3.17, 95% CI 1.04–9.63) and assimilation (OR 3.25, 95% CI 1.30–8.13) were associated with a higher risk for hallucinatory experiences.

Conclusions These results underline the protective effect of ethnic identity against mental health problems. Future research should focus on interventions that focus on strengthen social identity.

Keywords Psychotic experiences · Discrimination · Ethnic identity · Ethnic minority

Introduction

Meta-analyses have shown that many ethnic minority groups have an increased risk of developing psychotic disorders [1]. These findings represent an important public mental health problem. As psychosis is increasingly considered to be distributed along a continuum of severity in the general population, investigating the mildest manifestation in the form of psychotic experiences may help to improve understanding of the increased risk of psychotic disorders in ethnic minorities. Although most psychotic experiences that occur while growing up during childhood and adolescence are developmental phenomena that disappear over time [2], they are, nevertheless, associated with an increased risk of psychotic and other psychiatric disorders in later life (e.g. [3, 4]).

✉ Saliha el Bouhaddani
s.elbouhaddani@i-psy.nl

[1] Parnassia Academie, Oude Parklaan 123, Castricum, The Netherlands

[2] Department of Research and Development, Pluryn-Intermetzo, Nijmegen, The Netherlands

[3] Department of Child and Adolescent Psychiatry, VU Medical Centre, Amsterdam, The Netherlands

[4] Department of Psychiatry, University Medical Centre Groningen, University of Groningen, Groningen, The Netherlands

Whereas ethnic differences in incidence and prevalence of psychotic disorders have been broadly studied, fewer studies have addressed ethnic differences in prevalence of psychotic experiences (e.g. [5–8]), and only a minority of these have examined adolescent populations [9–12]. Ethnic minority youths in the Netherlands report more high impact psychotic experiences in comparison with native Dutch youth [9, 12]. A recent study by Eilbracht et al. [10] found that only some dimensions of psychotic experiences (mainly delusional ideas and grandiose beliefs) were higher in ethnic minorities compared to the ethnic majority in the United Kingdom. Laurens et al. [11] found that those of African–Caribbean origin reported more psychotic experiences compared to white British children. However, those with a South-Asian and East-Asian origin had a lower risk of reporting psychotic experiences.

Differences in the incidence of psychotic disorders between ethnic majority and minority groups can most likely be explained by variations in exposure to socio-environmental risk factors [13, 14]. More specifically, adverse social experiences, such as experiences of social exclusion, defeat, and being a negative exception to the norm, may contribute to the elevated risk for psychotic disorders among ethnic minorities [8, 15]. Similar observations were made in a study of psychotic experiences by Morgan et al. [6], in which psychotic experiences were more likely to be reported by black Caribbean and African adults than by white British adults. After adjustment for child and adult social adversities, however, the association between psychotic experiences and ethnicity no longer existed.

Two factors that may be of particular interest regarding the effect of socio-environmental risk factors on individuals are perceived discrimination and ethnic identity. Perceived discrimination can be defined as the experience of unequal treatment or negative attitude towards individuals based on belonging to or being regarded as belonging to a particular group [16]. Discrimination can resemble feelings of social exclusion that can deprive individuals of their need to belong, negatively impacting their sense of well-being. Perceived discrimination may cause a sense of devaluation and reduced control over important life outcomes, which negatively affects health and well-being [17]. There is strong and consistent evidence that perceived discrimination is a risk factor for developing physical and mental health problems [17–20]. Likewise, studies show a significant association between psychotic experiences and discrimination. In an adult sample, individuals reporting discrimination were three times more likely to report psychotic experiences than individuals who did not report any discrimination [7]. Several studies have examined the relationship between discrimination and ethnic identity in young adults. In a large sample of undergraduate students aged 18 up to 29, Anglin et al. [5, 21, 22] found that perceived discrimination was significantly associated with a higher likelihood of reporting more distressing psychotic experiences. To the best of our knowledge, there have thus far been no studies on the association between psychotic experiences and perceived discrimination in an early adolescent sample.

For ethnic minorities, ethnic identity is an important aspect of how they experience and cope with minority-related stress. Ethnic identity can be defined as the degree of belongingness and affirmation to a particular ethnic group [23]. Berry et al. [24] defined four ethnic identification categories. Integration occurs when a person strongly identifies with both his or her own ethnicity and the mainstream culture. Assimilation implies high identification with the mainstream culture, but low identification with the own's ethnic culture. Separation is the opposite, referring to low identification with the mainstream culture and high identification with one's own ethnic culture. Finally, marginalisation occurs when there is low identification with both cultures. Both integration and separation are related to psychological well-being and positive mental health outcomes [23, 25–27], and separation has been associated with reduced risk for schizophrenia [28]. These findings suggest that a commitment to one's own ethnicity (as in a strong ethnic identity) is an important protective factor for mental health, since both integration and separation imply a strong identification with one's own ethnicity.

Some studies suggest using ethnic identity to mediate the relationship between perceived stress and mental health problems [29, 30]. Espinosa et al. [29] found in a sample of young adults, aged 18 up to 29, a protective effect of high ethnic identity against perceived discrimination. Ethnic identity appears to have a buffering effect against different psychological problems [31–33]. A mechanism may be that a strong ethnic identity implicates stronger feelings of belonging to a particular ethnic group, which is likely to increase access to meaningful social resources. Anglin et al. [22] recently found that the effect of discrimination on psychotic experiences was higher for those with low ethnic identity compared to those with high ethnic identity.

This study aims to examine differences in the prevalence of psychotic experiences between ethnic majority and minority adolescents in The Netherlands, and to investigate the relationships between psychotic experiences, perceived discrimination, and ethnic identity. We expected to find more psychotic experiences among ethnic minority youth compared to majority youth, and we hypothesized that a higher level of perceived discrimination and a weak ethnic identity were associated with more psychotic experiences.

Methods

This study is part of the MasterMind project, a longitudinal school-based screening study of adolescents' mental health in the Netherlands [34]. Here, data from the second

assessment (one year after baseline) are used, because perceived discrimination and ethnic identity were only measured at the second assessment.

