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Article

Social Identity and Psychosis: Associations and Psychological Mechanisms

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Humans possess a basic need to belong and will join groups even when they provide no practical benefit. Paranoid symptoms imply a disruption of the processes involved in belonging and social trust. Past research suggests that joining social groups and incorporating those groups into one's identity (social identification) promotes positive self-views and better physical and mental health. However, no research has investigated whether social identity is associated with paranoia, nor the mechanisms by which this effect may emerge. Here, we examined the relationship between social identity and mental health (paranoia, auditory verbal hallucinations [AVHs], and depression), and tested the mediating role of self-esteem. In study 1, we analyzed data collected from 4319 UK residents as part of the NIHR CLAHRC NWC Household Health Survey. Study 2 comprised data collected from 1167 students attending a large UK university. The studies provided convergent evidence that social identification reduces symptoms of paranoia and depression by furnishing people with self-esteem. There was no consistent effect of social identification on AVHs. People developing mental health assessments, treatments, and policies are encouraged to consider the notion that joining and identifying with social groups may reduce people's risk of paranoia and depression.

Key words: psychosis/paranoia/depression/social identity/self-esteem/belonging

Introduction

Humans have evolved to live in social groups and will join groups and resist exclusion even when group membership affords no practical benefit.[1] Increasing group memberships, and one's sense of belonging or identification with those groups, has been shown to alleviate health symptoms and promote positive self-views[2]—a phenomenon referred to in the social psychology literature as the "social cure."[3] Here, we apply these principles to examine whether social identification protects against symptoms of psychosis, and whether the posited relationships emerge because identification furnishes people with personal self-esteem. Our particular focus is on paranoid symptoms, which are the most common symptom of first episode psychosis[4] and have been shown to lie on a continuum with healthy functioning.[5,6]

Epidemiological studies have pointed to specific social risk factors for paranoid thinking, such as living in deprived neighborhoods,[7,8] discrimination,[9] parental neglect,[10] and other kinds of attachment-disrupting events in childhood.[11,12] Although several psychological models have been proposed to explain how these kinds of experiences lead to paranoid delusions,[13,14] they all have a number of common features. First, overanticipation of social threat is believed to be the final common pathway that leads to paranoid beliefs; second, this overanticipation of threat is assumed to be modulated by various cognitive biases; and third, negative beliefs about the self (low self-esteem) are assumed to play an important role in stimulating paranoid thinking. The central role of self-esteem and related processes in paranoid beliefs is strongly supported by past research, which has shown that paranoia in patients is associated with low[15,16] and unstable self-esteem,[17] the momentary onset of paranoid thoughts is preceded by decreases in self-esteem,[17] and low self-esteem predicts the long-term persistence of paranoia.[18] It has also been found that insecure attachment styles are associated with paranoia among patients with psychosis, and that this relationship is mediated by reductions in self-esteem[19]—a finding that has been replicated in student[20] and population samples.[10]

The term social identity refers to individuals' identification with or sense of belonging to social groups. Humans have the capacity to identify with a wide range of groups, including families, the inhabitants of particular geographical areas (towns or neighborhoods), ethnicities, occupational groups, religious groups, and friendship groups.[21] People may incorporate several identities into their sense of self, or they may not identify with any groups at all.

Social identification is, therefore, the broad term that refers to all of these potential specific identities. It should be noted that identification cannot be reduced to the number of interpersonal ties one possesses. It has been demonstrated, for example, that higher self-esteem is predicted by belonging to multiple groups that are personally important to the individual and not by the number of friends or social connections one possesses.[22] Identification with positively valued groups was initially described as an important source of self-worth[23] and has since been found to predict high self-esteem among children, older adults, homeless people,[22] minority groups,[24] and students.[25] The number of groups to which a person belongs, and the strength of their identification with those groups, is also associated with better health and wellbeing.[2] Of relevance to the present research, studies examining depression—a psychiatric symptom which, like paranoia, is associated with low self-esteem—have shown that possessing fewer social identities predicts depressive symptoms longitudinally[26] and this relationship is likely to be causal.[27]

Research examining the relationship between identity and psychosis is sparse. In the most comprehensive theoretical account put forward to date, we posited that identity may reduce paranoia through several pathways.[28] We argued that group memberships and identification reduce paranoia through social (ie, group members challenging unusual beliefs) and psychological (eg, boosting self-esteem) mechanisms. Further, we suggested that identity may help explain the high rates of paranoia observed among ethnic minorities who live in majority dominated areas where their identities may be devalued. This model of social identity and psychosis, however, is yet to be tested empirically.

