



Delusional beliefs and their characteristics: A comparative study between dissociative identity disorder and schizophrenia spectrum disorders

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ABSTRACT

Firmly held beliefs that have a delusional quality are commonly experienced in those with schizophrenia spectrum disorders (SSD) and have been reported in those with dissociative identity disorder (DID). However, no study to date has compared delusional belief content and characteristics between these diagnostic groups. This study examined delusional content, and the degree of conviction, preoccupation and distress associated with them in 50 participants with DID and 50 with an SSD exploring also dissociation and childhood trauma as predictors of delusional beliefs. Multivariate analysis of variance and linear regressions were conducted to explore differences between beliefs and characteristics and to examine their association with dissociation and childhood trauma. The SSD sample presented more self-referential delusional beliefs and characteristics compared to the DID group. Yet, the DID group had more mistrust delusional beliefs and characteristics in comparison to SSD participants. Mistrust beliefs were predicted by depersonalization/derealization in the DID sample, but did not predict any delusional belief in the SSD sample. The content of fixed beliefs differs between DID and SSD samples and in this study depersonalization/derealization experiences were related to mistrust beliefs but not to other delusional forms, and only in the DID sample.

Clinical boundaries between Dissociative Identity Disorder (DID) and Schizophrenia Spectrum Disorders (SSD) remain somewhat blurry (Foote and Park, 2008; Moskowitz et al., 2019). DID is defined by disruption of and/or discontinuity in the normal integration of self-functioning (e.g., consciousness, memory, identity, emotion; American Psychiatric Association, 2013). SSD are characterized by the presence of positive (e.g., auditory hallucinations and delusions), negative (e.g., blunted affect) and cognitive symptoms (e.g., thought disorder). Clinical and empirical work show overlap between these two conditions, especially regarding the so-called positive symptoms of schizophrenia (e.g., Kluft, 1987; Ross et al., 1990; Moskowitz and Corstens, 2007). For example, several studies show auditory hallucinations are a common feature in DID patients (Dorahy et al., 2009; Honig et al., 1998; Laddis and Dell, 2012) and that delusions, although typically less endorsed than in SSD samples, are also present in DID samples (Laddis and Dell, 2012; Renard et al., 2017). Moreover, there is increased recognition of the role of childhood trauma and dissociation in the development and maintenance of positive symptoms in DID, SSD and

traumatized patients (e.g., Longden et al., 2020). For example, dissociation has been shown to mediate between childhood trauma and voice hearing (Longden et al., 2012; Perona-Garcelán et al., 2012a,b; Pilton et al., 2015; Renard et al., 2017; Sar et al., 2009; Varese et al., 2012; Wearne et al., 2018). However, the case for delusions is less clear (Sun et al., 2018). Some studies show significant associations between trauma-linked dissociation and delusions (Schäfer et al., 2012; Sun et al., 2018), while others do not (Perona-Garcelán et al., 2010). Yet, Longden et al.'s (2020) meta-analytic review was supportive of the connection.

1. Delusions in DID and SSD

Delusions are defined as fixed beliefs not easily amenable to change in light of conflicting evidence, and therefore to a greater or lesser extent oppose reality. They include a variety of themes (e.g., persecutory, grandiose, self-referential; American Psychiatric Association, 2013). An estimated 45% of patients with DID experience delusions, with the most common content being delusions of control (e.g., false belief that

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someone is controlling the person's thoughts or actions; which may derive from the influence of another dissociative identity or identities) and delusions of thought withdrawal/insertion (e.g., false belief that the person's thoughts are not their own; Renard et al., 2017). The latter are part of the first-rank symptoms of schizophrenia (Laddis and Dell, 2012), and in DID are considered as a delusion-type phenomena rather than a delusion itself, due to DID patients having non-bizarre beliefs and generally intact reality testing (Armstrong and Loewenstein, 1990; Şar and Öztürk, 2019). Yet, they remain firmly held beliefs. Additionally, delusions in DID can be understood as posttraumatic intrusions or intruding dissociative identities which disorganize behaviour and draw on explanations that appear delusional in nature. These delusional explanations may in part result from source amnesia existing for traumatic memories, which attempt to offer explanatory clarity for what is being experienced (Foote and Park, 2008; see Moskowitz and Montiroso, 2019).

