Self-disgust mediates the relationship between childhood adversities and psychosis

Objective: Traumatic events in childhood have been implicated in the development of psychosis but, given that trauma is not in itself sufficient to cause psychosis, researchers have started to investigate other psychological constructs potentially involved in explaining this relationship. Given that self-disgust as a transdiagnostic construct plays a role in the development/maintenance of a range of mental health difficulties, the objective of this study was to investigate if self-disgust mediates the relationship between childhood trauma and psychosis.

Method: A cross-sectional quantitative study design was used. Seventy-eight participants (M_{age} = 37.64 years, SD_{age} = 11.57 years; 77% women; 88% White Caucasian) who reported experiencing clinical levels of psychosis were recruited using social media. The participants completed online survey measures of childhood trauma, self-disgust, experiences of psychosis, self-esteem, and external shame. The data were analysed using correlation and mediation analyses.

Results: Significant indirect effects of childhood trauma on both positive (β = .17, BC 95% CI [.06, .30]) and negative symptoms (β = .26, BC 95% CI [.14, .40]) of psychosis via self-disgust were observed. These effects remained despite the inclusion of self-esteem and external shame as control variables in the mediation models.

Conclusion: This study is the first to show a mediating role for self-disgust in the relationship between childhood trauma and later psychosis. Although the findings should be considered preliminary until strengthened by further research, they nevertheless provide

corroboration of the potential utility of self-disgust as a transdiagnostic construct from a theoretical perspective, but also from its potential to inform formulation and interventions.

Practitioner points

- When assessing individuals with psychosis, especially those with a trauma history, explore experiences and feelings related to the construct of self-disgust. Such experiences are likely to centre on feelings of repulsion towards the self/need for distance and might also manifest in the content of their psychotic experiences.
- Individuals with significant levels or experiences of self-disgust are likely to need specific interventions to address these; while interventions seeking to improve positive aspects of their identity might well be useful, they are unlikely to address the specific maladaptive elements of self-disgust.
- While self-disgust focused interventions have not been widely researched, limited current evidence suggests cognitive restructuring and affirmation techniques might be useful.

Self-disgust mediates the relationship between childhood adversities and psychosis

Considerable evidence now links childhood trauma to the development of psychosis in later life. For example, in a meta-analysis of 36 studies, Varese et al. (2012) found that individuals who had experienced childhood trauma were almost three times more likely to develop psychosis than those who had not been exposed to trauma in childhood with additional evidence of a dose-response relationship (i.e . increased exposure to childhood trauma resulting in a greater likelihood of later psychosis (Varese et al., 2012). Furthermore, a number of papers have attempted to explain the link between trauma experienced in childhood and the later development of psychosis (see Williams, Bucci, Berry, & Varese, 2018, for a recent review). For example, Williams et al. (2018) have categorised potential mediators as belonging to three classes of variables: post-traumatic sequelae (e.g. dissociation, PTSD symptoms), affective dysfunction and dysregulation, and maladaptive cognitive factors (e.g. self-esteem and beliefs and concepts about the self and others).

One variable which has not yet been researched in relation to psychosis but which is gaining significant interest as a transdiagnostic construct relevant to a number of mental health difficulties is self-disgust (see Clarke et al., 2019, for a review). Disgust, categorised as a primary emotion since the emergence of Darwinian concepts regarding the evolutionary function of human emotions (Rozin & Fallon, 1987), is commonly understood as an affective rejection response, with the overall purpose being the prevention of contamination. Self-disgust, defined as a maladaptive disgust reaction triggered by specific aspects of the self, can be conceptually differentiated from other negative self-directed emotions such as self-loathing, self-criticism and self-hatred through its association with disgust and the notion of revulsion and contamination (Espeset, Gulliksen, Nordbo, Skarderud, & Holte, 2012; Gilbert et al., 2004; Powell, Simpson, & Overton, 2015a,b). It has also been shown to not simply be the inverse of a positive self concept – i.e. high self-esteem (Simpson, Hillman, Crawford &

Overton, 2010). Research on its relationship with shame, with which it is most frequently conflate (Powell et al., 2015a) has also supported the proposal that the two constructs can be differentiated (e.g., Olatunji, Cox & Kim, 2015; Powell et al, 2015a,b), perhaps most clearly through self-disgust's strong evocation of nausea and revulsion. Powell et al (2015a) also point to the different evolutionary roots of self-disgust and shame, with shame developing as a damage limitation strategy in a context of social competition. While the visceral and pervasive intensity of self-disgust (see |Powell et al., 2014) sets it apart from other negative emotions, this is not to suggest, however, that complex relationships and dependencies between self-disgust and these other emotions do not exist (see Powell et al., 2015a) for a full discussion of this issue).

While self-disgust is not inherently dysfunctional (Curtis, Danquah, & Aunger, 2009), when it is triggered by an aspect of the individual's physical characteristics, character traits, and/or behaviours, perceived as stable and enduring, then it may become maladaptive (Powell, Simpson et al., 2015a). The most advanced theoretical model of self-disgust (Powell, Simpson et al., 2015a) conceptualises it as an emotion schema, a cognitive-affective structure typically developed during childhood that consists of both higher-order cognitive processes and felt emotion (Izard, 2011). Crucially, it has been argued by theorists that emotion schemas can have a stable and enduring effect upon behaviour and information processing if repeatedly activated (Izard, 2011). Consequently, using this framework, the activation of self-disgust is likely to complicate the treatment process of any resulting psychological and/or emotional difficulties.

Several indications suggest that self-disgust may be theoretically and clinically useful in understanding the development and maintenance of psychotic experiences. For instance, as with psychosis, traumatic experiences in childhood have been implicated in the development

of a self-disgust emotion schema. In cases of interpersonal trauma, such as sexual assault, the victim may start to believe that their body has been contaminated or made dirty by the perpetrator (Badour, Feldner, Babson, Blumenthal, & Dutton, 2013). This belief may then be internalised by the individual and lead to maladaptive self-disgust. Indeed, there is some empirical evidence to support a link between reported sexual and emotional abuse in childhood and the presence of self-disgust. For example, researchers have reported a significant correlation between the self-disgust scale (SDS; Overton et al., 2008) and the child abuse and trauma scale (CATS; Sanders & Becker-Lausen, 1995; Powell, Simpson, & Overton,2015a). These types of victimisation have also been shown to increase an individual's risk to later psychosis (Varese et al., 2012). Moreover, self-disgust has been implicated in trauma-related conditions such as post-traumatic stress disorder (PTSD) (Badour & Adams, 2015). Given that psychosis has been argued to exist on a continuum of trauma responses that includes PTSD (Morrison, Frame, & Larkin, 2003), it is reasonable to conceptualise a potential developmental pathway from exposure to trauma in childhood, development of a maladaptive self-disgust emotion schema, and later onset of psychosis. In this theoretical model, the subject of this study's empirical focus, self-disgust is hypothesised to mediate the relationship between childhood trauma and psychosis. The mediation model is presented in Figure 1. However, self-esteem and external shame (the belief that others are shaming and hold a negative view of you; Wood & Irons, 2016) were considered as potential covariates because they have been shown to play in a role in the development and maintenance of psychosis-related experiences and their associated distress (Birchwood et al., 2007; Wood, Byrne, Burke, Enache, & Morrison, 2017). The inclusion of these covariates in the model also tests the mediational power of self-disgust against other conceptually similar variables (Simpson, Hillman, Crawford & Overton, 2012).