To our knowledge, the only study that has examined the relationship between identity and paranoia to date has been conducted with female Arab students attending English-language taught courses at a university in the United Arab Emirates.[29] The study found that students who identified more with US culture, and who had higher self-rated competence in English, reported more paranoid symptoms. In the present research, we examine the relationship between social identification, self-esteem, psychosis, and depression using two separate samples. Because social identities protect against low self-esteem, which appears to play an important role in paranoia, we expect that social identification will predict lower levels of paranoia. Further, we predict that this effect will be mediated by self-esteem. Given the role of self-esteem in depression and the results of previous studies reviewed above, we expect to find evidence for a similar pathway from identity to depression through self-esteem. Finally, we test the model against a second symptom of psychosis: auditory verbal hallucinations (AVHs). AVHs are thought to operate through different psychological mechanisms (eg, source monitoring failures and dissociative states; see refs. [30,31] for a review) and to be associated with

different social determinants compared with paranoia (ie, childhood sexual trauma as opposed to disrupted early attachment relationships).[10,11] Indeed, previous research has shown that insecure attachment, as noted an important process in paranoia, is not associated with hallucinatory experiences in either healthy[20] or clinical samples.[15] Low self-esteem is also more strongly associated with paranoia than AVH.[19] Together, past research suggests that, unlike paranoia, hallucinations do not show reliable associations with social relationship variables and it is unlikely that self-esteem is a key driver of AVH.

Study 1 Method

Participants and Design

Face-to-face interviews were conducted as part of the National Institute of Health Research Collaboration for Leadership in Applied Health Research and Care North West Coast (NIHR CLAHRC NWC) Household Heath Survey. In conjunction with local authorities, National Health Service partners and public advisors, we designed a comprehensive health and well-being survey. A total of 4319 participants from households across the North West of England were recruited between August 2015 and January 2016. The sample consisted of 1854 (43%) men and 2465 (57%) women whose ages ranged from 18 to 95 years (M = 49.12, SD = 19.13). The majority of participants (89%) indicated that they were of White European ethnic background. Fifteen percent of participants had a degree or higher level of education and 4% identified as current students. Forty percent indicated that they were employed, 29% had retired, 9% were permanently unable to work due to illness or injury, and 5% were actively looking for paid employment or training. All respondents were reimbursed with a £10 voucher in return for their participation. A more detailed description of the sampling procedure is available in Supplementary material (Appendix A).

Measures

Neighborhood Identity. Neighborhood identity was measured using a single item from the UK Community Life Survey.[32] Participants were asked to indicate on a four-point scale the extent to which they felt they belonged to their immediate neighborhood, with neighborhood defined to participants as "your street or block." Response options ranged from 1 = *not at all strongly* to 4 = *very strongly.* The item captures one's sense of group belonging, which has been implicated in the centrality,[33] satisfaction,[34] and solidarity[35] subcomponents of social identification.

Self-esteem. Participants completed the Single-Item Self-esteem scale (SISE). This scale has been validated against the 10-item Rosenberg Self-esteem scale (RSE),

showing very high convergent validity. It demonstrates good test-retest reliability and stability over time, coupled with high construct and discriminant validity.[36] The item required participants to indicate on a seven-point scale how true or untrue the statement "I have high self-esteem" was for them (1 = *not very true of me*, 7 = *very true of me*).

Paranoia. Paranoia was assessed with five items taken from the persecution subscale of the persecution and deservedness scale (PaDS), a measure designed for use with both clinical and population samples and which has been validated against both questionnaire and clinical measures of paranoia.[37] We found that the PaDS-5 correlates at 0.94 with the complete PaDS-10 in a sample of patient, at-risk, and general population participants.[6] Participants rated their agreement on a five-point scale with statements such as "I'm often suspicious of other people's intentions towards me" and "You should only trust yourself." Response options ranged from 1 = *strongly disagree* to 5 = *strongly agree* and were averaged to create a reliable scale, α = 0.84.

