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The association between social identity and paranoia through the mediators of trust and hostile attribution bias in a UK general population study

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Abstract

Background: Paranoia is a common experience prevalent in the general population. Social identity refers to our sense of belonging to a social group and has been implicated in the formation and maintenance of paranoia. Research into these mechanisms is still emerging. It was hypothesised trust and hostile attribution bias would mediate this relationship in a UK general population sample.

Methods: A cross-sectional online survey was conducted with 355 UK residents. Measures of family and friendship social identity, trust, hostile attribution bias, paranoia, and psychosis proneness were completed.

Results: A linear regression found social identity significantly predicted paranoia and unexpectedly this was replicated for psychosis proneness. This was a negative association whereby high social identity scores predicted lower paranoia and psychosis proneness scores. A parallel mediation model indicated family and friendship group identity was associated with lower paranoia and lower psychosis proneness when participants reported higher levels of trust and lower levels of hostile attribution bias.

Discussion: Social identity is associated with paranoia and psychosis proneness, and these effects are mediated through trust and hostile attribution bias. The findings have implication for targeting research and interventions on social group membership.

Key words: psychosis, group membership, belonging.

Introduction

Paranoia refers to the unfounded belief other people are trying to cause you harm (Freeman, 2016). It is well established in the literature that paranoid beliefs are not exclusively a symptom of schizophrenia, but a universal human experience (Bentall et al., 2001; van Os et al., 2000). In survey of university students, many people reported regular, mild social evaluative concerns (30-40%), some displayed persecutory ideation of mild to moderate threat (10-30%), and few reported delusional beliefs other people were trying to cause them severe harm (5%; Freeman et al., 2005). This hierarchical structure has been replicated in community samples (Bebbington et al., 2013).

Reframing paranoia as a normal experience of varying severity has prompted consideration of how and why certain individuals cross the clinical diagnosis threshold. The hierarchy research highlights that beliefs about others are central to these experiences. The social identity approach, integrating both social identity (Tajfel & Turner, 1986) and self-categorisation theory (Turner et al., 1987), has been indicated in how we understand the development of paranoia.

Social identity theory proposes people identify themselves not only as an individual “I”, but as a collective “we” regarding the social groups they belong to and internalise this to their personal identity. Self-categorisation theory considers the factors influencing when people define themselves as a group member rather than an individual. Experimental research has demonstrated we assign more trust and personal relevance to our ingroup (the group we belong to) than the outgroup (Hornsey, 2008). Although two individuals may categorise themselves in the same group, the degree this contributes to their personal identity will determine how they benefit from membership (Jetten et al., 2012). Lastly, it is important groups foster positive rather than detrimental social experiences to be beneficial (Sani, 2012). Lacking a sense of belonging could lead to beliefs you are

alone, an outsider, and other people are unsafe. Paranoia is therefore defensive; if you lack a protective group membership, being suspicious of others can influence behaviours to keep yourself safe from suspected harm, such as avoidance and hostility. Here, we focus specifically on paranoia above other psychotic-like experiences given its socially evaluative concerns and relationship with social isolation (Butter et al., 2017).

A multifactorial model of paranoia

The social identity approach to paranoia can be integrated with the cognitive model of persecutory delusions by Freeman and colleagues (2002). This is underpinned by the stress-vulnerability framework, where pre-existing vulnerability and stressful life events, encompassing biological, psychological, and social factors, predisposes the development of persecutory delusions. These factors interact with beliefs about the self, others, and the world, and cognitive biases associated with psychosis. The central feature is one's search for meaning, where an experience is interpreted in the context of pre-existing vulnerabilities. The selection of an explanation based on these factors forms the threat belief that someone is out to get you. The current study examines the role of social identity; arguing a strong sense of identity may protect against the development of paranoia.