[INSERT FIGURE 1]

Method

Participants

The specific inclusion criteria were as follows: a) the person reported having a diagnosis of psychosis (e.g., schizophrenia, schizo-affective disorder and/or delusional disorder etc.); and/or b) they reported having been prescribed antipsychotic medication; and/or c) they reported having received inpatient treatment, input from a community mental health team, or early intervention service for experiences related to psychosis; and/or d) they reported having received therapeutic input (e.g., attended a clinical psychology service, cognitive-behavioural therapist etc.) for experiences related to psychosis. Individuals who met one or more of the above criteria relating to psychosis were eligible to take part in the study.

A total of 78 self-selected participants completed the online questionnaires described below, and other measures not reported in this study. Participants' age ranged from 18 to 74 years (M = 37.64 years, SD = 11.57). The majority of the participants were female (77%) and White Caucasian (88%). The sample had a relatively high level of educational attainment (51% reported having received a degree) and the majority of participants were employed at the time of recruitment (43%). Demographic data for the final sample can be found in Table 1. In addition, Table 1 also includes the number and percentage of participants who self-reported having received a formal psychosis-related diagnosis, input from services for psychosis-related distress, or those who identified as having been prescribed antipsychotic medication.

[INSERT TABLE 1]

Measures and Covariates

Demographic and clinical characteristics questionnaire. A brief questionnaire was used to collect data on participants' sexual orientation, age, gender, nationality, ethnicity, first language, marital status, level of education, years in education, employment status, contact with services for psychosis-related difficulties, psychiatric diagnosis, and current medication.

Childhood abuse and trauma. Childhood trauma was assessed using the Childhood Abuse and Trauma Scale (CATS; Sanders & Becker-Lausen, 1995). The CATS is a 38-item self-report measure that assesses a range of trauma experienced prior to the age of 18. The measure includes three subscales: sexual abuse (six items), punishment (six items), neglect/negative home environment (14 items) measured on a five-point scale increasing in frequency (i.e. 0 to 4). Possible scores range from 0 to 152 with higher scores indicating higher levels of childhood trauma. A total CATS score is obtained by summing each of the subscale totals. Internal consistency of the scale in the present study was strong as indicated by a Cronbach's alpha coefficient of $\alpha = .95$.

Symptoms of psychosis. Level of psychosis was measured using the Community Assessment of Psychic Experience (CAPE; Stefanis et al., 2002). The CAPE is a 42-item self-report measure that covers three symptom dimensions: 1) positive symptoms (two items assessing auditory-verbal hallucinations and 16 items assessing delusions); 2) depressive symptoms (eight items) and 3) negative symptoms (14 items). Each item is measured on a 4-point Likert scale (0 = never, 3 = nearly always) to indicate the frequency of each symptom type. The CAPE provides an overall score and a total score for each dimension. The present study used the positive and negative symptom dimensions only and a total score for each was calculated. Internal consistency of the scale in the present study was strong for both subscales used (positive symptoms: $\alpha = .89$, negative symptoms: $\alpha = 88$).

Self-disgust. Self-disgust was measured using the Self-Disgust Scale-Revised (SDS-R; Powell, Overton, & Simpson, 2015). The SDS-R is a 22-item self-report measure that assesses an individual's level of self-directed disgust. The SDS-R has a bi-factor structure and consists of two subscales: physical self-disgust (5 items) and behavioural self-disgust (5 items) as well as a total score relating to general self-disgust (15 items). All 15 items, measured on a seven-point scale (1 = strongly disagree, 7 = strongly agree), are summed to obtain a total self-disgust score with higher scores indicating greater self-disgust. The internal consistency of the total score in the present study was good (α = .82).

Self-esteem. Level of self-esteem was measured using the Rosenberg Self-Esteem Scale (RSES; Rosenberg, 1965). The RSES is a 10-point self-report measure of global self-esteem. Items are scored on a four-point Likert scale (1 = strongly agree, 4 = strongly disagree), with a range of 10 – 40; higher scores indicate greater levels of self-esteem. The RSES had excellent internal consistency in the present study (α = .93).

External shame. External shame was measured using the Other as Shamer Scale (OAS; Goss, Gilbert, & Allan, 1994). The scale consists of 18 items each rated on a five-point scale (0 = never, 4 = almost always) according to the frequency of perceived evaluations about how others judge the self. A total external shame score is determined by summing item scores with a range of 0 to 72. Similarly, the scale's internal consistency in the present study was excellent (α = .95).

Procedure

The online survey platform, Qualtrics, was used to develop and administer the online survey. A digital link was created and was uploaded to relevant sites on the social media platforms Facebook and Twitter. The digital link directed potential participants to the participant information sheet (PIS) and study consent form. Upon providing their consent to

take part in the study, participants were directed to the complete set of survey measures. The survey measures were presented to all participants in the same order. This allowed the research team to manage the presentation of survey items based on perceived potential to cause distress. Therefore, a standardised approach was taken to remove the risk of trauma-related items being presented at the end of the survey for some participants. After completing the survey, participants were debriefed and offered the opportunity to be entered into a cash prize draw and to receive a summary of the study's findings once this was available.

Statistical Analysis

Data analyses were conducted using IBM SPSS Statistics Version 23.0. Data maximisation using series mean imputation was applied to cases with missing data. Following imputation of these data points, paired sample *t*-tests were conducted to assess the impact of this upon the variables. The results of these analyses revealed a negligible difference after series mean imputation had been applied and this was taken as confirmation that the data maximisation strategy had been successful.

Bivariate associations between the different variables were examined using correlational tests (Spearman rank order correlation). A series of mediation models were estimated to: 1) investigate the indirect effect of childhood trauma on positive symptoms of psychosis via self-disgust, while controlling for self-esteem and external shame; and 2) investigate the indirect effect of childhood trauma on negative symptoms of psychosis via self-disgust, while controlling for self-esteem and external shame. The mediation tool employed to conduct these analyses (PROCESS macro for SPSS: Hayes, 2013) also provided regression

coefficients between each of the variables of interest in the model. Bias-corrected bootstrap confidence intervals (BC 95% CIs) based on 2000 resamples were used to test for statistical significance of the indirect effects.