Auditory Verbal Hallucinations. Participants rated their level of agreement with two statements ("I have been troubled by hearing voices in my head" and "I often hear a voice speaking my thoughts aloud") adapted from the Launay-Slade Hallucination Scale.[38–40] Response options ranged from 1 = *strongly disagree* to 5 = *strongly agree, r* (4317) = 0.84, P < .001.

Depression. Depression was assessed with the nine-item Patient Health Questionnaire (PHQ-9).[41] Participants were asked how often they had been bothered by problems such as "Feeling down, depressed, or hopeless" and "Thoughts that you would be better off dead, or hurting yourself in some way" over the last 2 weeks. Response options ranged from 1 = *not at all* to 4 = *nearly every day*, α = 0.90.

Demographics. Participants were asked to indicate their age (1–10 in age bands), sex (1 = male, 2 = female), ethnicity (0 = white, 1 = black, and minority ethnic—due to the large proportion of white respondents), employment status (coded as 0 = not employed, 1 = employed), and education level (coded as 0 = no degree, 1 = degree).

Statistical Analysis Procedure

Descriptive, correlational, and missing value analyses were conducted using SPSS 22 software.[42] Multilevel mediation analyses were conducted using STATA 12 software and employing the ml_mediation command.[43] Variation between neighborhoods in the association between variables was considered using random intercept models.[44] Each model was constructed with participants at level 1 and the sampled areas at level 2. We specified three separate multilevel mediation models assessing the effect of the independent variable (IV: neighborhood identity) on the three dependent variables (DVs: paranoia, AVH, and depression) through the mediating variable (MV: self-esteem), all of which were at level 1. In each model, we specified the direct effect from the IV to the MV (path a), the direct effect from the MV to the DV (path b), and the direct effect from the IV to the DV (path c′). Mediation was assessed using bootstrapped 95% bias-corrected confidence intervals with 500 resamples. Complete regression equations are available as Supplementary material (Appendix B).

We included age, sex, ethnicity, education, and employment status as level 1 control variables in every model. These variables were chosen apriori because they might plausibly be correlated with our identity variables and were also known to correlate with mental health symptoms based on previous research.[12,15] For example, older participants may identify more with their neighborhood because they have lived there for a longer period of time. Similarly, people who live in deprived areas may be more likely to disidentify with their local area compared to people in less deprived locations. People from ethnic minority backgrounds, who experience higher rates of psychosis,[45,46] tend to have limited social networks compared to people from white backgrounds[47] and are also likely to face cultural challenges to group identification such as language barriers and discrimination.[28] Given that paranoia and AVH belong to the positive syndrome and are highly comorbid[48] and depression and psychosis are highly comorbid,[49] when examining each symptom the other two symptoms were included in the model as level 1 control variables. For example, when examining paranoia as the DV, we controlled for depression and AVH.

Study 1 Results

Preliminary Analyses

Ninety-one of the 4319 participants had incomplete data, but no participants were missing more than 50% of values. No variables were missing more than 1% of values; the variable with the highest level of missingness was neighborhood identity (0.7%). Participants and variables were, therefore, considered adequately sampled. Listwise deletion was used to account for missing values.

Descriptive statistics and bivariate correlations are reported in table 1. Participants who identified more strongly with their neighborhood had higher levels of self-esteem and lower levels of all three mental health symptoms. Further, the correlations indicated that multicollinearity between predictors was acceptable for subsequent mediation analyses.

Multilevel Mediation Analyses

Mediation was assessed via bootstrapping analyses with 500 resamples.[50] Baron and Kenny proposed that a direct

relationship between the IV and DV is a precondition for establishing mediation.[51] More recently, however, it has been recommended that this step is not necessary to test mediation.[52] Thus, indirect effects were examined when the conditions of a significant IV-mediator relationship and a significant mediator-DV relationship were satisfied.

