

## The role of perceived discrimination in mediating the relationship between minority status and psychotic symptoms in a community sample

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### Abstract

Minority groups have been found to be at higher risk of developing psychotic symptoms, but the underlying mechanism is yet to be established. This study aims to determine the mechanism that underlies the relationship between minority status and psychotic symptoms, investigating the role of perceived discrimination as a mediator. We assessed 387 participants from a community sample in Indonesia using the Community Assessment of Psychotic Experiences for psychotic symptoms, surveys adapted from the NEMESIS study for minority status and perceived discrimination, and controlled for depression with the Patient Health Questionnaire-9. Mediation analysis was conducted, which showed that perceived discrimination fully mediated the relationship between minority status and positive psychotic symptoms, but not negative psychotic symptoms. This finding supports the social defeat hypothesis, which states that social stressors lead to positive psychotic symptoms due to dopamine dysregulation. However, further research is required to illustrate the association between social stressors and negative symptoms.

**Keywords:** Discrimination, minority, psychotic symptom

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## Introduction

Mental disorders and substance abuse are the leading causes of non-fatal burden of disease in the world, based on the Years Lived with Disability (YLD) statistics (Whiteford et al., 2013). One of the largest contributors to this condition is psychotic disorders. Psychotic disorders are syndromes that belong to a wide spectrum of disorders that cause individuals to experience issues in recognizing and understanding reality (van der Steen, 2018). van der Steen further explained that the symptoms of psychotic disorders (i.e., psychotic symptoms) can be classified into two categories: positive symptoms, such as magical thinking, hallucinations, delusions, and disorganized behavior and negative symptoms, such as anhedonia, social withdrawal, and loss of motivation. Schizophrenia is one of the most severe types of psychotic disorders.

Worldwide, the prevalence of schizophrenia can be approximated to 7.49 per mill (Moreno-Küstner, Martin, & Pastor, 2018), while in Indonesia, the statistics approximate to 1.7 per mill (Depkes, 2013). The smaller number in Indonesia might warrant the research in this topic to be less important. However, lower prevalence of the disorders may not necessarily be equal to lower prevalence of the symptoms. It has been shown repeatedly that prevalence of psychotic symptoms is always much higher than anticipated, especially when comparing it to the prevalence of psychotic disorders (Linscott & Van Os, 2013).

The continuum of psychosis (Linscott & Van Os, 2013) states that psychotic symptoms occur not only in individuals diagnosed with psychotic disorders, but also in those who do not. This notion is important to understand that psychotic symptoms do not necessarily indicate the presence of a disorder in an individual. Furthermore, this notion also made it possible to investigate psychotic symptoms in a community sample consisting of people with psychotic disorders, people with non-psychotic disorders, and people without a mental disorder diagnosis. Moreover, it was found that psychotic symptoms behave like psychotic disorders in a way that they might share the same risk factors (Linscott & Van Os, 2013), such as:

genetic influence/history of disorders in family (Zavos et al., 2014); sleep problems (Koyanagi & Stickley, 2015), use of substances such as tobacco (Gurillo, Jauhar, Murray, & MacCabe, 2015), cannabis, methamphetamine (McKetin, Lubman, Baker, Dawe, & Ali, 2013), and depressive and anxiety disorders (Fusar-Poli, Nelson, Valmaggia, Yung, & McGuire, 2014).

Other risk factors, which will be the main point of this research, are social factors, defined as the factors occurring in our daily situations and or interactions in life. Several studies have investigated certain social factors, such as childhood trauma (Varese et al., 2012), bullying (van Dam et al., 2012), adaptation process of college freshmen to their new social environment (Binbay et al., 2017), and social relationship issues with peers, especially in adolescence (Maharani & Turnip, 2018). One of the first studies investigating the impact of social factors on psychotic symptoms was Janssen et al (2003), in which it was found that the perception of being discriminated was associated with psychotic symptoms.