Results

Initially, a total of 167 self-selected participants entered the online survey; 21% (n = 35) withdrew following completion of the consent form. A further 20% (n = 33) withdrew part way through the survey measures and their data were deleted according to the ethics agreement for the study. In addition, 13% (n = 21) had their data deleted because they did not meet the other inclusion criteria. This left a final sample of n = 78.

Participants' mean scores on the SDS-R for this study can be considered moderate to high (M = 60.07) given that possible scores on the scale can range from 22 to 154. By comparison, a non-clinical sample of university students scored a median value of 24 on the measure (see Powell, Overton et al., 2015). In terms of childhood trauma levels, the sample mean in the present study (M = 64) suggested a moderate level of trauma experiences. Furthermore, the minimum score in the sample was 15, evidence that all participants endorsed experiencing some traumatic experiences in childhood, with no participants not reporting a trauma event. Table 2 includes the descriptive statistics for measures used in the study.

[INSERT TABLE 2]

Correlation Analysis

Non-parametric Spearman rank order correlation co-efficient values (r_s) between study variables are shown in Table 3.

[INSERT TABLE 3]

Childhood trauma significantly correlated with all variables of interest (self-disgust and symptoms of psychosis). Positive correlations were also found between self-disgust and symptoms of psychosis (positive and negative). Analysis of the association between self-disgust and either positive or negative symptoms showed no significant difference in either the raw model, b = -.048, BCa 95% CI [-.154, .064], p = .397, or the adjusted model, b = .022, BCa 95% CI [-.163, .221], p = .785. Furthermore, significant correlations, in the predicted direction, for psychosis were found with both self-esteem and shame. Therefore, co-variation was indicated for these variables, indicating the need for statistical control.

Mediation Analyses

Unadjusted mediation. Initially, two unadjusted mediation models were tested. The first of these investigated the hypothesis that self-disgust would mediate the relationship between childhood trauma and positive symptoms of psychosis. The regression pathways showed that childhood trauma significantly predicted self-disgust (a: b = .38, 95% CI [.21, .55], p < .01) and self-disgust significantly predicted positive symptoms of psychosis (b: b = .17, 95% CI [.06, .27], p < .01). In addition, the indirect (mediation) effect of childhood trauma via self-disgust (ab: b = .06, BC 95% CI [.03, .13], β = .17, BC 95% CI [.06, .30]) was significant as the CIs did not contain zero. Furthermore, there was no evidence that childhood trauma predicted positive symptoms independently of self-disgust (c ¦ b = .07, 95% CI [- .02, .15], p = .14). Figure 2 displays a path diagram estimating the effect of childhood trauma on positive symptoms of psychosis through self-disgust.

[INSERT FIGURE 2]

The second unadjusted mediation model tested the hypothesis that self-disgust would mediate the relationship between childhood trauma and negative symptoms of psychosis. The regression pathways indicated that childhood trauma significantly predicted self-disgust (a: b

= .38, 95% CI [.21, .55], $p < .01$) and self-disgust significantly predicted negative symptoms of psychosis (b: $b = .22$, 95% CI [.14, .29], $p < .01$). Moreover, there was a significant indirect effect of childhood trauma on negative symptoms of psychosis via self-disgust (ab: $b = .08$, BC 95% CI [.04, .13], β = .26, BC 95% CI [.14, .40]). Also, childhood trauma did not predict negative symptoms independently of self-disgust ($c' b = .05$, 95% CI [- .02, .11], $p = .15$). Figure 3 displays a path diagram estimating the effect of childhood trauma on negative symptoms of psychosis through self-disgust.

[INSERT FIGURE 3]

Adjusted mediation. Following this, two adjusted mediation models, each controlling for self-esteem and shame, were tested. The first model investigated the hypothesis that self-disgust would mediate the relationship between childhood trauma and positive symptoms of psychosis when controlling for the effects of self-esteem and shame. The regression pathways showed that childhood trauma significantly predicted self-disgust (a: $b = .38$, 95% CI [.21, .55], $p < .001$) and self-disgust significantly predicted positive symptoms of psychosis (b: .19, 95% CI [.01, .36], $p < .05$). In addition, the indirect (mediation) effect of childhood trauma via self-disgust (ab: b = .07, BC 95% CI [.001, .16] was significant as the CIs did not contain zero. Moreover, childhood trauma did not predict positive symptoms of psychosis independently of self-disgust ($c' b = .02$, 95% CI [- .08, .11], $p = .71$). Figure 4 displays a path diagram estimating the effect of childhood trauma on positive symptoms of psychosis through self-disgust, with self-esteem and shame added to the model as control variables.

[INSERT FIGURE 4]

The second adjusted mediation model tested the hypothesis that self-disgust would mediate the relationship between childhood trauma and negative symptoms of psychosis

when controlling for self-esteem and shame. The regression pathways showed that childhood trauma significantly predicted self-disgust (a: b = .38, 95% CI [.21, .55], p < .001) and self-disgust significantly predicted negative symptoms of psychosis (b: b = .17, 95% CI [.03, .30], p = .01). In addition, there was a significant indirect effect of childhood trauma on negative symptoms of psychosis through self-disgust (ab: b = .06, BC 95% CI [.01, .14]). The model also showed that childhood trauma did not predict negative symptoms of psychosis independently of self-disgust (c ¦ b = .02, 95% CI [- .05, .09], p = .55). Figure 5 displays a path diagram estimating the effect of childhood trauma on negative symptoms of psychosis through self-disgust with self-esteem and shame added to the model as control variables.

[INSERT FIGURE 5]

Discussion

The present study aimed to test a potential mediational role for self-disgust on the relationship between childhood trauma and later onset of psychosis. In particular, the study examined the theoretical model that self-disgust would mediate this relationship over and above the related emotions of self-esteem and external shame. The results support the study hypotheses and suggest a potential role of self-disgust in the development and maintenance of both positive and negative symptoms of psychosis.

We acknowledge that studies have already demonstrated that multiple negative appraisals about the self are associated with trauma exposure in people with psychosis, and that these variables have been linked to increased presence and severity of psychotic experiences in clinical and non-clinical samples (Hardy et al., 2016; Williams et al., 2018). This study adds to the growing evidence suggesting that these appraisals represent a meaningful target for treatment. While our findings suggests that self-disgust is important, and while we have demonstrated that it has an effect above shame, we cannot at present claim

any ‘superiority’ of this construct over other psychological mediators of the trauma-psychosis relationship. In reality, it is likely that trauma characteristic, peri-traumatic factors and post-traumatic appraisal processes will influence the exact ‘psychological mediator’ that develops or is activated in response to trauma exposure. It is therefore possible that self-disgust may represent a highly relevant trauma sequela for some trauma survivors with psychosis, but not others. Current evidence suggests that self-disgust is relevant to both positive and negative difficulties.