The unstandardized estimates and CIs of the direct and indirect effects are reported in tables 2–4. The direct and total effects between neighborhood identity and paranoia and neighborhood identity and depression were significant. Higher neighborhood identification was associated with lower depression and paranoia scores. There was no total or direct effect of neighborhood identity on AVH. Higher self-esteem was significantly related to lower paranoia, depression, and AVH. Bootstrapped bias-corrected indirect effects indicated that self-esteem partially mediated the relationship between neighborhood identity and symptoms of depression and paranoia. There was also an indirect-only mediation effect for AVH. The mediated effect was strongest for depression insofar as 20% of the total effect of neighborhood identity on depression was mediated by self-esteem, compared to 15% for paranoia. There was not total effect of neighborhood identity on AVH.

Study 1 Discussion

Our analyses of data from a general population sample provided preliminary support for our hypotheses. Because neighborhood identity was associated with depression and paranoia through self-esteem, but not with AVH, the effect is unlikely to pertain to mental health in general. This finding is consistent with our predictions and recent theorising[28]; however, due to practical constraints associated with

Table 1. Descriptive Statistics and Bivariate Correlations Between Variables in Study 1

Variable	M	SD	1	2	3	4	5
1. Neighborhood ID	1.84	0.83	—	0.10***	−0.14***	−0.05**	−0.15***
2. Self-esteem	4.54	1.73	—	—	−0.30***	−0.22***	−0.33***
3. Paranoia	1.95	0.87	—	—	—	0.39***	0.50***
4. AVH	1.29	0.66	—	—	—	—	0.33***
5. Depression	1.52	0.65	—	—	—	—	—

AVH, auditory verbal hallucination.
*$P < .05$, **$P < .01$, ***$P < .001$

Table 2. Total, Direct and Indirect Effects Between Social Identity, Self-esteem, and Paranoia, While Controlling for Demographic Variables and Comorbid Symptoms in Study 1

Criterion Variable		Predictor Variable	B	SE	95% CI
Path a					
Self-esteem	On	Neighborhood identity	0.15***	0.03	0.09, 0.21
		Age	−0.03*	0.01	−0.06, −0.005
		Sex	−0.15**	0.05	−0.25, −0.05
		Ethnicity	0.004	0.08	−0.15, 0.16
		Employment	0.32***	0.06	0.21, 0.43
		Education	0.49***	0.07	0.35, 0.63
		AVH	−0.25***	0.04	−0.33, −0.18
		Depression	−0.73***	0.04	−0.81, −0.64
Path b					
Paranoia	On	Self-esteem	−0.06***	0.01	−0.07, −0.04
Path c′					
Paranoia	On	Neighborhood identity	−0.05***	0.01	−0.08, −0.03
		Age	−0.02*	0.01	−0.03, −0.003
		Sex	<0.001	0.03	−0.04, 0.04
		Ethnicity	0.02	0.04	−0.05, 0.09
		Employment	−0.08**	0.03	−0.13, −0.03
		Education	−0.12**	0.03	−0.18, −0.06
		AVH	0.32***	0.02	0.28, 0.35
		Depression	0.54***	0.02	0.51, 0.58
Bootstrapped bias-corrected total effect (path c)			−0.06*	0.01	−0.08, −0.03
Paranoia	On	Neighborhood identity			
Bootstrapped bias-corrected indirect effect			−0.01*	0.002	−0.013, −0.005
Neighborhood identity → self-esteem → paranoia					

*$P < .05$, ** $P < .01$, *** $P < .001$

Table 3. Total, Direct and Indirect Effects Between Social Identity, Self-Esteem, and Depression, While Controlling for Demographic Variables and Comorbid Symptoms in Study 1