Indonesia, with its rich cultural features, consists of at least 1.340 ethnic identities (Na'im & Syaputra, 2011) and hundreds of millions of individuals providing a diverse identity background. This condition, however, also increases the risks of discrimination occurring, which is closely associated with minority statuses. Minorities—part of population differing from other larger groups in some characteristics— have been shown to be vulnerable to various adverse psychological outcomes. For example, it has been shown that depression and suicidal thoughts are more common in sexual minorities (Burton, Marshal, Chisolm, Sucato, & Friedman, 2013), depressive symptoms are more common in ethnic minorities/immigrants (Missinne & Bracke, 2012), and psychotic symptoms are more common in ethnic minorities (Leaune et al., 2019; Van Der Ven & Selten, 2018) and sexual minorities (Gevonden et al., 2014). This is presumed to occur because individuals belonging to various minority groups are prone to being discriminated against, which then leads to a higher risk of various negative conditions in well-being.

Discrimination can be defined as the different or unfair treatment on the basis of individual social group membership (Grollman, 2012; Williams, Lavizzo-Mourey, & Warren, 1994), such as race/ethnicity, nation origin, religion/beliefs, gender, sexual orientation, and other social groups (Slopen, Lewis, & Williams, 2016). Interestingly, the occurrence of discrimination as a negative experience is rather difficult to observe objectively in day-to-day contexts (Ruggiero & Taylor, 1997), which is why in research contexts, this concept is often measured as perceived discrimination (Ruggiero & Taylor, 1997). The word 'perceived' is attached because it involves one's perception to the different or unfair treatment received from others, and that it happens because of their association to certain social groups (Cardo, 1994; Kakarika, 2012). The same word also explains that one can feel as though he/she was just discriminated against even if this may not be true, or vice versa (Phinney, Madden, & Santos, 1998). Hence, not everyone—regardless of minority or majority—can objectively know that he/she is being discriminated against.

Discrimination and/or perceived discrimination has negative consequences towards mental health. They have been found to be related to a lower level of psychological well-being (Schmitt, Branscombe, Postmes, & Garcia, 2014) and various psychological disorders, such as depression, panic disorder, substance abuse (Chou, Asnaani, & Hofmann, 2012), and psychotic disorders (Oh, Yang, Anglin, & DeVlyder, 2014). A similar condition is experienced by those who belong to a minority group, for instance ethnic minorities (El Bouhaddani, van Domburgh, Schaefer, Doreleijers, & Veling, 2019) and sexual minorities (Gevonden, et al., 2014). In the field of psychosis, one of the mechanisms proposed to explain the association of minority status, perceived discrimination, and psychotic symptom is known as social defeat (Selten & Cantor-Graae, 2007).

The social defeat hypothesis states that individuals can experience psychotic symptoms because they have negative experiences of being excluded by a majority group. This can take place due to various environmental stressors, such as discrimination (Selten & Cantor-Graae, 2005), that subsequently sensitizes the mesolimbic dopaminergic system and increases the risk of an individual experiencing psychotic disorders (Selten, Booij, Buwalda, & Meyer-Lindenberg, 2017). In terms of the research phenomena, the negative impact of discrimination, particularly towards members of a minority group, is highly dependent on negative individual perceptions. This makes individuals feel excluded from a group, which in turn impacts the development of psychotic symptoms.

In Indonesia, the latest study covering more than one social factor in relation to psychotic symptoms was conducted by Jaya, Ascone, and Lincoln (2017), with samples from three different countries: Germany, Indonesia, and the United States. Findings suggested that social adversity—a term encompassing several social factors, such as discrimination and minority status—was found to be associated with both positive and negative symptoms of psychosis. Nevertheless, the relationship between minority status, discrimination, and their impacts towards psychotic symptoms was not specifically

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illustrated, even though those two phenomena are closely related to discrimination, since it is more likely for an individual to be discriminated against if he/she belongs to a minority group.

In conclusion, considering the nature of psychotic symptoms appearing on a continuum in varying degrees of severity, studies related to the mechanisms of the presence of psychotic symptoms in minorities (who are more prone to experience psychotic disorders) become increasingly important. It is equally important to also consider the effect of various or multiple minority statuses on psychosis, especially taking into account the rich and diverse cultures and ethnic backgrounds in Indonesia. To give us a complete understanding of why individuals in minority groups are more vulnerable to psychotic disorders, we must also comprehend the role of perceived discrimination in bridging the relationship between the variables. Thereupon, in this research we predicted that the influence of minority statuses on psychotic symptoms can be explored more thoroughly by considering the role of perceived discrimination as a mediator. We aim to test this mediation effect further by controlling depressive symptoms as a covariate that may influence the occurrence of psychotic symptoms. We conducted the study in a community sample in Indonesia—the general population with diverse backgrounds—consisting of individuals who have a history of psychotic disorders and those who have never and are not currently experiencing them.