Participants

The total sample consisted of 1512 participants from 13 secondary schools. For the analysis of this study, only participants with Dutch, Moroccan–Dutch, Turkish–Dutch, Surinamese–Dutch, and Antillean–Dutch ethnicity were included, which led to a sample of 1194 participants. Ethnicity was determined by the countries of birth of the students and their parents. Ethnicity was classified as Dutch if the student, the mother, and the father were all Dutch-born. If either the participant, the father, or the mother was born abroad, the ethnicity of the participant was coded as ethnic minority Dutch [35]. Ethnicity was coded as 'missing' if the ethnic background of the participant, father, and/or mother was unknown ($n = 16$). From the 1194 participants, 68.9% ($n = 823$) were categorised as Dutch, 13.3% ($n = 159$) as Moroccan–Dutch, 10.7% ($n = 128$) as Turkish–Dutch, 4% ($n = 53$) as Surinamese–Dutch, and 2.6% ($n = 31$) as Antillean–Dutch. Of those classified as ethnic minority Dutch, 90% were born in the Netherlands and 10% were born elsewhere. Most of those born abroad (91%), emigrated to The Netherlands before their 12th birthdays.

Procedure

This study was approved by the medical ethics committee of the VUmc (Vrije Universiteit medisch centrum, reference number 2013.247). After we obtained approval from the school, students and their parents received a letter of introduction, a description of the study, and a passive informed consent form, which they were requested to complete and return only if they did not give permission to participate in the study. During their regular classes, students received instructions and completed a web-based questionnaire under supervision of a researcher and a research assistant.

Instruments

Educational level

The students' educational level was divided into three levels, namely lower (general) vocational level (in Dutch: vmbo), general higher secondary level (in Dutch: havo), and pre-university level (in Dutch: VWO). The educational level was based on the school level the students were having currently.

Psychotic experiences

The 16-item version of the Prodromal Questionnaire (PQ-16, [36]) measures psychotic experiences. The PQ-16 is a shortened version of the 92-version of the PQ and was validated in a non-psychotic help-seeking population [37] and in an adolescent sample [38]. The PQ-16 consists of 14 positive symptom items and two negative symptom items. Responses were made on a dichotomous scale (0 = not true; 1 = true). The items were followed by questions on distress (possible responses: 0—no distress, 1—mild distress, 2—moderate distress, and 3—severe distress).

The items of the PQ-16 can be divided into three subscales: hallucinatory experiences (assessed by nine items), delusional experiences (assessed by five items), and 'negative' symptoms (assessed by the two items *I feel uninterested in the things I used to enjoy* and *I get extremely anxious when meeting people for the first time*). This study used the 14 positive items to measure psychotic experiences; that is, the subscales hallucinatory experiences and delusional experiences. Examples of items measuring delusional experiences included 'I have been confused at times whether something I experienced was real or imaginary' and 'I often feel that others have it in for me'. Hallucinatory experiences were measured by items such as 'I have heard things other people can't hear like voices of people whispering or talking' and 'My thoughts are sometimes so strong that I can almost hear them'. Positive psychotic experiences better represent the psychosis continuum in a general adolescent population than non-specific negative symptoms [38]. Four items were marked as cultural sensitive items, i.e., 'I have felt that I am not in control of my own ideas or thoughts'; 'I often feel that others have it in for me'; 'I have seen things that other people can't see or don't seem'; 'I have had the sense that some person or force is around me, even though I could not see anyone'.

A psychotic experience was classified as present when associated with at least moderate distress. Several studies have concluded that adding an additional measurement of the impact on well-being or functioning increases the clinical significance of measuring psychotic experiences [9, 39]. The PQ-16 measures distress with a four-point Likert scale; 'no distress', 'mild distress', 'moderate distress', and 'severe distress'. Since 'no' and 'mild' distress refer to light impact, we set the threshold at 'at least moderate' distress.

Ethnic identity

Assimilation, integration, marginalisation, or separation with regard to ethnic identity was assessed with the items 'I consider myself to be "my own ethnic identity" (Moroccan/Turkish/Surinamese/Antillean)' and 'I consider myself to be Dutch' from the Psychological Acculturation Scale (PAS

[40]). These items were rated on a five-point Likert scale ranging from 'totally disagree' to 'totally agree'. Participants who scored 'totally agree or agree' on ethnic identity but 'totally disagree or disagree' on Dutch identity were classified as having a separated identity. Those who scored 'totally agree or agree' on both ethnic identity and Dutch identity were classified as having an integrated identity, those who scored 'totally disagree or disagree' on ethnic identity but 'totally agree or agree' on Dutch identity were classified as having an assimilated identity, and those who scored 'totally disagree or disagree' on both ethnic and Dutch identity were classified as having a marginalised identity. Separated and integrated identities were considered strong ethnic identities, and assimilated and marginalised identities were considered weak ethnic identities.

Perceived personal and group discrimination

To measure perceived personal and group discrimination, the questionnaire from Stevens et al. [41] was used. Personal discrimination was assessed by three items asking students if they felt discriminated against because of their skin colour, ethnicity, or religion. Responses were dichotomous (true/false). Perceived personal discrimination was rated as present if participants reported discrimination on at least one item.

Group discrimination was assessed by four items asking if the participant felt that people from their ethnic group are discriminated against on the street, at school, in stores, or by the police. Answers ranged from never to always (0 = never, 1 = sometimes, 2 = mostly, 3 = always). Perceived group discrimination was rated as present if participants had a score other than zero on at least one item.

Statistical analyses

Descriptive data were analysed using the Statistical Package for the Social Sciences, version 23 (SPSS Inc., Chicago, IL, USA). Statistical significance was set at $p \leq 0.05$. Ethnic differences were tested using ANOVA and Chi-square tests, followed by post hoc tests with Bonferroni correction. Furthermore, to account for cultural bias, we performed explorative analyses with Chi-square tests. We tested ethnic differences in psychotic experiences that could reflect cultural or religious beliefs. To explore whether reported perceived personal discrimination was merely a measure of (paranoid) delusional thoughts, we performed sensitivity analyses. These analyses tested differences in endorsement of items assessing delusional experiences between those reporting discrimination and those who did not.