Criterion Variable		Predictor Variable	B	SE	95% CI
Path a	On	Neighborhood identity	0.17***	0.03	0.11, 0.23
Self-esteem		Age	−0.02	0.01	−0.05, 0.01
		Sex	−0.16**	0.05	−0.26, −0.06
		Ethnicity	0.09	0.08	−0.07, 0.25
		Employment	0.37***	0.06	0.26, 0.48
		Education	0.42***	0.07	0.28, 0.56
		AVH	−0.26***	0.04	−0.34, −0.18
		Paranoia	−0.45***	0.03	−0.51, −0.39
Path b					
Depression	On	Self−esteem	−.07***	0.005	−0.08, −0.06
Path c′					
Depression	On	Neighborhood identity	−0.05***	0.01	−0.07, −0.03
		Age	−0.03***	0.005	−0.04, −0.02
		Sex	0.01	0.02	−0.02, 0.04
		Ethnicity	−0.13***	0.03	−0.19, −0.08
		Employment	−0.10***	0.02	−0.14, −0.06
		Education	0.08**	0.02	0.03, 0.13
		AVH	0.13***	0.01	0.11, 0.16
		Paranoia	0.28***	0.01	0.26, 0.30
Bootstrapped bias-corrected total effect (path c)			−0.06*	0.003	−0.08, −0.04
Depression	On	Neighborhood identity			
Bootstrapped bias-corrected indirect effect			−0.01*	0.003	−0.018, −0.007
Neighborhood identity → self-esteem → depression					

*P < .05, ** P< .01, *** P< .001.

Table 4. Total, Direct and Indirect Effects Between Social Identity, self-Esteem, and AVH, While Controlling for Demographic Variables and Comorbid Symptoms in Study 1

Criterion Variable		Predictor Variable	B	SE	95% CI
Path a	On	Neighborhood identity	0.14***	0.03	0.08, 0.20
Self-esteem		Age	−0.04**	0.01	−0.07, −0.01
		Sex	−0.13**	0.05	−0.23 −0.04
		Ethnicity	0.01	0.08	−0.15, 0.17
		Employment	0.32***	0.06	0.21, 0.43
		Education	0.47***	0.07	0.33, 0.60
		Depression	−0.61***	0.04	−0.69, −0.52
		Paranoia	−0.31***	0.03	−0.37, −0.24
Path b					
AVH	On	Self-esteem	−0.02***	0.006	−0.04, −0.01
Path c′					
AVH	On	Neighborhood identity	0.004	0.01	−0.02, 0.03
		Age	−0.003	0.006	−0.01, 0.01
		Sex	−0.09***	0.02	−0.13, −0.06
		Ethnicity	0.01	0.03	−0.05, 0.07
		Employment	−0.10***	0.02	−0.14, −0.05
		Education	−0.04	0.03	−0.09, 0.01
		Depression	0.17***	0.02	0.14, 0.20
		Paranoia	0.21***	0.01	0.19, 0.23
Bootstrapped bias-corrected total effect (Path c)			0.001	0.01	−0.02, 0.02
AVH	On	Neighborhood identity			
Bootstrapped bias-corrected indirect effect			−0.003*	0.001	−0.006, −0.001
Neighborhood identity → self-esteem → AVH					

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

the administration of a large public health survey, there were limitations associated with this study. Specifically, we used a single-item measure of identification and we only measured identification with the locality of residence. We, therefore, undertook a second survey that addressed these limitations, which we conducted with university students. In the United Kingdom, approximately 42% of young people enter university education by the age of 19.[53] Students are, therefore, a fairly representative sample of people who are at the peak risk age for psychosis.[54]

Study 2 Method

Participants and Design

A mental health survey was conducted at a large university in North West England. In total, 1545 students attempted the survey. Surveys missing more than 50% of responses were considered incomplete and were excluded, leaving a final sample of 1167. Students from all three faculties completed the survey: Health and Life Sciences ($n = 345$), Humanities and Social sciences ($n = 474$), and Science and Engineering ($n = 205$). The majority (69%, $n = 804$) of participants identified as female and were from white European backgrounds (80%, $n = 934$). The mean age was 20.78 years (SD = 4.35).

Measures

Social Identity. A three-item measure of social identity was employed that tapped identification with six social groups and categories likely to be important to UK university students, namely, country of origin, England, university city, university, university friendship group, and online community. The online community question related to the online group participants felt was most important to them. Items on the scale included the followings: "I feel a sense of belonging to [group]," "I identify with [group]," and "I feel strong ties with [group]." The first item was adapted from the belonging question used in study 1. The second and third items were taken from Doosje and colleagues' measure of group identification.[55] All six measures of identification showed good internal consistency. Items for each identity were summed to create reliable scales. Cronbach's alphas raged from 0.89 to 0.93.