In the present study, the effects of both self-esteem and external shame were controlled in the mediation models. This reflected the need for greater conceptual clarity regarding the discrete nature of self-disgust in relation to these constructs. Indeed, the findings described here support theoretical accounts of self-disgust that consider it to be conceptually distinct from shame (e.g. Powell, Simpson et al., 2015a). In this case, despite controlling for the effects of self-esteem and shame on the relationship between childhood trauma and symptoms of psychosis, indirect effects via self-disgust were still found. This again calls for a nuanced view of negative emotions and the need for definitional clarity when using related constructs.

Study Limitations

The present study has a number of limitations. First, due to the limited sample size used in the present study, and the large drop-out rate of initial referrals, it is not possible to draw firm conclusions based on the results. This is especially the case given the novel nature of the research topic because, to the authors’ knowledge, the role of self-disgust in the development and maintenance of psychosis has not previously been investigated. Second, given that the study employed a cross-sectional design, it is not possible to assert causal

relationships between the variables of interest. Also, given that the study relied upon retrospective reports of childhood trauma the findings could be subject to recall bias. However, there is reasonable evidence that people who have experienced psychosis reliably report their experiences of past trauma (Fisher et al., 2011).

A further limitation relates to the measurement of shame and self-esteem as control variables in the study. For instance, it is generally accepted that shame has two forms: internal (negative thoughts and feelings about the self) and external (perceptions that others view you negatively), which each impact upon mental wellbeing (Matos, Pinto-Gouveia, & Gilbert, 2013; Pinto-Gouveia, Castilho, Matos, & Xavier, 2013; Wood & Irons, 2016). Yet, the present study only included external shame as a covariate and it may have been empirically useful to have included internal shame alongside this. Equally, it could be argued that the RSES (Rosenberg, 1965) is typically based on social comparison evaluations of the self, rather than self-appraisals *per se*. Accordingly, future studies may consider evaluating self-disgust alongside alternative measures of shame and self-esteem. Nevertheless, previous research findings suggest that external shame may be the most relevant to the development and maintenance of psychosis-related experiences, specifically paranoid ideation in a non-clinical sample (Matos et al., 2013; Pinto-Gouveia et al., 2013), and self-disgust has been shown to have a socially comparative element (Powell, Overton, & Simpson, 2014).

Finally, the recruitment strategy used in the present study involved self-selection to participate in the research. In this case, participants choose to enter an online survey via social media, which may have introduced bias to the study sample. Differences in demographics between people who use social media and those who do not, for example, indicate the former are more likely to be female, younger in age and from higher social-economic groups (Mellon & Prosser, 2017). Moreover, the demographic characteristics of the present sample showed that a significant majority of participants were female, had relatively

high levels of education and were working and/or in further education, thus reflecting the biases outlined above. Therefore, it will be crucial for future research in this area to adopt alternative strategies of recruiting from this population.

Clinical Implications

The presence of a self-disgust schema should be assessed for and considered by clinicians when developing formulations and delivering interventions to individuals who experience psychosis, especially in cases where a history of childhood trauma has been established. Moreover, learning strategies for effective emotion regulation is increasingly being recognised as an important aspect of interventions for clients experiencing psychosis (Clarke & Nicholls, 2018). Indeed, the ability to manage strong affect, for example, the negative emotional experiences when a self-disgust schema is triggered, has been highlighted as an area of particular difficulty for people living with psychosis (Livingstone, Harper, & Gillanders, 2009). Few papers report interventions specifically targeting self disgust. Powell, Simpson and Overton (2015b) conducted a study that represents the only demonstration to date that it is possible to reduce self-disgust using a therapeutic intervention. In this case, a self-affirmation exercise was used to elicit examples of trait kindness by participants, which subsequently led to reduced levels of self-disgust in relation to appearance. These findings suggest that self-affirming kindness may be an effective intervention for individuals high in trait self-disgust. Therefore, acknowledging the relatively stable nature of emotion schemas, such as maladaptive self-disgust, and offering targeted interventions to alleviate them, may increase the therapeutic benefits for clients experiencing mental health difficulties precipitated and maintained by such schemas.

For individuals for whom self-disgust seems to be relevant to their clinical formulations, adaptations to current treatment plans may be required. Of particular relevance

might be those techniques which are increasingly being evaluated in people with psychosis and concurrent trauma-related difficulties, for example eye movement desensitisation therapy and trauma-focused cognitive behavioural therapy (e.g., van den Berg et al., 2015; Mueser et al., 2010). Self-disgust is not routinely or sufficiently evaluated in these treatment protocols and self-disgust is not commonly included among psychological assessments for post-traumatic difficulties. Clearly a further clinical research goal would be to test aspects of current interventions which could help address the self-disgust schema specifically.

In conclusion, this study has provided the first empirical demonstration of the mediating role of self-disgust in the relationship between childhood trauma and psychosis, even when other related constructs have been added to the model. This adds further evidence of the value and relevance of self-disgust to our understanding of individuals with mental health difficulties. In relation to psychosis, self-disgust can be understood as a maladaptive cognitive structure (Powell, Simpson et al., 2015a), one of the three categories of potential mediators between childhood trauma and psychosis recently outlined (Williams et al., 2018). Given the potential of self-disgust to complicate and intensify other psychological difficulties (see Clarke et al., 2019), it is important for clinicians to explore experiences indicative of self-disgust with clients with psychosis presenting with an abusive/traumatic history. Understanding and responding to such experiences is an important component of an effective formulation and therapy plan.

References

Badour, C. L., & Adams, T. G. (2015). Contaminated by trauma: Understanding links between self-disgust, mental contamination and post-traumatic stress disorder. In P. A. Powell, P. G. Overton & J. Simpson (Eds.), *The Revolting Self: Perspectives on the Psychological, Social and Clinical Implications of Self-directed Disgust* (pp. 127-150). London: Karnac.

Badour, C. L., Feldner, M. T., Babson, K. A., Blumenthal, H., & Dutton, C. E. (2013). Disgust, mental contamination, and posttraumatic stress: Unique relations following sexual versus non-sexual assault. *Journal of Anxiety Disorders*, *27*(1), 155-162

Birchwood, M., Trower, P., Brunet, K., Gilbert, P., Iqbal, Z., & Jackson, C. (2007). Social anxiety and the shame of psychosis: A study in first episode psychosis. *Behaviour Research and Therapy, 45*(5), 1025-1037. doi: 10.1016/j.brat.2006.07.011

Clarke, A., Simpson, J., & Varese, F. (2019). A systematic review of the clinical utility of the concept of self-disgust. Clinical Psychology and Psychotherapy, 26(1), 110-134.