Differences in the prevalence of reporting at least one psychotic experience with impact between each ethnic minority group (Moroccan–Dutch, Turkish–Dutch, Surinamese–Dutch, and Antillean–Dutch) and to the Dutch group (ethnic majority) were examined using Chi-square tests. The same analyses performed after subdividing psychotic experiences into hallucinatory experiences and delusional experiences.

Logistic regression analyses, with educational level as covariate, were used to study whether psychotic experiences with distress among ethnic minority youth were associated with perceived personal discrimination, group discrimination, and ethnic identity. To test the association between ethnic identity and psychotic experiences, two logistic regressions were performed. We first examined the association between the dichotomised variable of ethnic identity (strong–weak) and psychotic experiences. Second, we looked at associations between the four ethnic identity categories (separation–integration–assimilation–marginalisation) and psychotic experiences. In these analyses, separated identity was set as a reference group, because it had the lowest risk association with psychotic disorders in a previous Dutch study [28].

Results

Table 1 shows the sociodemographic characteristics of the sample. Compared to the ethnic minority groups, the Dutch group more often had a pre-university educational level. The Surinamese–Dutch tended to have a higher secondary educational level compared to the Antillean–Dutch and higher a pre-university educational level compared to both Turkish–Dutch and Antillean–Dutch adolescents.

Explorative analyses done with Chi-square test, showed no significant gender differences for the main outcomes [psychotic experiences, χ^2 (1) = 2.62, $p = 0.11$; ethnic identity, χ^2 (3) = 0.57, $p = 0.90$; personal discrimination, χ^2 (1) = 0.54, $p = 0.46$; group discrimination, χ^2 (1) = 0.50, $p = 0.48$].

We found no significant differences between the different ethnic groups in the prevalence of psychotic experiences that were marked as possibly reflecting cultural or religious beliefs [I have felt that I am not in control of my own ideas or thoughts, χ^2 (4) = 7.55, $p = 0.11$; I often feel that others have it in for me, χ^2 (4) = 4.58, $p = 0.33$; I have seen things that other people cannot see or do not seem, χ^2 (4) = 8.01, $p = 0.09$; I have had the sense that some person or force is around me, even though I could not see anyone, χ^2 (4) = 2.35, $p = 0.67$]. Furthermore, explorative analyses showed no significant differences between those reporting perceived personal discrimination and those who did not, for delusional experiences that may reflect perceived discrimination, most notably "I often feel that others have it in for me" [χ^2 (1) = 0.29, $p = 0.59$]. Items "I have been confused at times whether something I experienced was real or imaginary" and "I have felt that I am not in control of my own ideas or

Table 1 Characteristics of the study sample ($n=1194$)

	Dutch ($n=823$)	Moroccan–Dutch ($n=157$)	Turkish–Dutch ($n=126$)	Surinamese–Dutch ($n=50$)	Antillean–Dutch ($n=30$)	Group differences
Gender (% girl)	52.5	57.2	53.1	50.9	64.5	χ^2 (4) = 2.89, ns
Age [*M* (SD)]	13.5 (0.57)	13.6 (0.64)	13.9 (0.65)	13.6 (0.54)	13.9 (0.76)	F (4) = 1.81, ns
Educational level (%)						χ^2 (8) = 182.09, $p<0.001$
Lower vocational	25.4	58.5	71.1	49.1	83.9	
General higher secondary	44.6	30.2	24.2	30.2	9.7	
Pre-university	30	11.3	4.7	20.8	6.5	
Psychotic experiences (%)	16.6	19.5	12.5	15.1	9.8	D-MD: χ^2 (1) = 0.78, $p=0.38$; D-TD: χ^2 (1) = 1.41, $p=0.24$; D-SD: χ^2 (1) = 0.07, $p=0.77$; D-AD: χ^2 (1) = 1.06, $p=0.30$
Hallucinatory experiences	12	10.7	6.3	11.3	9.7	D-MD: χ^2 (1) = 0.23, $p=0.63$; D-TD: χ^2 (1) = 3.71, $p=0.05$; D-SD: χ^2 (1) = 0.03, $p=0.88$; D-AD: χ^2 (1) = 0.16, $p=0.69$
Delusional experiences	10.3	13.8	8.6	7.5	3.2	D-MD: χ^2 (1) = 1.69, $p=0.19$; D-TD: χ^2 (1) = 0.37, $p=0.55$; D-SD: χ^2 (1) = 0.42, $p=0.52$; D-AD: χ^2 (1) = 1.66, $p=0.19$
Experience of discrimination (%)						
Personal	4.3	23.3	9.4	24.5	23.3	χ^2 (4) = 87.57, $p<0.001$
Group	27.5	73.6	65.9	73,6	64.4	χ^2 (4) = 183.09, $p<0.001$
Weak ethnic identity	–	31.8	14.4	60	30.2	χ^2 (3) = 36.89, $p<0.001$
Strong ethnic identity	–	68.2	85.6	40	69.8	
Ethnic identity (%)						χ^2 (9) = 79.93, $p<0.001$
Separation	–	31.2	56.8	20	37.9	
Integration	–	36.9	28.8	20	24.1	
Assimilation	–	22,3	2.4	58	27.6	
Marginalisation	–	9.6	12	2	10.3	

D-MD Dutch–Moroccan–Dutch, *D-TD* Dutch–Turkish–Dutch, *D-SD* Dutch–Surinamese–Dutch, *D-AD* Dutch–Antillean–Dutch, *ns* not significant

thoughts" were not associated with perceived discrimination either. Adolescents reporting perceived discrimination did more often endorse the items "I often seem to live through events exactly as they happened before" and "I sometimes see special meanings in advertisements, shop windows, or in the way which things are arranged around me."

Ethnic differences in prevalence of psychotic experiences

The prevalence of reporting at least one psychotic experience ranged from 9.7 to 19.5% across the ethnic groups (Fig. 1; Table 1). The proportion of adolescents with psychotic experiences did not differ significantly among the separate ethnic minority groups and the Dutch group. When subdividing psychotic experiences into hallucinatory experiences and delusional experiences, Turkish–Dutch adolescents reported hallucinatory experiences less often than Dutch adolescents. No differences in delusional experiences were found between the different ethnic minority groups and the Dutch group.