## Method

Data was collected between November 2018 and January 2019 through an online survey utilizing survey.ui.ac.id—the official survey platform of Universitas Indonesia. Non-random (convenience) sampling was used in the data collection phase. Prior to the research, ethical clearance was obtained from the Ethics Committee of the Faculty of Psychology, Universitas Indonesia in the year 2018.

Participants were recruited from a community sample in Indonesia, consisting of individuals with diverse backgrounds and histories of mental illnesses. Participants were then screened for several criteria: minimum age of 18 years, provided their consent, completed the questionnaire, and answered accordingly to our seriousness check which we adapted from (Aust, Diedenhofen, Ullrich, & Musch, 2013). Of the 1,767 responses recorded, only 387 participants were eligible for further analysis in this study. Three different measurements were used to assess each variable in this study: Community Assessment of Psychotic Experiences (CAPE), adaptation of NEMESIS (Netherland Mental Health Survey and Incidence Study) survey, and Patient Health Questionnaire-9 (PHQ-9). Each of these measurement tools will be explained within the next few paragraphs.

In this study, psychotic symptoms in the general population were assessed using the Community Assessment of Psychotic Experiences (Mossaheb et al., 2012; Stefanis et al., 2002). We used the Indonesian version of CAPE, which had been translated into Bahasa Indonesia and validated by Jaya (2017). The lifetime frequency of psychotic symptoms was measured using a 4-point Likert scale, ranging from 'never' to 'nearly always', consisting of 20 items for positive symptoms and 14 items for negative symptoms. Reliability analysis with Cronbach Alpha for positive and negative symptoms was 0.896 and 0.891, subsequently, which indicated good reliability.

Minority status was measured through self-report using questionnaires adapted from The Netherlands Mental Health Survey and Incidence Study (Janssen, et al., 2003), translated into Bahasa Indonesia by Jaya et al.(2017), and further developed with the help of Turro Selrits Wongkaren from the Lembaga Demografi FEB UI as an expert. The questionnaire consisted of 7 items measuring the degrees of the minority status they held, in which participants were asked to give their agreement when the statement provided was applicable to them. These items covered several domains of minority status: sexual orientation, gender identity, physical disability, ethnicity, skin colour/eye shape, religion/beliefs, and certain physical characteristics (such as moles, scars, baldness, or obesity). An example of an item in the survey regarding minority in sexual orientation: *"I have a different sexual orientation than most people"*. Each statement considered applicable by a participant (clicked in the survey), would be scored as 1 with total score ranging from 0 (not applicable/no minority statuses) to 7 (minority statuses in all domains).

Perceived discrimination was measured using a similar instrument as the one used for minority status, developed and adapted in the same way. It consisted of nine dichotomous items (yes/no), inquiring whether participants ever experienced discrimination associated with the same domains as those of the minority status in their lifetime, with addition of two domains: age and gender based discrimination. Every item answered "yes" by the participants will be scored 1, with a total score ranging from 0 (no discrimination in all domains) to 9 (ever discriminated in all domain).

Depressive symptoms as a covariate for statistical control was measured using the Patient Health Questionnaire-9 (Kroenke, Spitzer, & Williams, 2001). We used the Bahasa Indonesia version available on phqscreeners.com. PHQ-9 consisted of 9 items measuring depressive symptoms based on its diagnostic criteria in DSM-IV, focusing on the occurrence of each symptom in the last two weeks. PHQ-9 utilized a 4-point Likert scale for each item, ranging from ‘never’ to ‘almost every day’. Reliability analysis using Cronbach Alpha was 0.897, meaning this measure has good reliability.

Finally, the data collected was screened using the inclusion criteria and then analyzed. Statistical analysis was conducted using an IBM software package called the Statistical Package for the Social Sciences version 22. To answer the research question regarding the mediation effect of perceived discrimination on the association between minority status and psychotic symptoms, we ran model 4 (simple mediation model) in PROCESS version 3.3 by Hayes (2017), controlling for depressive symptoms.

## Results and Discussion

Table 1 shows the participant and variable characteristics of the 387 data entries recorded. Aside from age as a demographic variable, we also measured gender and educational attainment. In general, most of the participants were female (72.4%), and a large part of their latest educational attainment was high school (72.9%).