Clarke, I., & Nicholls, H. (2018). *Third Wave CBT Integration for Individuals and Teams: Comprehend, Cope and Connect*: Routledge.

Curtis, V. A., Danquah, L. O., & Aunger, R. V. (2009). Planned, motivated and habitual hygiene behaviour: an eleven country review. *Health education research*, *24*(4), 655-673.

Espeset, E.M.S., Gulliksen, K.S., Nordo, R.H.S., Skarderud, F., & Holte, A. (2012). The link between negative emotions and eating disorder behaviour in patients with anorexia nervosa. *European Eating Disorders Review*, *20*, 451-460.

Fisher, H. L., Craig, T. K., Fearon, P., Morgan, K., Dazzan, P., Lappin, J., . . . Morgan, C. (2011). Reliability and Comparability of Psychosis Patients' Retrospective Reports of Childhood Abuse. *Schizophrenia Bulletin, 37*(3), 546-553. doi: 10.1093/schbul/sbp103

Gilbert, P. (2015). Self-disgust, self-hatred, and compassion-focused therapy. In P. A. Powell, P. G. Overton & J. Simpson (Eds.), *The Revolting Self: Perspectives on the Psychological, Social, and Clinical Implication of Self-directed Disgust* (pp. 223-242). London: Karnac.

Gilbert, P., Clarke, M., Hempel, S., Miles, J.N.V., & Irons, C (2004). Criticising and reassuring oneself: An exploation of forms, styles and reasons in females studients. *British Journal of Clinical Psychology*, *43*, 31-50.

Goss, K., Gilbert, P., & Allan, S. (1994). An exploration of shame measures—I: The other as Shamer scale. *Personality and Individual Differences, 17*(5), 713-717. doi: 10.1016/0191-8869(94)90149-X

Hardy, A., Emsley,R., Freeman, D., Bebbington, P., Garety, P.A., Kuipers, E.A., Dunn, G., & Fowler, D. (2016). Psychological mechanisms mediating effects between trauma and psychotic symptoms: the role of affect regulation, intrusive trauma memory, beliefs, and depression, *Schizophrenia Bulletin*, 42, S34–S43, https://doi.org/10.1093/schbul/sbv175

Izard, C. E. (2011). Forms and functions of emotions: Matters of emotion–cognition interactions. *Emotion Review*, *3*(4), 371-378.

Jung, K., & Steil, R. (2012). The Feeling of Being Contaminated in Adult Survivors of Childhood Sexual Abuse and Its Treatment via a Two-Session Program of Cognitive

Restructuring and Imagery Modification: A Case Study. *Behavior Modification, 36*(1), 67-86. doi: 10.1177/0145445511421436

Jung, K., & Steil, R. (2013). A randomized controlled trial on cognitive restructuring and imagery modification to reduce the feeling of being contaminated in adult survivors of childhood sexual abuse suffering from posttraumatic stress disorder. *Psychotherapy and psychosomatics, 82*(4), 213-220

Livingstone, K., Harper, S., & Gillanders, D. (2009). An exploration of emotion regulation in psychosis. *Clinical psychology & psychotherapy, 16*(5), 418-430

Matos, M., Pinto-Gouveia, J., & Gilbert, P. (2013). The Effect of Shame and Shame Memories on Paranoid Ideation and Social Anxiety. *Clinical Psychology & Psychotherapy, 20*(4), 334-349. doi: 10.1002/cpp.1766

Mellon, J., & Prosser, C. (2017). Twitter and Facebook are not representative of the general population: Political attitudes and demographics of British social media users. *Research & Politics, 4*(3). doi: 10.1177/2053168017720008

Morrison, A. P., Frame, L., & Larkin, W. (2003). Relationships between trauma and psychosis: A review and integration. *British Journal of Clinical Psychology, 42*(4), 331-353. doi: 10.1348/014466503322528892

Mueser KT, Rosenberg SD, Xie H, Jankowski MK, Bolton EE, Lu W, et al. A randomized controlled trial of cognitive-behavioral treatment for posttraumatic stress disorder in severe mental illness. Journal of Consulting & Clinical Psychology. 2008;76:259–271.

Olatunji, B.O., Cox, R., & Kim, E.H. (2015). Self-disgust mediates the associations between shame and symptoms of bulimia and obsessive-compulsive disorder. *Journal of Social and Clinical Psychology*, *34,* 239-258.

Overton, P. G., Markland, F. E., Taggart, H. S., Bagshaw, G. L., & Simpson, J. (2008). Self-disgust mediates the relationship between dysfunctional cognitions and depressive symptomatology. *Emotion*, *8*(3), 379.

Pearce, J., Simpson, J., Berry, K., Bucci, S., Moskowitz, A., & Varese, F. (2017). Attachment and dissociation as mediators of the link between childhood trauma and psychotic experiences. *Clinical Psychology & Psychotherapy, 24*(6), 1304-1312. doi: 10.1002/cpp.2100

Pilton, M., Varese, F., Berry, K., & Bucci, S. (2015). The relationship between dissociation and voices: A systematic literature review and meta-analysis.(Clinical report)*, 40*, 138

Pinto-Gouveia, J., Castilho, P., Matos, M., & Xavier, A. (2013). Centrality of Shame Memories and Psychopathology: The Mediator Effect of Self-Criticism. *Clinical Psychology: Science and Practice, 20*(3), 323-334. doi: 10.1111/cpsp.12044

Powell, P.A., Overton, P.G., & Simpson, J. (2014). The revolting self: an interpretative phenomenological analysis of the experience of self-disgust in females with depressive symptoms. *Journal of Clinical Psychology*, *70*, 562-578.

Powell, P. A., Overton, P. G., & Simpson, J. (2015). Reflections on the revolting self: a commentary and further directions. In P. A. Powell, P. G. Overton & J. Simpson (Eds.), *The revolting self: Perspectives on the psychological, social and clinical implications of self-directed disgust*. London: Karnac.

Powell, P. A., Simpson, J., & Overton, P. G. (2013). When disgust leads to dysphoria: A three-wave longitudinal study assessing the temporal relationship between self-disgust and depressive symptoms. *Cognition & Emotion*, 1-14. doi: 10.1080/02699931.2013.767223

Powell, P. A., Simpson, J., & Overton, P. G. (2015a). An introduction to the revolting self: Self-disgust as an emotion schema. In P. A. Powell, Overton, P. G., & Simpson, J.,

(Ed.), *The revolting self: Perspectives on the psychological, social and clinical implications of self-directed disgust*. London: Karnac.