Existing research

A substantial research base supports the association between social identity and health benefits (Haslam et al., 2012), although the literature exploring paranoia is less established. Research into paranoia and larger social groups, including ethnic and national identity, has shown mixed results, suggesting the type of group membership may be important. Ethnic identity has been found to have an indirect effect on psychotic-like experiences through ethnicity (Gonzales, 2003), racial discrimination (Anglin et al., 2018), and cognitive bias (Cicero & Cohn, 2018); however a direct effect

has not been supported. One large American general population study showed national identity had a significant effect on paranoia which was not replicated for political identity (Greenaway et al., 2019). Research into smaller, more personal social groups such as friendship and family identity, reports more consistent direct effects. Sani and colleagues (2012) found greater family identity predicted lower paranoia over time in a student sample, however a significant, but smaller, effect was found for anomalous experiences, questioning the specific role of paranoia. Another robust study measuring six separate social identity groups found friendship group had the strongest significant effect on paranoia, also within a student sample (McIntyre, Worsley, et al., 2018). Family and friendship group identity were chosen for this study due to these promising findings and to test this association in a general population sample. Evidence has emerged for the role of mediators and moderators, including self-esteem (Elahi et al., 2018; McIntyre, Wickham, et al., 2018) and loneliness (McIntyre, Wickham, et al., 2018) and there is scope for further exploration.

Mediators: Trust and Hostile Attribution Bias

Trust is a potential mediator in the relationships between social identity and paranoia. Trust is an expectation other people will do as they say they will and can be relied on (Rotter, 1971). Returning to the cognitive model, trust is conceptualised as a belief about others and the world, mediating the pathways between precipitant and search for meaning. Belonging to supportive groups may foster more positive experiences of trusting other people and lead to trust in others more generally. Evidence suggests those with higher levels of paranoia have less trust in other people (Bibbey, 2020), and a direct effect between a mistrust bias and paranoia has been demonstrated within a general population sample (Martinez et al., 2021). Furthermore, a mediating

relationship has been demonstrated in a large community study between paranoia and national identity (Greenaway et al., 2019).

The second potential mediator to be explored is hostile attribution bias; the tendency to interpret other people's actions as hostile (Garety & Freeman, 1999). The cognitive model proposes cognitive biases based on past experiences bias individuals to interpret neutral events as threats. Social identity provides experience interacting with in-group members who are seen to be similar to ourselves (Scheepers & Ellemers, 2019).

Consequently, we attribute other people's actions to external factors rather than hostility, as we would our own (McKay et al., 2005). One literature review (Buck et al., 2020), reported evidence from 28 studies of a significant relationship between at least one subscale of the Ambiguous Intention Hostility Questionnaire (AIHQ; Combs et al., 2007a) and paranoia. Thus, our group membership is internalised as a model of how we expect other people to behave. This allows us to make sense of our social world through cognitive biases and judgements of how trustworthy other people are, determining our sense of threat and protecting us from paranoia.

Current study

The current study aimed to test the association between family and friendship group identity and paranoia in a UK general population sample, and to explore trust and hostile attribution bias in mediating this relationship. To test the hypothesis this association is specific to paranoia, a measure of psychosis proneness was included as a comparator. Psychosis proneness captures the milder precursors of clinical diagnoses across the schizophrenia continuum (Kwapil & Barrantes-Vidal, 2015).

The hypotheses were:

- (1) There will be an association between social identity and paranoia. Social identity will have a significant negative direct effect on paranoia, with higher social identity scores predicting lower levels of paranoia.
- (2) There will be an indirect effect of social identity on paranoia through the mediator of hostile attribution bias. Higher social identity scores are expected to predict lower paranoia scores when hostile attribution bias is lower.
- (3) There will be an indirect effect of social identity on paranoia through the mediator of trust. Higher social identity scores are expected to predict lower paranoia when trust scores are higher.
- (4) This relationship will be specific to paranoia; there will be either no direct effect or a weaker direct effect of social identity on psychosis proneness.

Methods

Ethics

Ethical approval was granted by the University of Edinburgh Clinical Psychology Ethics Committee on 25th March 2021.