Self-esteem and Mental Health. The same measures of self-esteem (SISE), depression (PHQ-9; $\alpha = 0.89$, this study), and paranoia (PaDS; $\alpha = 0.84$, this study) used in study 1 were administered in study 2. The measure of AVH used in study 2 was a single item taken from the Dissociative Experience Scale[56]: "Some people sometimes find that they hear voices inside their head that tell them to do things or comment on things that they are doing", rated "never" to "always" on a 10-point scale. Multi-item measures were summed to create reliable scales.

Study 2 Results

Statistical Analyses

Hierarchical Linear Regression Models. The only variable missing more than 5% of responses was ethnicity (5.7%). This was not considered problematic for subsequent analyses. Means, standard deviations, and intercorrelations between variables are presented in table 5. To determine which identity was the strongest predictor of each mental health symptoms, we conducted three hierarchical linear regression models (HLMs) in SPSS. In each model, we regressed the DV (depression, paranoia, or AVH) onto all social identities, while controlling for demographic covariates. Age, gender, and ethnicity were entered into the models as predictors at step 1, and all social identity variables (country of birth, England, city of university, university, friendship group, and online community) were entered as predictors at step 2.

Mediation Analyses Mediation was assessed in SPSS using model 4 of the PROCESS extension.[57] As in study 1, we specified direct, indirect, and total effects from the IV (social identification) to the DV (symptom) via the mediating variable (self-esteem). Age, sex, ethnicity, and comorbid symptoms were entered as control variables in every model. The model was estimated three times using the different measures of mental health as outcomes. The IV specified in each model was the identity variable identified as the most important predictor of the mental health symptom in the HLM. Mediation was assessed via bootstrapping with 1000 resamples and examining the 95% bias-corrected confidence intervals only when paths *a* and *b* were significant. Listwise deletion was used to account for missing values in all analyses.

Table 5. Descriptive Statistics and Bivariate Correlations Between Variables in Study 2

Variable	*M*	SD	1	2	3	4	5
1. Friendship group ID	15.38	4.16	—	0.21***	−0.25***	−0.10***	−0.31***
2. Self-esteem	3.24	1.70	—	—	−0.38***	−0.09**	−0.47***
3. Paranoia	12.83	5.27	—	—	—	0.24***	0.56***
4. AVH	9.88	20.92	—	—	—	—	0.29***
5. Depression	18.91	6.68	—	—	—	—	—

*$P < .05$, ** $P < .01$, *** $P < .001$

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Depression Results of the HLM indicated that age ($\beta = -0.08$, $P = .008$), gender ($\beta = 0.10$, $P = .002$), and ethnicity ($\beta = -0.07$, $P = 0.020$) were significant predictors of depression at step 1, $R2_{adj} = 0.02$, $F(3,1093) = 8.31$, $P < .001$. Female participants, white participants, and younger participants reported higher levels of depression. At step 2, the addition of the identity variables significantly contributed to the model, $R2_{adj} = 0.13$, $R2_{ch.} = 0.12$, $F_{ch.}(6,1087) = 24.67$, $P < .001$. Friendship group identification significantly predicted lower depression scores, $\beta = -0.26$, $P < .001$; however, all other identity predictors were not significant. Friendship group identification was, therefore, the most important predictor of depression, while controlling for demographic variables, paranoia, and AVH.

Results of the mediation analysis indicated that the total effect of friendship group identification on depression was significant (TE = -0.30, SE = 0.04, CI [-0.38, -0.22]), as was the direct effect (DE = -0.23, SE = 0.04, CI [-0.31, -0.15]). Self-esteem significantly mediated the relationship between identification and depression (IE = -0.07, SE = 0.02, CI [-0.10, -0.04]). Effect size indices indicated that 23% of the total effect of friendship group identity on depression was mediated through self-esteem. Thus, self-esteem partially mediated the relationship between friendship group identity and depression.