Psychotic experiences and perceived discrimination

Ethnic minority adolescents reported more personal and group discrimination than Dutch adolescents, and Turkish–Dutch adolescents had a lower level of perceived personal discrimination than the other ethnic minority adolescents (see Table 1). Table 2 shows the prevalence rates of psychotic experiences, hallucinatory experiences, and

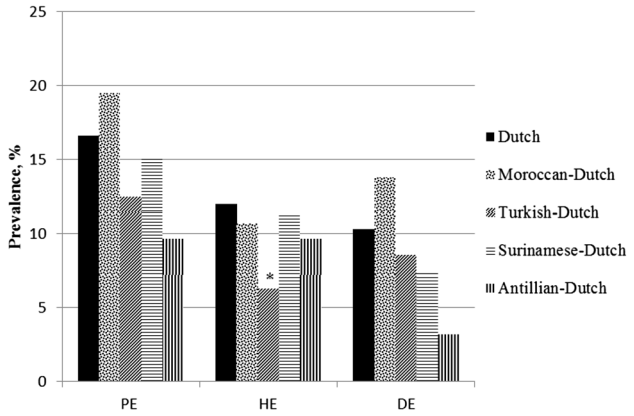

Fig. 1 Prevalence of reporting at least one psychotic experience (PE), hallucinatory experience (HE), and delusional experience (DE) in Moroccan–Dutch, Turkish–Dutch, Surinamese–Dutch, Antillean–Dutch, and Dutch adolescents; $^{*}p < 0.05$

delusional experiences among those reporting personal and group discrimination.

As shown in Table 3, perceived personal discrimination was significantly associated with the presence of psychotic experiences. Ethnic minority adolescents who reported the experiences of personal discrimination were more likely to also report psychotic experiences, in particular delusional experiences, than those reporting no experiences of discrimination. No significant associations were found between psychotic experiences and perceived group discrimination.

Psychotic experiences and ethnic identity

Integration was the most common ethnic identity of Moroccan–Dutch adolescents (38%), separation was most frequently adopted by Turkish–Dutch (56%) and Antillean–Dutch (38%) adolescents, and Surinamese–Dutch adolescents predominantly reported an assimilated identity (58%). Adolescents with a weak ethnic identity reported a higher prevalence of psychotic experiences than those with a strong ethnic identity [χ^2 (1) = 5.41, $p = 0.02$]. When subdividing psychotic experiences into hallucinatory experiences and delusional experiences, we found a significant difference in the prevalence rate for hallucinatory experiences [χ^2 (1) = 10.61, $p = 0.001$], but not for delusional experiences [χ^2 (1) = 0.47, $p = 0.49$; see Table 2]. Furthermore, having a weak ethnic identity was associated with a twofold increased risk for reporting psychotic experiences and a three times higher risk for reporting hallucinatory experiences when compared to those with a strong ethnic identity (Table 4).

When analysing the prevalence of psychotic experiences across the four ethnic identity categories, we found that psychotic experiences were more common in the marginalisation and assimilation groups compared to the separated and integrated groups (Table 2). Ethnic identity categories had significant associations with psychotic and hallucinatory experiences. Those feeling marginalised were three times more likely to report psychotic and hallucinatory experiences compared to those with a separated identity. Those with an assimilated identity were three times more likely to report hallucinatory experiences than separated adolescents (Table 4).

Table 2 Prevalence of psychotic experiences for discrimination and for each ethnic identity group among ethnic minority adolescents

	Strong ethnic identity		Weak ethnic identity		Personal discrimination		Group discrimination	
	Separation	Integration	Assimilation	Marginalisation	No	Yes	No	Yes
Psychotic experiences, *n* (%)	16 (10.9)	17 (14.9)	15 (19.5)	10 (27.8)	40 (13.3)	18 (26.1)	14 (12.0)	44 (17.4)
Hallucinatory experiences	9 (6.1)	7 (6.1)	13 (16.9)	6 (16.7)	25 (8.3)	9 (13.0)	8 (6.8)	26 (10.3)
Delusional experiences	12 (8.2)	12 (10.5)	8 (10.4)	5 (13.9)	24 (8.0)	14 (20.3)	10 (8.5)	28 (11.1)

Moroccan–Dutch, Turkish–Dutch, Surinamese–Dutch, and Antillean–Dutch adolescents included ($N = 371$)

Table 3 Perceived discrimination as a predictor for psychotic experiences in ethnic minority adolescents

	Psychotic experiences		Hallucinatory experiences		Delusional experiences	
	OR (95% CI)	Wald (*p*)	OR (95% CI)	Wald (*p*)	OR (95% CI)	Wald (*p*)
Personal discrimination	2.30 (1.22–4.34)	6.69**	1.65 (0.73–3.72)	1.48	2.94 (1.43–6.06)	11.13***
Group discrimination	1.56 (0.81–2.99)	1.76	1.53 (0.67–3.52)	1.00	1.32 (0.61–2.85)	0.49

Moroccan–Dutch, Turkish–Dutch, Surinamese–Dutch, and Antillean–Dutch adolescents included ($N = 371$)

$^{**}p < 0.05$; $^{***}p < 0.01$

Table 4 Ethnic identity as a predictor for psychotic experiences in ethnic minority adolescents

	Psychotic experiences		Hallucinatory experiences		Delusional experiences	
	OR (95% CI)	Wald	OR (95% CI)	Wald	OR (95% CI)	Wald
Strong ethnic identity[a]	–	–	–	–	–	–
Separation[b]	–	–	–	–	–	–
Integration[b]	1.53 (0.73–3.20)	1.27	1.06 (0.38–2.95)	0.01	1.48 (0.63–3.46)	0.82
Weak ethnic identity[a]	2.04 (1.14–3.66)	0.71**	3.15 (1.54–6.44)	1.15***	1.35 (0.65–2.78)	0.30
Marginalisation[b]	3.26 (1.33–8.03)	6.63**	3.17 (1.04–9.63)	4.5**	1.90 (0.62–5.85)	1.26
Assimilation[a]	2.13 (0.98–4.65)	3.60	3.25 (1.30–8.13)	6.32***	1.48 (0.57–3.85)	0.65