Design and participants

A cross-sectional design was implemented. Participants completed an online questionnaire battery at one time point using Qualtrics online survey software tool (Qualtrics, 2005; Copyright © 2021/22). Social media was used to advertise the study with a Twitter account set up with information for potential participants. The Twitter accounts of third sector organisations associated with mental health and psychosis were contacted and asked to share study details to their followers. This aimed to recruit participants with a pre-existing interest who would be more likely to take part. Participants gave informed consent to access the study. An internet mediated design improved sample size, accessibility, and anonymity (Saleh & Bista, 2017). Participants

were English-speaking adults over the age of 18. To capture the full hierarchy of paranoia, current or previous mental health difficulties, including schizophrenia, were not an exclusion criterion. The study excluded non-UK residents to mitigate possible cross-country differences in social identity expression (Brewer & Yuki, 2007). An *a priori* statistical power analysis estimated a minimum sample size of 109 to achieve a medium effect size consistent with previous studies (McIntyre et al., 2021).

A total of 401 participants were recruited between April and September 2021. Of these, 355 participants completed at least the independent and dependent variable measures and 307 completed all measures. The attrition rate throughout the survey was 23.44% ($n = 94$). Within the sample of 355 participants, the majority identified as female (76.1%) and White British (73%). The most common age range was 25 to 34 years (47.3%) and level of education Undergraduate Degree (43.4%). A total of 4.8% reported having received a diagnosis of schizophrenia or other psychosis related disorder, and 69% indicated having experienced any other mental health difficulty, such as anxiety or depression. A full description of participant characteristics is available in the appendix (Appendix A).

Measures

Social identity. The Group Identification Scale (GIS; Doosje et al., 1995) is a four-item instrument using a 7-point Likert scale rated from 1 “I strongly disagree” to 7 “I strongly agree”. A higher score indicates stronger social identity. Items measure feelings of belonging and similarity. “Family” and “friendship group” were substituted accordingly. Participants were instructed to rate these based on how best they identify their family, not necessarily their biological family, and the friendship group they spend the most time with. General population studies have found good reliability for both family ($\alpha = 0.76$; Sani, 2012) and friendship group ($\alpha = 0.93$; McIntyre, Worsley, et al.,

2018). In the current study both scales had excellent reliability (family $\alpha = 0.90$; friendship group $\alpha = 0.93$).

Paranoia. The 18-item Revised Green et al., Paranoid Thoughts Scale (R-GPTS; Freeman et al., 2021) rates items on a five-point Likert scale from 0 “not at all” to 4 “totally” in the last month. It uses two subscales: ideas of reference and ideas of persecution. Excellent reliability has been found across presentations ($\alpha > 0.90$; Freeman et al., 2021). The Cronbach’s alpha for the current study was 0.95.

Hostile attribution bias. The Ambiguous Intentions Hostility Questionnaire, Ambiguous items (AIHQ; Combs et al., 2007b) consists of five vignettes of negative social situations where the cause is ambiguous. Participants rate a 6 and 5-point Likert scale on how strongly they believe the person performed the action on purpose, how angry it made them feel, and how much blame they attributed. These form intent, anger, and blame sub scores. Higher scores indicate a high tendency to interpret ambiguous actions as hostile. Two qualitative research rated items were not included as they have poor internal consistency (Buck et al., 2016), are time-consuming, and require resource to score. The measure has shown good internal consistency in general population samples ($\alpha = 0.86$; Buck et al., 2016). The current study found excellent reliability ($\alpha = 0.90$).

Trust. Rotter’s Interpersonal Trust Scale (RITS; Rotter, 1967) is made up of 40 items rated on a 5-point Likert scale from strongly disagree to strongly agree, with higher scores indicating stronger trust. It defines trust as an expectation another individual or group can be relied on, measuring trust of social groups and individuals, and general optimism towards society. The wording was edited to make it more readable, current, and UK English, for example “sales men” was changed to “sales person”, and “college” changed to “university”. Rotter (Rotter, 1971) found acceptable internal consistency ($\alpha = 0.76$) and this has been replicated in further samples ($\alpha = 0.75$; Schiffman et al.,

2010). The current study also found a Cronbach's alpha of 0.76.