Paranoia At step 1 of the HLM, age was the only significant predictor of paranoia ($\beta = -0.12$, $P < .001$). Younger participants reported higher levels of paranoia, $R2_{adj} = 0.02$, $F(3,1093)$ 7.81, $P < .001$. At step 2, the identification variables explained a significant portion of variance in the model, $R2_{adj} = 0.09$, $R2_{ch.} = 0.08$, $F_{ch.}(6,1087) = 16.18$, $P < .001$. Country of birth identification predicted lower paranoia ($\beta = -0.08$, $P = 0.028$); however, friendship group identification was a more important predictor of lower paranoia scores, $\beta = -0.26$, $P < .001$. No other identification variables reached significance.

The mediation model indicated significant total (TE = -0.34, SE = 0.03, CI [-0.20, -0.07]) and direct (DE = -0.18, SE = 0.03, CI [-0.18, -0.05]) effects of friendship group identification on paranoia. Self-esteem significantly mediated the effect of identification on paranoia (IE = -0.02, SE = 0.01, CI [-0.04, -0.01]). Seventeen percent of the total effect of friendship group identity on paranoia was mediated by self-esteem. In sum, self-esteem partially mediated the relationship between friendship group identity and paranoia.

AVH Age emerged as the only significant predictor of AVH ($\beta = -0.07$, $P = .023$) at Step 1, $R2_{adj} = 0.01$, $F(3,1093) = 2.79$, $P = .039$. As a set, the identity variables contributed significantly to the model at step 2, $R2_{adj} = 0.01$, $R2_{ch.} = 0.01$, $F_{ch.}(6,1087) = 2.67$, $P = .014$. However, no individual identity variables significantly predicted AVH, and self-esteem did not predict AVH when controlling for demographic variables and comorbid symptoms. Because neither path *b* nor path *c* reached significance, mediation was not assessed for AVH.

General Discussion

We investigated the relationship between social identity, self-esteem, and mental health symptoms in a general population and student sample. Consistent with predictions, we found that social identification was associated with lower levels of paranoia and depression. Moreover, as predicted, there was no reliable association between identity and AVH. Mediation models controlling for known correlates of psychosis and depression (ie, age, sex, ethnicity, and SES) and comorbid symptoms suggested that the association between identity and paranoia was partially mediated by self-esteem, as was the relationship between identity and depression. Despite finding no evidence of a total effect of social identification on AVH in study 2, there was a small indirect effect through self-esteem in study 1. This effect, however, was weaker than the indirect effects for depression and paranoia. The lack of a total or indirect effect on AVH in study 2 suggests that the study 1 finding should be interpreted with caution. Study 2 additionally revealed that identification with friendship groups was more protective against symptoms than identification with superordinate groups such as universities and countries. However, the negative association between identification with country of birth and paranoia found in our student sample is consistent with a similar finding in Emerati women[29] and may have social as well as psychopathological implications. Overall, our findings converged on the proposition that developing strong group ties is associated with a reduced risk of paranoia and depression, but not AVH, because social groups are a source of personal self-esteem. The results extend previous work demonstrating that identification is associated with better general health and wellbeing[2] and replicate recent research that has shown a link between social identity and depression.[26,27,58]

Given that current psychological theory does not implicate either identity or self-esteem in hallucinations, but instead suggests that these experiences are caused by disruption of processes involved in monitoring inner speech,[31] we did not anticipate any relationship between identity and hallucinations. Indeed, in a previous analysis of findings from the Adult Psychiatric Morbidity Survey, it was found that paranoia but not hallucinations was associated with neighborhood deprivation.[8] Similarly, in student,[20] population,[10] and clinical samples,[19] it has been found that insecure attachment styles are associated with paranoia but not hallucinations. Whereas adverse childhood experiences have been implicated in both symptoms, the most toxic childhood event for hallucinations appears to be sexual abuse.[10,11] However, in the case of paranoia, chronic events that undermine attachment security, such as neglect and being raised in institutional care seem more potent.[10,11]

The identification of partial mediation effects for paranoia and depression suggests that social identity predicts

paranoia and depression through self-esteem, but also other unmeasured pathways. This is consistent with theorising that social identity protects against psychosis via several social and psychological mechanisms.[28] For example, possessing an external locus of control has been associated with both higher paranoia[59–62] and weaker group identification.[63] Thus, identification may buffer people from paranoia by enhancing perceived control as well as self-esteem. This is an important question for future research.