Powell, P.A., Simpson, J., & Overton, P.G. (2015b). Self-affirming trait kindness regulates disgust towards one's appearance. *Body Image*, *12*, 98-107.

Rosenberg, M. (1965). Rosenberg self-esteem scale (SES). *Society and the adolescent self-image*.

Rozin, P., & Fallon, A. E. (1987). A perspective on disgust. *Psychological Review*, *94*(1), 23.

Sanders, B., & Becker-Lausen, E. (1995). The Measurement of Psychological Maltreatment: Early Data on the Child Abuse and Trauma Scale. *Child Abuse & Neglect: The International Journal, 19*(3), 315-323. doi: 10.1016/S0145-2134(94)00131-6

Simpson, J., Hillman, R., Crawford, T., & Overton, P. G. (2010). Self-esteem and self-disgust both mediate the relationship between dysfunctional cognitions and depressive symptoms. *Motivation and Emotion*, *34*(4), 399-406.

Sinclair, S. J., Blais, M. A., Gansler, D. A., Sandberg, E., Bistis, K., & LoCicero, A. (2010). Psychometric Properties of the Rosenberg Self- Esteem Scale: Overall and Across Demographic Groups Living Within the United States. *Evaluation & the Health Professions, 33*(1), 56-80. doi: 10.1177/0163278709356187

Stefanis, N. C., Hanssen, M., Smirnis, N. K., Avramopoulos, D. A., Evdokimidis, I. K., Stefanis, C. N., ... & Van Os, J. (2002). Evidence that three dimensions of psychosis have a distribution in the general population. *Psychological medicine*, *32*(2), 347-358.

van den Berg D. P., de Bont P. A., van der Vleugel B. M., de Roos C., de Jongh A., van Minnen A., et al. (2015). Prolonged exposure vs eye movement desensitization and reprocessing vs waiting list for posttraumatic stress disorder in patients with a psychotic disorder: a randomized clinical trial. *JAMA Psychiatry, 72*, 259–267. 10.1001/jamapsychiatry.2014.2637

Varese, F., Smeets, F., Drukker, M., Lieverse, R., Lataster, T., Viechtbauer, W., . . . Bentall, R. P. (2012). Childhood adversities increase the risk of psychosis: a meta-analysis of patient-control, prospective- and cross-sectional cohort studies. *Schizophr Bull, 38*(4), 661-671. doi: 10.1093/schbul/sbs050

Williams, J., Bucci, S., Berry, K., & Varese, F. (2018). Psychological mediators of the association between childhood adversities and psychosis: A systematic review. *Clinical Psychology Review, 65*, 175-196.

Wood, L., Byrne, R., Burke, E., Enache, G., & Morrison, A. P. (2017). The impact of stigma on emotional distress and recovery from psychosis: The mediatory role of internalised shame and self- esteem. *Psychiatry Research, 255*, 94-100. doi: 10.1016/j.psychres.2017.05.016

Wood, L., & Irons, C. (2016). Exploring the associations between social rank and external shame with experiences of psychosis*, 44*(5), 527-538. doi: 10.1017/S1352465815000570

Tables and Figures

Table 1

Demographic characteristics of participants

		N	%
Sex	Female	60	77

	Male	18	23
Ethnicity	White Caucasian	69	88
	Other	9	12
Marital Status	Never Married	48	62
	Married	18	23
	Registered Civil Partnership	1	1
	Separated or Divorced	10	13
	Widowed	1	1
Level of Education	GCSEs or Less	5	7
	A Levels	7	9
	Degree Level	40	51
	Other	25	33
Employment Status	Unemployed	9	12
	Working	33	43
	Studying	4	5
	Retired	2	3
	Other	30	37
Diagnosis	Schizophrenia	9	13
	Schizoaffective Disorder	6	9
	Depression with Psychotic Features	12	17
	Delusional Disorder	1	1
	Bipolar with Psychotic Features	10	14
	Brief Psychotic Disorder	3	4
	Other (psychosis related)	30	42
Antipsychotic Medication History	Yes	61	87
	No	17	13
Inpatient History	Yes	58	74
	No	20	26
CMHT or EIT History	Yes	61	78

	No	17	22

Table 2

Descriptive characteristics

	n	*M (SD)*	95% CI	*Median*	Min.	Max.	^{Z}Skewness	^{Z}Kurtosis
Childhood Trauma (CATS)	73	102.48 (25.96)	[58.42, 70.54]	102	53	152	0.11	-1.70
Self-Esteem (RSES)	77	23.62 (7.13)	[22.00, 25.24]	24	11	40	- 0.64	- 0.86
Shame (OAS)	75	54.28 (15.27)	[50.77, 57.79]	53	18	83	- 0.19	- 0.50
Self-Disgust (SDS-R)	76	60.07 (21.12)	[55.24, 64.89]	64	21	104	- 0.41	- 0.10
Positive symptoms (CAPE)	74	37.11 (9.87)	[34.82, 39.39]	38	20	65	2.02	0.01
Negative symptoms (CAPE)	74	32.66 (8.22)	[30.76, 34.57]	32	16	56	1.68	0.37

Note. CATS = Child Abuse and Trauma Scale; RSES = Rosenburg Self-Esteem Scale; OAS = Other as Shamer scale; SDS-R = Self-Disgust Scale-Revised; CAPE = Community Assessment of Psychic Experience.

Table 3

Correlation matrix

Note. * $p < .05$. ** $p < .01$.

	1.	2.	3.	4.	5.	6.
1. Childhood Trauma (CATS)	-					
2. Self-esteem (RSES)	- .43**	-				
3. Shame (OAS)	.62**	- .69**	-			
4. Self-disgust (SDS-R)	.47**	- .82**	.67**			
5. Positive Symptoms (CAPE)	.35**	- .32**	.50**	.41**	-	
6. Negative Symptoms (CAPE)	.41**	- .59**	.63**	.63**	.45**	-

CATS = Child Abuse and Trauma Scale; RSES = Rosenburg Self-Esteem Scale; OAS = Other as Shamer scale; SDS-R = Self-Disgust Scale-Revised; CAPE = Community Assessment of Psychic Experience.