Psychosis proneness. The short version Oxford-Liverpool Inventory of Feelings and Experiences (sO-LIFE; Mason et al., 2005) is a 43-item measure of Schizotypy for use in general population samples. It includes four subscales related to psychotic experiences: unusual perceptual experiences, cognitive disorganisation, introverted anhedonia and impulsive nonconformity. These items are rated either 1 "false" or 0 "true". Previous research report excellent concurrent validity ($\alpha > 0.90$) across all subscales (Mason et al., 2005). The current study found a Cronbach's alpha of 0.89.

Analytic plan

Analyses were conducted using SPSS version 24 (IBM Corp, 2016). To test the first hypothesis a simple linear regression was performed. This used data from the larger sample size ($n = 355$) who completed social identity and paranoia measures. The second and third hypotheses were tested with a parallel multiple mediation analysis using Model 4 of the PROCESS (Hayes, 2012) extension with data from the sample who completed all measures ($n = 307$). To test the fourth hypothesis a further linear regression substituted psychosis proneness as the outcome variable. Preacher and Hayes (2011) recommend measuring effect size in mediation analysis using the unstandardised regression coefficients and R^2 using Cohen (1992) to interpret the strength of an effect size.

Assumptions of normality

A Kolmogorov-Smirnov test revealed all measures except the RITS were significant and therefore not normally distributed. Further analysis of histograms revealed the GIS measures were both positively skewed, and the R-GPTS and sO-LIFE negatively skewed, as expected with the level of paranoia and psychosis proneness in the general population (Freeman et al., 2005). Ten extreme outliers were present for the

R-GPTS alone. These were included to capture a realistic representation of paranoia (Freeman et al., 2008). The bias in sampling revealed by these tests was compensated for using bootstrapping with 1000 samples in the mediation analysis (Preacher & Hayes, 2004).

Results

Descriptive data

Full descriptive data and bivariate correlations for all outcome measures are available in the appendix (Appendix B). The sample reported consistent scores compared with general population samples in the R-GPTS (Freeman et al., 2021), AIHQ (Buck et al., 2016; Combs et al., 2007b), RITS (Rotter, 1967), and sO-LIFE (Mason et al., 2005). This sample were classified as high social identifiers on the GIS in comparison to population studies (family $M = 5.40$; friends $M = 5.38$; Doosje et al., 1995).

Hypothesis 1: There will be an association between social identity and paranoia

Entering family and friendship group identity into a simple linear regression explained 24.4% ($p < .001$) of the variation in paranoia scores, a medium to large effect size (Cohen, 1988).

Hypothesis 2 and 3: The relationship is mediated through hostile attribution

bias and trust

When controlling for age, gender, ethnicity and education, the mediation analysis showed family identity had a significant effect on paranoia through hostile attribution (a path: $b = -.09, p < .01$; b path: $b = .26, p < .001$) and trust (a path: $b = .10, p < .001$; b path: $b = -.36, p < .001$). Bias-corrected bootstrap confidence interval for the indirect effects did not contain zero for hostile attribution bias ($b = -.02$; 95% BCa CI [-.04, -.01]) or trust ($b = -.03$; 95% BCa CI [-.06, -.01]). The direct effect was significant and smaller than the total effect, indicating the strength of the association between social

identity and paranoia was reduced when the mediators were included in the model. This model explained 40% of the variance in direct effect scores, considered a large effect size (Cohen, 1988). Age ($b = -.11$) and education ($b = -.21$) were both found to have significant effects ($p < .001$) in this model, whereas gender and ethnicity were non-significant.

When controlling for age, gender, ethnicity and education, the analysis revealed friendship group identity had a significant effect on paranoia through hostile attribution bias. The indirect effect indicated higher friendship group identity was associated with lower paranoia via lower hostile attribution bias (a path: $b = -.14, p < .001$; b path: $b = .23, p < .001$) and higher trust scores (a path: $b = .07, p < .001$; b path: $b = -.40, p < .001$). Bias-corrected bootstrap confidence interval for both indirect effects did not contain zero (hostile attribution bias; $b = -.07$; 95% BCa CI [-.11, -.03]; trust; $b = -.06$; 95% BCa CI [-.09, -.02]). All effects were in the expected directions. This model explained 38% of the variance in the direct effect. Both age ($b = -.10$) and education ($b = -.27$) had significant effects ($p < .001$). Gender and ethnicity were non-significant.