The overall picture that emerges is that paranoia is related to problems of social connectedness and the impact of these problems on self concept. The effects observed here are consistent with findings from previous studies that suggest low self-esteem contributes to paranoia.[15–17] It should be noted, however, that the relationship between self-esteem and paranoia could be causally reversed. As Freeman et al. (1998) point out, poor self-esteem can be considered both a maintaining factor *and* a consequence of psychosis. In fact, there is likely to be a bidirectional relationship between most mental illnesses and self-esteem. Nevertheless, when considering experience sampling evidence linking self-esteem fluctuations with paranoid beliefs,[17] and experimental and longitudinal evidence linking identification with better mental health,[26,27] it seems likely that reduced identification and group memberships places people at higher risk of developing paranoia. The same point regarding causal direction could be advanced in reference to the relationship between social identity and self-esteem. Lacking meaningful social identities may deplete self-esteem, while possessing low self-esteem may also make it more difficult to identify with social groups. It should be noted, however, that there is some evidence for our proposed causal pathway. Indeed, it has been found that multiple group memberships predict self-esteem longitudinally, but not vice versa.[22] However, experimental evidence of this effect is lacking and will be an important step for future research.

The results also support the assertion that loss of small group ties may explain why ethnic minority people living in low ethnic density areas are more susceptible psychotic symptoms (the ethnic density effect).[28] Indeed, people who are surrounded by people from their own culture may be better equipped to form smaller friendship groups and hence navigate stressful life events such as migration, which may, in turn, reduce their risk of paranoia. While neighborhood identification does seem to provide protection against paranoid and depressive symptoms, our finding that friendship group identities are the strongest predictors of symptoms suggests that it may be the connections that people maintain or forge while surrounded by ingroup members (eg, university classmates, fellow churchgoers) that elicit the most mental health benefits, rather than maintaining original cultural or national identities following migration. Given our sample comprised primarily of majority

group members, no firm conclusions can be drawn about whether identification explains ethnic density effects. Further research investigating cultural and friendship group identities among ethnic minority populations in low- and high-density areas is necessary to test these assertions.

Some methodological limitations of the present research should be acknowledged. First, we included single item measures of identification (study 1) and AVH (study 2); however, these were complemented with multi-item measures of identification (study 2) and AVH (study 1). Both the depression and paranoia scales had been validated in clinical as well as nonclinical samples.[6] The self-esteem measure used was only a single item; however, it has been shown to be both valid and reliable when compared to more comprehensive measures.[36] The survey was also cross-sectional, which limits any firm inferences about causality, notwithstanding the arguments for our proposed causal pathway outlined above. Finally, the measures of paranoia and AVH were not time anchored; thus, it is unclear whether the observed relationships apply to recent symptoms.

Our findings highlight the need to consider social context when attempting to understand psychotic and nonpsychotic symptoms. If social identification protects people from depression and paranoia, there may be important implications for public health policy and clinical interventions, particularly for disadvantaged and minority groups.[28] In Europe, a quarter of schizophrenia patients remain socially and occupationally disabled 15 years after diagnosis[64] and roughly 5% of patients die by suicide.[65] Moreover, psychotic disorders such as schizophrenia represent a 12.5 billion dollar cost to the United Kingdom each year.[66] It is, therefore, plausible that interventions designed to facilitate people's transition into positive and meaningful groups could substantially reduce the health burden of psychiatric disorders, including psychosis. Research conducted by Haslam and colleagues focusing on depression has demonstrated how identity-based approaches can be translated into clinical interventions,[67] while broader policies that encourage community belonging and connectivity could represent an effective strategy for reducing incidences of paranoia and depression.

Ethical approval

The research was approved by the University of Liverpool Committee on Research Ethics (Ref: RETH00836 and IPHS-1516-SMC-192). Participants provided informed consent before completing the study.

Supplementary Material

Supplementary material is available at *Schizophrenia Bulletin* online.

Author contributions

The study was conceived by J.C.M. and R.P.B. Statistical analysis and interpretation was conducted by all authors. The manuscript was written by J.C.M. and R.P.B., and edited by S.W. and B.B. All authors approved the final version of the manuscript.

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