Moroccan–Dutch, Turkish–Dutch, Surinamese–Dutch, and Antillean–Dutch adolescents included ($N = 371$)

**$p < 0.05$; ***$p < 0.01$

[a]Strong ethnic identity as reference group

[b]Separation as reference category

Discussion

This study of psychotic experiences in a large, school-based sample of ethnic minority and ethnic majority adolescents in The Netherlands found no difference in the prevalence of psychotic experiences with distress between the Dutch ethnic majority group and various ethnic minority groups. Within the group of ethnic minority adolescents, perceived personal discrimination was associated with delusional experiences. Adolescents with a weak ethnic identity more often had hallucinatory experiences than those with a strong ethnic identity.

Inconsistent with earlier studies, we found no difference in the prevalence of psychotic experiences in ethnic minority adolescents compared to the ethnic majority [9–11]; in fact, Turkish–Dutch adolescents report significantly less fewer hallucinatory experiences with distress compared to Dutch adolescents. An explanation for not finding differences in psychotic experiences in ethnic minority adolescents compared to their ethnic majority peers is that these differences are only visible when symptoms are more persistent and more severe. Most research examining ethnic differences is done comparing the incidence of psychotic disorders in adult populations. In these cases, the symptomatology is more severe. Differences may be subtle to detect in a general adolescent population. However, this does not explain the inconsistency compared to earlier studies of a general adolescence population (e.g. [9]). In these cases, differences in social and environmental factors may explain this inconsistency. Moreover, reviews investigating mental health differences between ethnic minority and majority adolescents in both European and American countries have concluded that ethnic background itself is not the strongest predictor for mental health differences. The primary explanation of these inconsistent results must instead be sought in the distribution of risk factors. Risk factors associated with the development of mental health problems may be more present in certain ethnic minority groups compared to other ethnic minority and majority groups. Similarly, protective factors for mental health problems may be less common in certain groups, depending on the social and cultural context. Another explanation for the inconsistent findings may be the heterogenic methodological character of the various studies, for example the use of different questionnaires [42, 43].

In our study, perceived discrimination was significantly associated with psychotic experiences. Many studies have concluded that discrimination in general is a risk factor for developing mental health problems, including psychosis [17, 20]. Personal perceived discrimination was associated with a three times increased risk for reporting delusional experiences. This is in line with studies, showing that experiences of discrimination are related to paranoid attribution, which contribute to delusional experiences [7, 44, 45]. Experiences of discrimination, when severe or chronic, can be perceived as traumatic [7], especially when related to visible or stereotyped characteristics of ethnicity that is uncontrollable and difficult to cope with [46]. Negative social evaluations and treatment based on ascribed personal characteristics can lead to frustration, helplessness, feelings of defeat, and negative thoughts about the self, which can in turn contribute to the development of psychotic experiences [14, 15, 18, 47]. Experiencing discrimination or another form of social exclusion may lead people to think that others have it in for them or that people are not trustworthy. Theories explaining higher incidence of psychotic disorders among ethnic minorities suggested that experiencing discrimination may present as a threat for their social identity. This threat is extra challenging for those with a vulnerability to psychotic disorders [47]. It can lead to paranoia [48, 49] and eventually increase the risk for developing a psychotic disorder [47]. Therefore, the prevalence of perceived discrimination may be influenced by delusional experiences, or reverse, experiences of discrimination may have affected the self-reported delusional thoughts. However, explorative analyses in our study suggest it is unlikely that perceived personal discrimination is merely a reflection of paranoid

delusional thoughts, since we did not find significant differences between those reporting perceived personal discrimination and those who did not, for delusional experiences related to paranoid ideations. Furthermore, research suggests that perceived discrimination is a chronic source of threat for members of a devalued ethnic group. In this study, no significant associations were found for group discrimination. This may be in accordance with the rejection-identification model [50], stating that group discrimination strengthens in-group identification, which may act as a protection against the development of mental health problems. A mechanism behind this theory is that failures and adversity are attributed to discrimination rather than to personal characteristics. This corresponds to the idea that a strong ethnic identity has a protective effect on mental health.

Our results showed that a weak ethnic identity was significantly associated with psychotic experiences. Adolescents reporting a weak ethnic identity had more psychotic experiences. When investigating specific associations between psychotic experiences and ethnic identity categories, we found that, compared to separation as an ethnic identity, assimilation and marginalisation (both characterised by low orientation to one's own ethnic identity) were related to an increased risk of reporting psychotic experiences in ethnic minority adolescents. The finding that a weak identity has a strong influence on the development of psychotic experiences is consistent with the previous research [28]. Strong ethnic identity protects against psychopathology and is related to higher self-esteem (e.g. [31]). A strong affirmation to one's own ethnic group may buffer the negative effects of discrimination on mental health. This is shown for the relation between perceived discrimination and anxiety and depression [32, 33]. To the best of our knowledge, there is one study investigating the role of ethnic identity in the relationship between racial discrimination and psychotic symptoms in young adults. Anglin et al. [21] found that strong ethnic identity may protect against distressing psychotic symptoms in racially discriminating environments. The sample size of our study was too small to investigate moderation effects of ethnic identity, but future research should investigate the effect of ethnic identity in the relationship between discrimination and psychotic experiences in the early adolescent samples.

Rejecting one's own ethnic heritage identity and attempting to adopt a new ethnic identity to be accepted by another culture may lead to social exclusion and a feeling of lack of belongingness, which tends to occur when the majority group rejects the minority's attempts to be part of the 'in-group' [51, 52]. Together with our results, these studies suggest that a sense of belonging is an important protective factor for the mental health of ethnic minority youth.