Hypothesis 4: There will be no effect of social identity on psychosis proneness

Entering family and friendship group identity into linear regression model ($n = 307$) explained 23.6% of the variation in psychosis proneness scores ($p = .001$). Further exploratory analyses tested if the same mechanisms influenced the effect of social identity on psychosis proneness as found with paranoia. The parallel mediation model analysis was replicated substituting psychosis proneness as the outcome variable with the reduced sample ($n = 307$). When controlling for age, gender, education and ethnicity, a mediation analysis found family identity had a significant effect on psychosis proneness through hostile attribution bias ($b = -.06$; 95% BCa CI [-.11, -.02]) and trust ($b = -.07$, 95% Bca CI [-.12, -.03]). Age and education both had significant

interactions with the indirect effect ($b = -.03, p < .001$; $b = -.04, p < .001$). Gender and ethnicity were not significant. This model explained 50% of the variance in direct effect scores.

When friendship group identity was entered as a predictor, identity had a significant effect on psychosis proneness through hostile attribution bias ($b = -.09$; 95% BCa CI [-.14, -.04]) and trust ($b = -.06$, 95% BCa CI [-.10, -.03]). This model explained 48% of the variance in direct effect scores. Again, age and education had a significant interaction ($b = -.03, p < .001$; $b = -.04, p < .001$), as did gender ($b = .02, p < .05$). Ethnicity was not significant.

An exploratory analysis was performed to establish if the direct association was significant for all subscales of psychosis proneness. A linear regression found significant direct negative effect of family identification ($p < .001$) on all subscales. The analysis found friendship group identification had a significant negative effect for cognitive disorganisation ($p < .01$) and introvertive anhedonia ($p < .001$).

Discussion

The present study aimed to test the hypothesis that social identity is associated with paranoia in a UK general population sample, and if this relationship is mediated by trust and hostile attribution bias. A linear regression analysis revealed the expected direct association; a stronger sense of social identity predicted lower levels of paranoia.

Further analysis found mediation through trust and hostile attribution bias. As anticipated, a stronger social identity was associated with lower levels of paranoia when participants reported higher trust and lower hostile attribution bias. The analysis demonstrated a stronger indirect effect for family identity. Unexpectedly, a linear regression found a negative direct association between social identity and psychosis proneness. Further mediation analysis revealed this effect was significant through trust

and hostile attribution bias with the same directions of effects as paranoia. Of interest, social identity explained more variance in psychosis proneness than paranoia. Both social identities had stronger mediation relationships, where including trust and hostile attribution bias in the model reduced the direct effect to nearly 0 ($b = -.02$ and $-.03$ respectively).

The findings support the social identity approach to paranoia; having a strong sense of belonging to your family and friendship group appears to provide a buffer to the development of paranoid thoughts. Effect sizes from this study are similar to previous research investigating family and friendship group identity (McIntyre, Wickham, et al., 2018; Sani, 2012), which contrasts with research investigating ethnic identity and psychotic-like experiences, where support has been found for indirect effects alone (Anglin et al., 2018; Cicero & Cohn, 2018; Gonzales, 2003). This indicates the type of group is important and findings should not be generalised across social identities.

The current findings support the cognitive model of persecutory delusions, which posits social vulnerability provides a foundation for threat beliefs to form (Freeman et al., 2002). Whilst previous literature has implied social factors such as quantity of social contacts (Combs et al., 2013), the present study adds to the emerging evidence base indicating the role of group membership.

The results of the mediation analysis build on Greenaway et al. (2019), suggesting trust is indicated across groups as a mediator for both national, friendship, and family identity. To our knowledge, this is the first study to investigate social identity in relation to Hostile Attribution Bias and findings are consistent with research evidencing hostility is associated with psychosis (Buck et al., 2020).