**Table 1 <Participant and Variable Characteristics>**

Variable	M	SD	Sample Range	Possible Range
Age	22.01	5.15	18 – 57	-
Positive Psychotic Symptoms	15.58	9.75	0 – 56	0 – 60
Negative Psychotic Symptoms	19.05	8.06	0 – 41	0 – 42
Minority Status	0.97	1.09	0 – 5	0 – 7
Perceived Discrimination	1.19	1.46	0 – 8	0 – 9
Depressive Symptoms	11.06	10	0 - 27	0 - 27

In table 2, detailed characteristics of each domain of minority status and perceived discrimination is presented.

**Table 2 <Domain of Minority Status and Perceived Discrimination>**

Domain	Minority Status	Perceived Discrimination
Age	-	78 (20.2%)
Gender	-	83 (21.4%)
Sexual Orientation	38 (9.8%)	11 (2.8%)
Gender Identity	4 (1%)	6 (1.6%)
<i>(Continued)</i>		
Physical Disability	25 (6.5%)	27 (7%)
Ethnicity	41 (10.6%)	44 (11.4%)
Skin Colour/Eye Shape	52 (13.4%)	52 (13.4%)
Religion/Beliefs	59 (15.2%)	52 (13.4%)
Certain Physical Characteristics	155 (40.1%)	109 (28.2%)

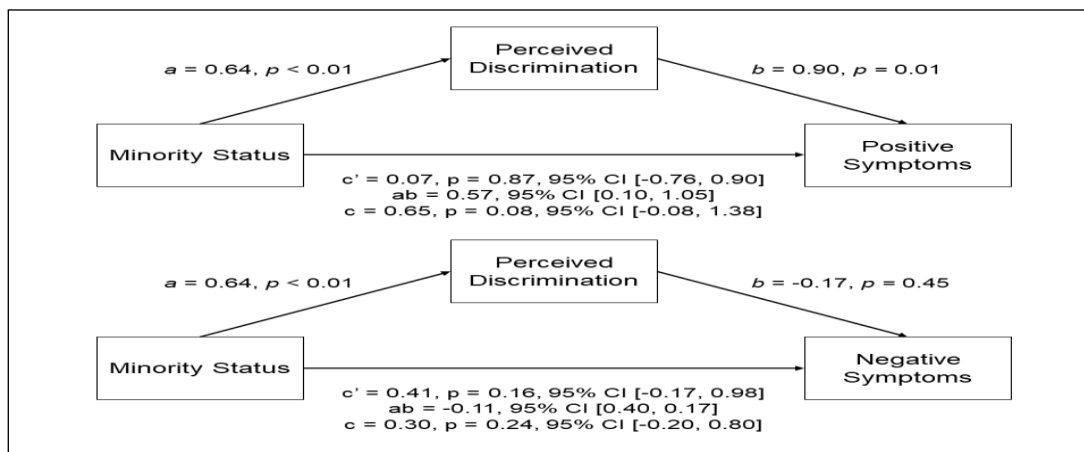
Note. The number in brackets represents the percentage of total participants

The numbers outside the brackets represent the number of participants who declared having the minority status or perceived to be discriminated against because of that status. The physical characteristics domain is the highest reported minority status affiliation and the reason for which most people felt they

were discriminated against. In comparison, the least reported domain is gender identity, ranging from 1 to 1.6%.

Mediation analysis results are shown in Figure 1, with two different models representing two different outcomes: positive symptoms and negative symptoms. The  $a$  pathway refers to the regression coefficient from the predictor to the mediating variable,  $b$  pathway to the regression coefficient from mediating variable to the outcome, and the  $ab$  pathway as a result of multiplying  $a$  and  $b$  pathways, referring to the indirect effect from predictor to the outcome via the mediating variable. The direct effect and total effect, each corresponds to  $c'$  and  $c$  value was reported in the figure. Even so, in concluding whether mediation effect occurs, the principles from MacKinnon (2008) will be used. This principle stated that mediation can be concluded when  $a$  and  $b$  pathway are significant, even though their direct ( $c'$ ) or total effect ( $c$ ) are not significant.