Furthermore, in this study, we used Berry's acculturation model. This model is widely used in acculturation research, but it has limitations. The acculturation model of Berry appears to imply that migrants consciously or freely choose an acculturation 'strategy'. It does not fully recognize the influence of the majority society on the acculturation process. Research shows that the attitudes of the ethnic majority toward ethnic minority interact with migrants' own acculturation preferences [53]. Furthermore, the model does not take into account the complexity and variability related to ethnic identity [54]. For example, people often incorporate several identities into their self-concept and this often changes in specific situations. The multidimensional model of Sellers et al. [55] proposes a more descriptive model which gives the opportunity to get insight in the qualitative meaning of ethnic identity. The multidimensional model describes with four dimensions of identity, i.e., salience, centrality, regard, and ideology. Salience refers to the extent to which identity is relevant to the self-concept in particular time point or situation. This dimension changes over time and to specific contexts. The salience of one's ethnicity is determined by the interaction with the social context, e.g., being the only adolescent with a migrant background in a class with only students without a migrant background can make one more aware of his/her ethnicity. Centrality refers the extent to which an individual emphasizes his/her ethnic group membership as part of their self-concept. This dimension is described to be stable and conceptualize a hierarchical ranking of different identities someone incorporates. Regard refers to the extent an individual refers positively to his/her ethnic background. Ideology refers to beliefs and opinions which one has about how people from the same membership should live and interact with society. Further research using a more descriptive model to assess ethnic identity could give more insight in the meaning of ethnic identity for those with an ethnic minority background compared models that solely prescribed ethnic identity strategies. This can help to understand the protective effect of identity against psychotic experiences in a more in-depth way.

Our research has both strengths and limitations. A strength of this study is the large number of participants, in particular the large number of ethnic minority youth. We are not aware of previous studies investigating ethnic identity in relation to psychotic experiences in ethnic minority adolescents.

One limitation of our study is that the surveys which we used, such as the 16-PQ, have not been validated for use in ethnic minority groups like Moroccan–Dutch and Turkish–Dutch youth in The Netherlands. Although the 16-PQ has been used worldwide, it has not been specifically validated for adolescents with a non-western background. Cultural and religious background may have influenced reporting psychotic experiences, because some experiences assemble the cultural/religious beliefs. However, explorative analyses showed no ethnic differences for

items, that were marked as possible reflecting cultural or religious beliefs. Furthermore, we only assessed psychotic experiences once, despite the fact that these experiences can change over time, especially in fluctuating periods like childhood and adolescence [12].

Furthermore, ethnic identity was measured with two questions from the Psychological Acculturation Scale. The Psychological Acculturation Scale has shown good psychometric properties in the previous studies [56, 57], but we have no information on the validity of using two items of the scale to measure ethnic identity. We assessed ethnic identity as a construct with only two options: Dutch majority or ethnic minority. Adolescents growing up in the globalised world of today, however, are likely to have a more fluid and dynamic identity. Furthermore, identity is often flexible and changes between social situations, like with peers, at work, or at home.

Finally, because of limited sample size, this study was not able to examine differences in psychotic experiences between first- and second-generation migrants. However, in our sample size, 90% of the adolescents were second-generation migrants. Furthermore, of the 10% born abroad, approximately 90% migrated before their adolescence to the Netherlands. Schwartz et al. [53] describe a new migrant status, namely the "1.5 generation", referred to those migrants who arrive as young children. They state that these migrants are in many ways more similar to the second-generation migrants than to the first-generation migrants.

In conclusion, our results indicate no differences in psychotic experiences between ethnic minority and majority adolescents in The Netherlands, except for low levels of hallucinatory experiences in Turkish–Dutch adolescents. Both discrimination and weak ethnic identity were associated with higher levels of psychotic experiences. These findings implicate the need for intervention programs that focus on strengthening ethnic identity. While identity development is a (daunting) task for all youth, it may be even more important for adolescents with an ethnic minority background to learn to build their own identities, as it may prevent mental health problems in the future. More importantly, considering the clear evidence linking discrimination and social exclusion to mental health problems, public health policies should underline the importance of preventing discrimination. Especially in childhood and early adolescence, therefore, schools should promote social justice and encourage diversity.

Acknowledgements This work was supported by ZonMw (417100004). The authors gratefully acknowledge all participating children and teachers, and all research assistants involved.

Compliance with ethical standards

Conflict of interest The authors declare that they have no conflict of interest.

References

1. Bourque F, van der Ven E, Malla A (2011) A meta-analysis of the risk for psychotic disorders among first- and second-generation immigrants. Psychol Med 41:897–910. https://doi.org/10.1017/S0033291710001406
2. van Os J, Linscott RJ, Myin-Germeys I et al (2009) A systematic review and meta-analysis of the psychosis continuum: evidence for a psychosis proneness-persistence-impairment model of psychotic disorder. Psychol Med 39:179–195. https://doi.org/10.1017/S0033291708003814
3. Johns LC, van Os J (2001) The continuity of psychotic experiences in the general population. Clin Psychol Rev 21:1125–1141
4. Kelleher I, Connor D, Clarke MC et al (2012) Prevalence of psychotic symptoms in childhood and adolescence: a systematic review and meta-analysis of population-based studies. Psychol Med 42:1857–1863. https://doi.org/10.1017/S0033291711002960
5. Anglin DM, Lighty Q, Greenspoon M, Ellman LM (2014) Racial discrimination is associated with distressing subthreshold positive psychotic symptoms among US urban ethnic minority young adults. Soc Psychiatry Psychiatr Epidemiol 49:1545–1555. https://doi.org/10.1007/s00127-014-0870-8
6. Morgan C, Fisher H, Hutchinson G et al (2009) Ethnicity, social disadvantage and psychotic-like experiences in a healthy population based sample. Acta Psychiatr Scand 119:226–235. https://doi.org/10.1111/j.1600-0447.2008.01301.x
7. Oh H, Yang LH, Anglin DM, DeVylder JE (2014) Perceived discrimination and psychotic experiences across multiple ethnic groups in the United States. Schizophr Res 157:259–265. https://doi.org/10.1016/j.schres.2014.04.036
8. Velthorst E, Nieman DH, Veling W et al (2012) Ethnicity and baseline symptomatology in patients with an at risk mental state for psychosis. Psychol Med 42:247–256. https://doi.org/10.1017/S0033291711001486
9. Adriaanse M, van Domburgh L, Hoek HW et al (2014) Prevalence, impact and cultural context of psychotic experiences among ethnic minority youth. Psychol Med. https://doi.org/10.1017/S0033291714001779
10. Eilbracht L, Stevens GWJM, Wigman JTW et al (2015) Mild psychotic experiences among ethnic minority and majority adolescents and the role of ethnic density. Soc Psychiatry Psychiatr Epidemiol 50:1029–1037. https://doi.org/10.1007/s00127-014-0939-4
11. Laurens KR, West SA, Murray RM, Hodgins S (2008) Psychotic-like experiences and other antecedents of schizophrenia in children aged 9–12 years: a comparison of ethnic and migrant groups in the United Kingdom. Psychol Med 38:1103–1111. https://doi.org/10.1017/S0033291707001845
12. Wigman JTW, van Winkel R, Raaijmakers QAW et al (2011) Evidence for a persistent, environment-dependent and deteriorating subtype of subclinical psychotic experiences: a 6-year longitudinal general population study. Psychol Med 41:2317–2329. https://doi.org/10.1017/S0033291711000304
13. Morgan C, Charalambides M, Hutchinson G, Murray RM (2010) Migration, ethnicity, and psychosis: toward a sociodevelopmental model. Schizophr Bull 36:655–664. https://doi.org/10.1093/schbul/sbq051