The significant effect of social identity on psychosis proneness contradicts the hypothesis the association would be specific to paranoia, or that if there was a

relationship it would be weaker. It does build on a previous study; Sani and colleagues (2017) found greater family identity predicted reduced anomalous experiences over time, alongside paranoia. However, McIntyre and colleagues (2018) did not find a significant association with auditory verbal hallucinations (AVHs) and friendship group or neighbourhood identity. It is possible social identity is associated with anomalous experiences but not AVHs. Psychosis proneness has social aspects; the subscale of cognitive disorganisation taps into aspects of social anxiety whilst introverted anhedonia describes a lack of enjoyment from social pleasure and avoidance of intimacy (Mason & Claridge, 2006). Therefore, lacking positive experiences of interacting with others in social groups may make relating to others feel uncomfortable and anxiety provoking.

Furthermore, McIntyre and colleagues (2018) did not measure interpretation of AVHs. Research has highlighted the importance of the interpretation of voices in relation to social rank, benevolence, and omnipotence in predicting distress (Birchwood et al., 2011; Hayward et al., 2014). Therefore, having a strong sense of social identity may protect against beliefs the voice is more powerful than the individual. Measures of psychosis proneness or AVHs are indicated for future studies.

Other pre-existing vulnerabilities which may interact with social identity in the development of psychosis are childhood trauma and insecure attachment style. This has been supported by a breadth of research evidencing that child maltreatment, bullying from peers, and experiences of parental loss and separations are specific risk factors in psychosis (Varese et al., 2012). Relevant to the model proposed in the current study, these experiences are more likely to occur in your family or friendship group.

Furthermore, early experiences with caregivers create an attachment blueprint for all future relationships and again are likely to occur within the context of family identity.

Empirical studies have shown robust support for the association between insecure attachment styles and psychosis (see Gumley et al., 2014 for review). Further research may include exploration of the role of trauma and attachment style in the context of social identity and psychosis.

There are limitations of the current study. The cross-sectional design limits any conclusions of the causality of these associations. The sample will be impacted by self-selection bias reducing the generalisability of findings. The majority white female sample with a high level of education skewed towards the 25-to-34-year age range affects external validity. Attrition rates may have impacted the findings with nearly a quarter of the initial sample dropping out. This was mitigated by retaining partially completed responses and prioritising outcome measures relevant to the primary research question. Completers had a higher level of education on average than those who dropped out, and as attending university can impact friendship group identity this may have influenced the findings (McIntyre, Worsley, et al., 2018).

Implications of this study are tentative when applied to clinical populations as the study used a community sample. Whilst considering this limitation, the findings suggest research could be targeted towards social interventions where people with, or at risk of, psychosis can form meaningful group memberships (Harrop et al., 2015). We provide a rationale for future research to further our understanding of how group membership can influence the development of paranoia and psychosis proneness, both directly and through trust and hostile attribution bias.

Declaration of Interest

This work was carried out as part of a Doctor of Clinical Psychology thesis funded by NHS Education for Scotland. The authors have declared that there are no conflicts of interests in relation to the subject of this study.