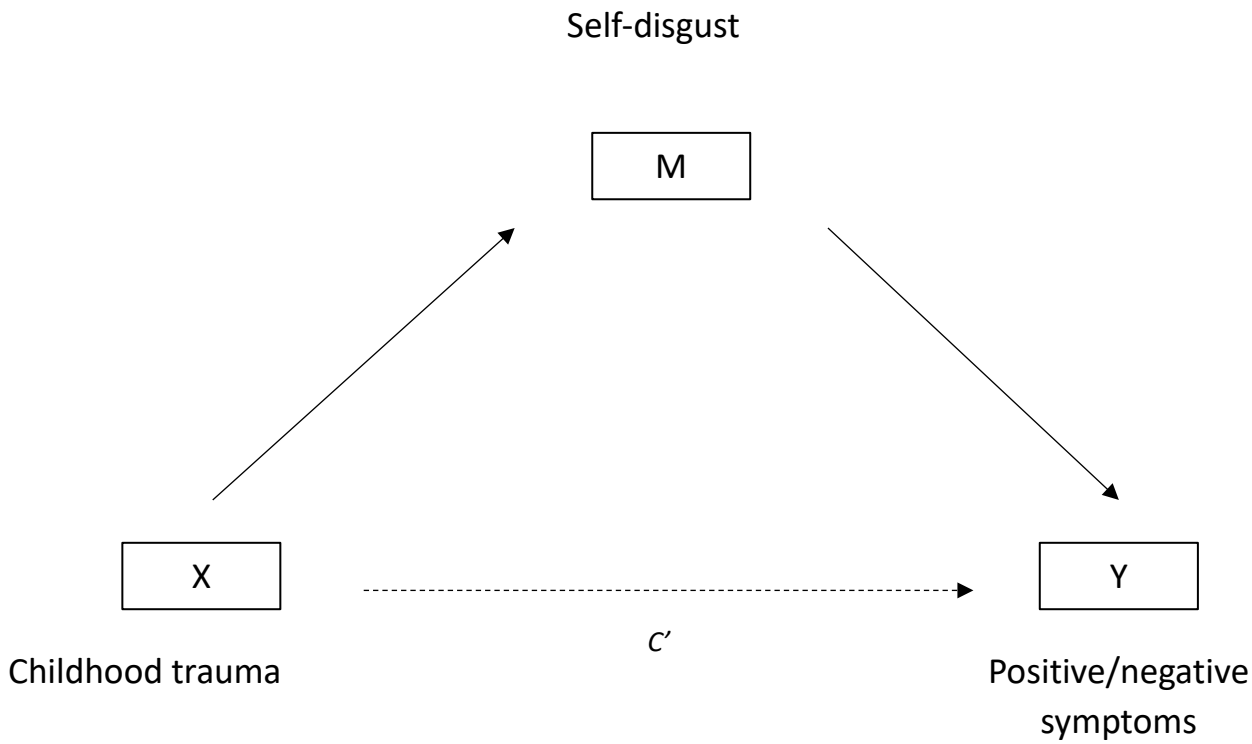

Figure 1. Path diagram of unadjusted mediation model testing if self-disgust mediates the relationship between childhood trauma and symptoms of psychosis. N.B. positive and negative symptoms will be tested in separate models but are included in the same diagram here for illustrative purposes.

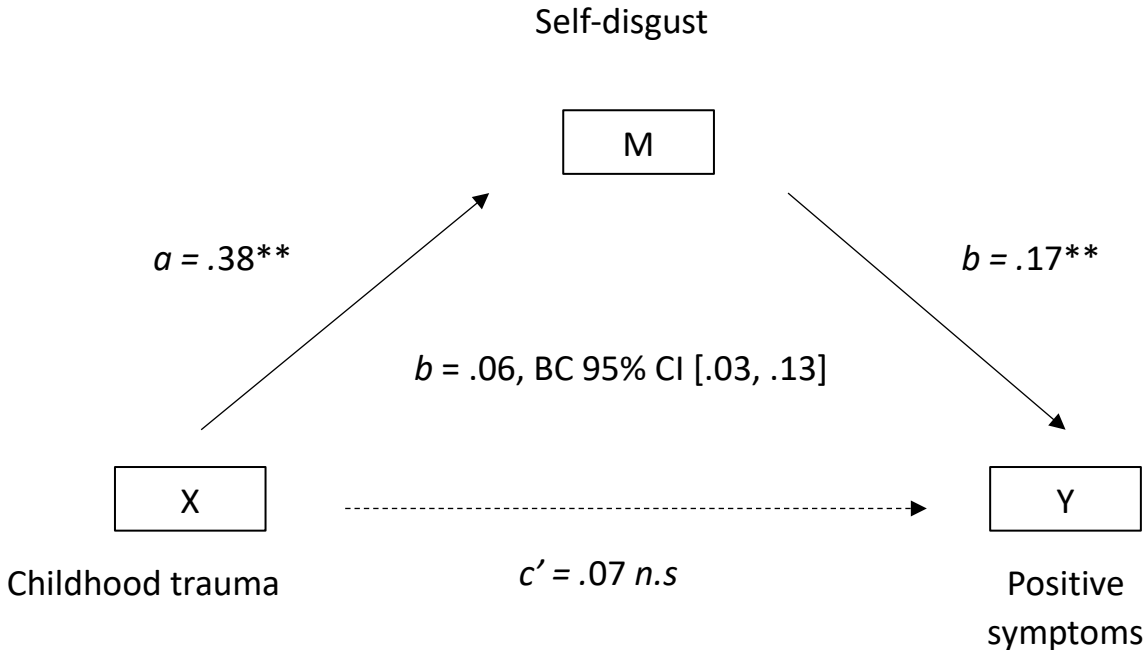

Figure 2. Path diagram of unadjusted mediation model testing if self-disgust mediates the relationship between childhood trauma and symptoms of psychosis.