14. Veling W, Susser E (2011) Migration and psychotic disorders. Expert Rev Neurother 11:65–76. https://doi.org/10.1586/ern.10.91
15. Selten JP, Van Der Ven E, Rutten BPF, Cantor-Graae E (2013) The social defeat hypothesis of schizophrenia: an update. Schizophr Bull 39:1180–1186. https://doi.org/10.1093/schbul/sbt134
16. Lewis TT, Cogburn CD, Williams DR (2015) Self-reported experiences of discrimination and health: scientific advances, ongoing controversies, and emerging issues. Annu Rev Clin Psychol. https://doi.org/10.1146/annurev-clinpsy-032814-112728
17. Schmitt MT, Postmes T, Branscombe NR, Garcia A (2014) The consequences of perceived discrimination for psychological well-being: a meta-analytic review. Psychol Bull 140:921–948. https://doi.org/10.1037/a0035754
18. Selten J, Cantor-Graae E (2005) Social defeat: risk factor for schizophrenia? Br J Psychiatry. 187:101–102. https://doi.org/10.1192/bjp.187.2.101
19. Pascoe EA, Richman LS (2009) Perceived discrimination and health: a meta-analytic review. Psychol Bull 135:531–554. https://doi.org/10.1037/a0016059
20. Veling W, Hoek HW, Mackenbach JP (2008) Perceived discrimination and the risk of schizophrenia in ethnic minorities. Soc Psychiatry Psychiatr Epidemiol 43:953–959. https://doi.org/10.1007/s00127-008-0381-6
21. Anglin DM, Lui F, Espinosa A et al (2016) Ethnic identity, racial discrimination and attenuated psychotic symptoms in an urban population of emerging adults. Early Interv Psychiatry. https://doi.org/10.1111/eip.12314
22. Anglin DM, Lui F, Espinosa A et al (2018) Ethnic identity, racial discrimination and attenuated psychotic symptoms in an urban population of emerging adults. Early Interv Psychiatry 12:380–390. https://doi.org/10.1111/eip.12314
23. Berry JW, Sabatier C (2011) Variations in the assessment of acculturation attitudes: their relationships with psychological wellbeing. Int J Intercult Relat 35:658–669. https://doi.org/10.1016/j.ijintrel.2011.02.002
24. Berry JW, Phinney JS, Sam DL, Vedder P (2006) Immigrant youth: acculturation, identity, and adaptation. Appl Psychol 55:303–332. https://doi.org/10.1111/j.1464-0597.2006.00256.x
25. Phinney JS, Horenczyk G, Liebkind K, Vedder P (2001) Ethnic identity, immigration, and well-being: an interactional perspective. J Soc Issues 57:493–510. https://doi.org/10.1111/0022-4537.00225
26. Koneru VK, Weisman de Mamani AG, Flynn PM, Betancourt H (2007) Acculturation and mental health: current findings and recommendations for future research. Appl Prev Psychol 12:76–96. https://doi.org/10.1016/J.APPSY.2007.07.016
27. Phinney JS, Cantu CL, Kurtz DA (1997) Ethnic and American identity as predictors of self-esteem among african american, latino, and white adolescents. J Youth Adolesc 26:165–185. https://doi.org/10.1023/A:1024500514834
28. Veling W, Hoek HW, Wiersma D, MacKenbach JP (2010) Ethnic identity and the risk of schizophrenia in ethnic minorities: a case-control study. Schizophr Bull 36:1149–1156. https://doi.org/10.1093/schbul/sbp032
29. Espinosa A, Tikhonov A, Ellman LM et al (2016) Ethnic identity and perceived stress among ethnically diverse immigrants. J Immigr Minor Health. https://doi.org/10.1007/s10903-016-0494-z
30. Lopez CR, Antoni MH, Fekete EM, Penedo FJ (2012) Ethnic identity and perceived stress in HIV + minority women: the role of coping self-efficacy and social support. Int J Behav Med 19:23–28. https://doi.org/10.1007/s12529-010-9121-x
31. Cronin TJ, Levin S, Branscombe NR et al (2012) Ethnic identification in response to perceived discrimination protects well-being and promotes activism: a longitudinal study of Latino college students. Gr Process Intergr Relat 15:393–407. https://doi.org/10.1177/1368430211427171
32. Romero AJ, Edwards LM, Fryberg SA, Orduña M (2014) Resilience to discrimination stress across ethnic identity stages of development. J Appl Soc Psychol 44:1–11. https://doi.org/10.1111/jasp.12192
33. Brittian AS, Kim SY, Armenta BE et al (2015) Do dimensions of ethnic identity mediate the association between perceived ethnic group discrimination and depressive symptoms? Cult Divers Ethn Minor Psychol 21:41–53. https://doi.org/10.1037/a0037531
34. el Bouhaddani S, van Domburgh L, Schaefer B et al (2017) Peer status in relation to psychotic experiences and psychosocial problems in adolescents: a longitudinal school-based study. Eur Child Adolesc Psychiatry. https://doi.org/10.1007/s00787-017-1063-2
35. Stronks K, Kulu-Glasgow I, Agyemang C (2009) The utility of 'country of birth' for the classification of ethnic groups in health research: the Dutch experience. Ethn Health 14:255–269. https://doi.org/10.1080/13557850802509206
36. Ising HK, Veling W, Loewy RL et al (2012) The validity of the 16-item version of the prodromal questionnaire (PQ-16) to screen for ultra high risk of developing psychosis in the general help-seeking population. Schizophr Bull 38:1288–1296
37. Loewy RL, Bearden CE, Johnson JK et al (2005) The prodromal questionnaire (PQ): preliminary validation of a self-report screening measure for prodromal and psychotic syndromes. Schizophr Res 79:117–125. https://doi.org/10.1016/j.schres.2005.03.007
38. de Jong Y, Mulder CL, Boon AE et al (2016) Screening for psychosis risk among adolescents in child and adolescent mental health services: a description of the first step with the 16-item version of the Prodromal Questionnaire (PQ-16). Early Interv Psychiatry. https://doi.org/10.1111/eip.12362
39. Fusar-Poli P, Nelson B, Valmaggia L et al (2014) Comorbid depressive and anxiety disorders in 509 individuals with an at-risk mental state: impact on psychopathology and transition to psychosis. Schizophr Bull 40:120–131. https://doi.org/10.1093/schbul/sbs136
40. Tropp LR, Erkut S, Coll CG et al (1999) Psychological acculturation: development of a new measure for Puertoricans on the U.S. mainland. Educ Psychol Meas 59:351–367. https://doi.org/10.1177/00131649921969794
41. Stevens GWJM, Vollebergh WAM, Pels TVM, Crijnen AAM (2005) Predicting externalizing problems in Moroccan immigrant adolescents in the Netherlands. Soc Psychiatry Psychiatr Epidemiol 40:571–579. https://doi.org/10.1007/s00127-005-0926-x
42. Belhadj Kouider E, Koglin U, Petermann F (2014) Emotional and behavioral problems in migrant children and adolescents in Europe: a systematic review. Eur Child Adolesc Psychiatry 23:373–391. https://doi.org/10.1007/s00787-013-0485-8
43. Belhadj Kouider E, Koglin U, Petermann F (2015) Emotional and behavioral problems in migrant children and adolescents in American countries: a systematic review. J Immigr Minor Heal 17:1240–1258. https://doi.org/10.1007/s10903-014-0039-2
44. Janssen I, Krabbendam L, Bak M et al (2004) Childhood abuse as a risk factor for psychotic experiences. Acta Psychiatr Scand 109:38–45. https://doi.org/10.1016/S0920-9964(03)80117-2
45. Wickham S, Shryane N, Lyons M et al (2014) Why does relative deprivation affect mental health? The role of justice, trust and social rank in psychological wellbeing and paranoid ideation. J Public Ment Health 13:114–126. https://doi.org/10.1108/JPMH-06-2013-0049
46. Steele CM (1997) A threat in the air. How stereotypes shape intellectual identity and performance. Am Psychol 52:613–629
47. Verkuyten M, Thijs J (2006) Ethnic discrimination and global self-worth in early adolescents: the mediating role of ethnic self-esteem. Int J Behav Dev. https://doi.org/10.1177/0165025406063573
48. Veling W, Selten J-P, Susser E et al (2007) Discrimination and the incidence of psychotic disorders among ethnic minorities in the