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Appendix

Appendix A

Descriptive Data and Bivariate Correlations for Outcome Measures

| Measure | N | Mean (SD) | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 | 13 | 14 | 15 |
|-------------------|-----|------------------|------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|
| GIS | 355 | | | | | | | | | | | | | | | |
| 1.Family | | 5.40 (1.48) | .37* | -.44* | -.38* | -.43* | -.24* | -.29* | -.16* | -.17* | .39* | -.45* | -.32* | -.31* | -.37* | -.42* |
| 2.Friends | | 5.38 (1.41) | - | -.38* | -.35* | -.36* | -.28* | -.33* | -.19* | -.21* | .26* | -.33* | -.18* | -.24* | -.41* | -.22* |
| 3.R-GPTS | 355 | | | | | | | | | | | | | | | |
| 4.Reference | | 7.36 (7.48) | - | - | .93* | .94* | .49* | .55* | .38* | .38* | -.44* | .61* | .59* | .48* | .36* | .53* |
| 5.Persecution | | 4.56 (7.98) | - | - | - | .74* | .46* | .52* | .35* | .35* | -.40* | .56* | .52* | .43* | .31* | .49* |
| 6.AIHQ | 333 | 2.67 (0.79) | - | - | - | - | - | .86* | .90* | .93* | -.41* | .55* | .44* | .47* | .32* | .47* |
| 7.Intent | | 2.97 (0.96) | - | - | - | - | - | - | .61* | .66* | -.40* | .61* | .47* | .51* | .42* | .50* |
| 8.Anger | | 2.35 (0.82) | - | - | - | - | - | - | - | .85* | -.33* | .41* | .34* | .37* | .19* | .38* |
| 9.Blame | | 2.67 (0.85) | - | - | - | - | - | - | - | - | -.35* | .42* | .35* | .37* | .29* | .37* |
| 10.RITS | 310 | 68.37 (10.28) | - | - | - | - | - | - | - | - | - | -.49* | -.42* | -.39* | -.34* | -.37 |
| 11.sO-LIFE | 307 | 3.39 (1.89) | - | - | - | - | - | - | - | - | - | - | .81* | .87* | .62* | .80* |
| 12.UnEx | | 2.54 (2.19) | - | - | - | - | - | - | - | - | - | - | - | .58* | .32* | .61* |
| 13.CoDi | | 4.92 (2.92) | - | - | - | - | - | - | - | - | - | - | - | - | .39* | .63* |
| 14.InAn | | 2.97 (2.31) | - | - | - | - | - | - | - | - | - | - | - | - | - | .29* |
| 15.ImNo | | 3.16 (2.21) | - | - | - | - | - | - | - | - | - | - | - | - | - | - |

Note: *SD* = Standard Deviation; GIS = Group Identity Scale; R-GPTS = Revised Green's Paranoid Thoughts Scale; AIHQ = Ambiguous Intentions Hostility Questionnaire; RITS = Rotter's Interpersonal Trust Scale; sO-LIFE = Short Oxford-Liverpool Inventory of Feelings and Experiences; sO-LIFE subscales UnEx = unusual experiences, CoDi = cognitive disorganisation, InAn = introvertive anhedonia, ImNo = impulsive nonconformity; Correlations reported are Pearson's *r*; * $p < .01$

Appendix B

| Demographic | N | % |
|--|----------|----------|
| Gender | | |
| Female | 270 | 77.0 |
| Nonbinary/Agender/Gender Queer | 4 | 1.1 |
| Male | 77 | 22.0 |
| Age (years) | | |
| 18-24 | 31 | 8.7 |
| 25-34 | 168 | 47.3 |
| 35-44 | 68 | 19.2 |
| 45-54 | 40 | 11.3 |
| 55-64 | 39 | 11.0 |
| 65-74 | 9 | 2.5 |
| Ethnicity | | |
| Bangladeshi | 1 | 0.3 |
| Black African | 3 | 0.9 |
| Black British | 2 | 0.6 |
| Black Caribbean | 2 | 0.6 |
| Brown British | 1 | 0.3 |
| Indian | 2 | 0.6 |
| Pakistani | 1 | 0.3 |
| Turkish | 2 | 0.6 |
| White British | 259 | 74 |
| White European | 54 | 15.4 |
| White Irish | 7 | 2.0 |
| White and Asian | 2 | 0.6 |
| White and Black African | 1 | 0.3 |
| White and Black Caribbean | 6 | 1.7 |
| White European and British | 8 | 2.3 |
| White, Black African and Caribbean | 1 | 0.3 |
| Education | | |
| Primary School | 5 | 1.4 |
| Scottish National 5s, GCSEs, or equivalent | 21 | 6.0 |
| Scottish Highers, A Levels, or equivalent | 47 | 13.3 |
| Undergraduate Degree | 154 | 43.6 |
| Master's Degree | 99 | 28 |
| Doctorate Level Degree | 27 | 7.7 |
| Schizophrenia diagnosis | | |
| Yes | 17 | 4.8 |
| No | 338 | 95.2 |
| Mental Health Difficulty | | |
| Yes | 245 | 69.2 |

| | | | |
|----|-----|------|--------|
| No | 109 | 30.8 | Sample |
|----|-----|------|--------|

characteristics table