Results showed that mediation effect occurs in the positive symptom model, meaning that minority status is significantly associated with perceived discrimination, which in turn is associated with higher positive symptoms. This mediation effect, however, was not found in the negative symptom model as the  $b$  pathway from perceived discrimination to negative symptoms is not significant. Thus, the hypothesis was supported partially.



**Figure 1 <Mediation Analyses for two Separate Models: Positive and Negative Symptoms>**

Figure 1 aimed to examine the mechanism of the relationship between minority status as a social factor and psychotic symptoms, which was assumed to exist through the role of perceived discrimination as a mediator. In order to provide elaborate explanations, two different mediation model analyses were carried out, each for positive and negative symptoms. The results of the data analysis shows evidence that supports the initial hypothesis of this study, that perceived discrimination mediates the relationship between minority status and psychotic symptoms (more specifically, positive psychotic symptoms, the first model) after controlling for depressive symptoms.

These findings regarding the role of perceived discrimination in the emergence of psychotic symptoms are in line with previous research (El Bouhaddani, et al., 2019; Janssen, et al., 2003; Oh, et al., 2014; Van De Beek, Van Der Krieke, Schoevers, & Veling, 2017). In addition, another study also found that a higher level of discrimination is associated with a higher risk of experiencing psychotic disorders (Veling et al., 2007). An interesting finding in this study is that the mediating effect of perceived discrimination was found in the first model (positive symptoms) but not the second (negative symptoms), which causes the research hypothesis to only be partially supported. This implies that social defeat—as a mechanism to explain the emergence of psychotic symptoms—can only explain how discriminated minority groups develop positive psychotic symptoms but not their negative counterpart. Yet, when discussing issues with the dopamine system, this can impact both positive and negative symptoms (Mark & Toulopoulou, 2016).

One of the strengths of this research is the multidimensional approach in targeting psychotic symptoms (positive and negative), specifically when discussing the effects of minority status and perceived discrimination at the same time. This can be done because the use of the CAPE, which has been tested for its dimensionality (Mark & Toulopoulou, 2016). Although the CAPE does not include disorganized symptoms into its measurement, this is still considered reasonable as disorganized symptoms tend to be

unreliable when assessed using self-report measures (Rodgers & Mann, 1986). Hence, the CAPE can still be considered the best measurement alternative that can be used on a community sample.

Previous studies related to social factors and psychotic symptoms showed a tendency to view psychotic symptoms as unidimensional constructs. This was influenced by the measuring instruments that were used, for instance the Prodromal Questionnaire-16 (Ising et al., 2012; Lorenzo et al., 2018) used in el Bouhaddani et al. (2019) dan van de Beek et al. (2017), or the WHO-CIDI 3.0 Psychosis Screen used in Oh et al. (2014). These unidimensional constructs focused mainly on positive symptoms, which is why we only found limited sources that discussed positive and negative psychotic symptoms separately to compare to the results of our study.

To summarize the results of this study, we found convincing evidence that supported the hypothesis that perceived discrimination—as one of many environmental stressors—mediates the relationship between minority status and positive psychotic symptoms. This mediation effect remained significant despite controlling for depressive symptoms, a factor that has been shown to affect psychotic symptoms. The null finding regarding the absence of the mediating effects on negative symptoms in this study is also in line with findings of previous studies (Berg et al., 2011). Thus, other mechanisms that are more appropriate in explaining the relationship between minority status and psychotic symptoms should be targeted and identified in future research. Even so, the findings of this study hold important implications; of all the social factors that can cause psychotic symptoms, discrimination is one of the factors that can be minimized using appropriate interventions, such as by eradicating stigma towards minority groups. Reducing discrimination in the population may have immediate health consequences. This can be particularly relevant in low-and-middle-income countries such as Indonesia because of the immediate needs in reducing healthcare costs that are imposed on the national health insurance known as Badan Penyelenggara Jaminan Sosial (Agustina et al., 2019).

## Conclusion

The purpose of this study is to determine whether perceived discrimination mediates the relationship between minority status and psychotic symptoms (both positive and negative). Based on data analysis, the role of perceived discrimination as a mediator only applies to the relationship between minority status and positive symptoms of psychosis, not negative symptoms. This implies that individuals who identify with more minority statuses will have more experiences of discrimination in various identity domains throughout their lives, which in turn will increase the emergence of positive psychotic symptoms that they experience. One important implication of the study is that eradicating stigma towards minority groups may have immediate health consequences in the population.

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