Netherlands. Int J Epidemiol 36:761–768. https://doi.org/10.1093/ije/dym085
49. McIntyre JC, Wickham S, Barr B, Bentall RP (2018) Social Identity and psychosis: associations and psychological mechanisms. Schizophr Bull 44:681–690. https://doi.org/10.1093/schbul/sbx110
50. Branscombe NR, Schmitt MT, Harvey RD (1999) Perceiving pervasive discrimination among African Americans: Implications for group identification and well-being. J Pers Soc Psychol 77:135–149. https://doi.org/10.1037/0022-3514.77.1.135
51. Nakash O, Nagar M, Shoshani A et al (2012) The effect of acculturation and discrimination on mental health symptoms and risk behaviors among adolescent migrants in Israel. Cult Divers Ethn Minor Psychol 18:228–238. https://doi.org/10.1037/a0027659
52. Verkuyten M (2003) Ethnic in-group bias among minority and majority early adolescents: the perception of negative peer behaviour. Br J Dev Psychol 21:543–564. https://doi.org/10.1348/026151003322535219
53. Schwartz SJ, Unger JB, Zamboanga BL, Szapocznik J (2010) Rethinking the concept of acculturation: implications for theory and research. Am Psychol 65:237–251. https://doi.org/10.1037/a0019330
54. Bhatia S, Ram A (2009) Theorizing identity in transnational and diaspora cultures: a critical approach to acculturation. Int J Intercult Relat 33:140–149. https://doi.org/10.1016/j.ijintrel.2008.12.009
55. Sellers RM, Smith MA, Shelton JN et al (1998) Multidimensional model of racial identity: a reconceptualization of African American racial identity. Pers Soc Psychol Rev 2:18–39. https://doi.org/10.1207/s15327957pspr0201_2
56. Stevens GWJM (2004) Patterns of psychological acculturation in adult and adolescent moroccan immigrants living in the Netherlands. J Cross Cult Psychol 35:689–704. https://doi.org/10.1177/0022022104270111
57. Özbek E, Bongers IL, Lobbestael J, van Nieuwenhuizen C (2015) Turkish and Moroccan young adults in the Netherlands: the relationship between acculturation and psychological problems. J Immigr Minor Heal 17:1687–1696. https://doi.org/10.1007/s10903-015-0203-3