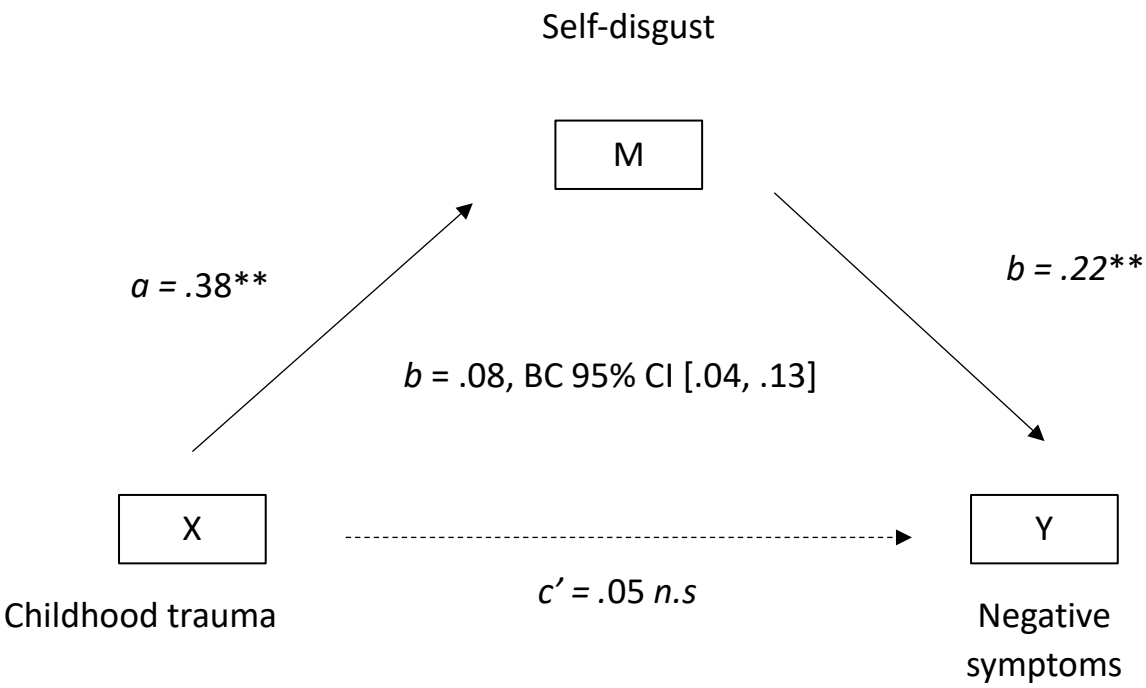

Figure 3. Path diagram of unadjusted mediation model testing if self-disgust mediates the relationship between childhood trauma and negative symptoms of psychosis.

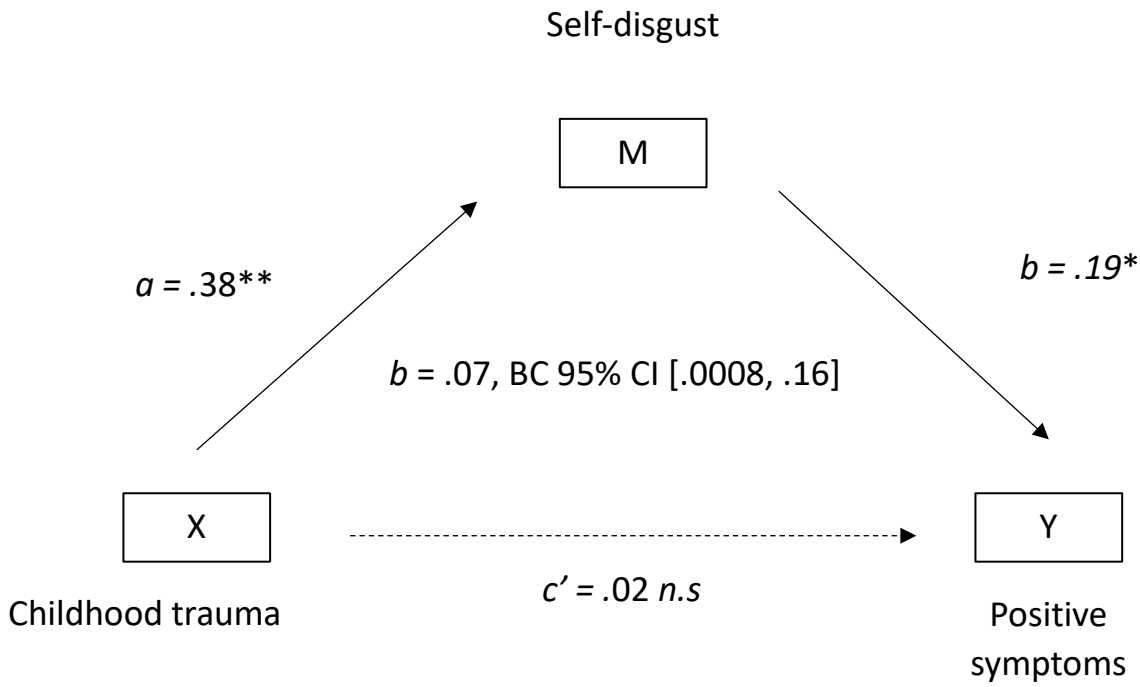

Figure 4. Path diagram of adjusted mediation model testing if self-disgust mediates the relationship between childhood trauma and positive symptoms of psychosis while controlling for self-esteem and shame (not pictured on this illustrative diagram).

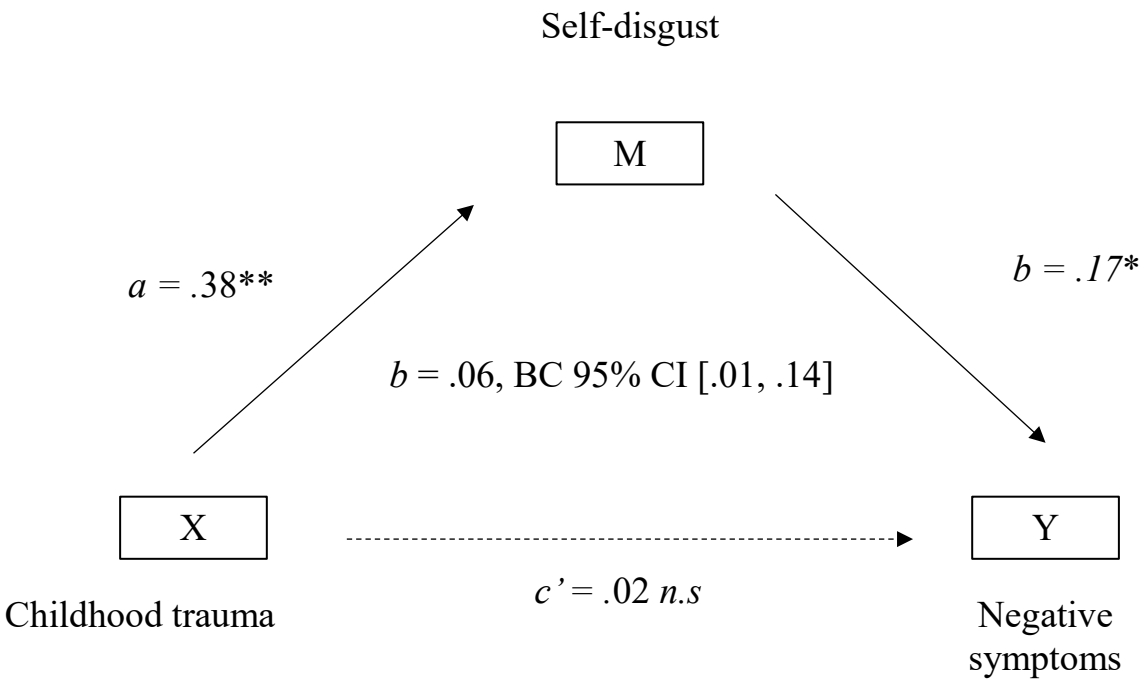

Figure 5. Path diagram of adjusted mediation model testing if self-disgust mediates the relationship between childhood trauma and negative symptoms of psychosis while controlling for self-esteem and shame (not pictured on this illustrative diagram).