Regarding schizophrenia, studies show 70% of patients experience persecutory delusions and 67% experience self-referential delusions (Bebbington and Freeman, 2017; Bucci et al., 2008). These types of delusions in SSD patients are thought to have a defensive function for a vulnerable self-construct (Bentall, Corcoran, Howard, Blackwood and Kinderman, 2001) either by making excessive causal external attributions for negative events to avoid activation of negative self-schemas, or by believing that mere innocuous experiences have a strong personal significance (Bentall and Fernyhough, 2008). Therefore, different types of delusions are evident in DID and SSD samples and may have different psychological pathways. However, comparative studies of delusions between DID and SSD are scarce, so little is empirically known about differential content and differing mechanisms.

Beyond the firmly held belief, other features should be considered when examining delusions. Characteristics such as levels of conviction (i.e., how strongly the belief is held), preoccupation (i.e., fixation on the belief) and distress (i.e., negativity of the belief; Combs et al., 2006) are key aspects of beliefs that can help distinguish between an over-valued belief and a delusional one (Bentall et al., 2001). Hence, by looking not only at delusional content but also delusional characteristics, studies may more sensitively explore delusions and their potential psychological mechanisms across clinical conditions. No studies have compared delusional characteristics for different subtypes of delusions (e.g., persecutory) between DID and SSD samples.

This study compared subtypes of delusional beliefs (e.g., self-referential and delusions of control) and their delusional characteristics (i.e., conviction, preoccupation, distress) in SSD and DID participants. Moreover, the study assessed if delusional subtypes were predicted by childhood trauma and dissociation variables (i.e., depersonalization, absorption, amnesia). Based on previous work, it was predicted the SSD group would endorse overall more delusional beliefs and they would be more firmly held, preoccupied and distressing. Regarding delusional subtypes, it was hypothesised the DID group would present significantly more delusions of control and thought interference (i.e., thought withdrawal/insertion), whereas the SSD would present significantly more persecutory and self-reference delusions. Furthermore, significantly higher levels of delusional subtype characteristics in the SSD sample (i.e., self-referential, persecutory) were expected as higher delusions characteristics may indicate the difference between a delusion and delusional-type belief, the latter being more present in DID patients. Finally, it was anticipated delusional subtypes would be predicted by dissociative phenomena in the DID group but not in the SSD group, since different delusional subtypes might be driven by different pathways (e.g., dissociative post-traumatic intrusions).

2. Method

2.1. Participants

One hundred participants (69 female, 31 male) with a mean age of

44.34 years ($SD = 10.84$) were recruited. Participants were stabilized inpatients and outpatients from a psychiatric hospital in Australia (DID) and outpatients recruited from hospital programmes, non-governmental organisations and private practice in New Zealand (SSD). All SSD participants ($n = 50$; 21 female, 29 male; Mage = 43.54, $SD = 10.83$) had been diagnosed with schizophrenia or schizoaffective disorder and all those in the DID sample ($n = 50$; 48 female, 2 male; Mage = 45.14, $SD = 10.91$) had been diagnosed with DID. Further, all participants in the DID sample were currently positive for DID on the Dissociative Disorders Interview Schedule (DDIS; Ross et al., 1989), with the exception of five, who had been positive for DID but therapy had eroded their amnesia (criterion B). Seven participants in the SSD group were positive for DID on the DDIS, but follow-up questions indicated their reports of having dissociative identities and amnesia were inconsistent with DID. Thus, no member of the SSD group was positive for DID. Consistent with the gender differences observed in clinical practice, the samples differed on gender, $\chi^2(1, n = 100) = 34.08$; $p < .001$, but not on age, $F(1, 98) = 0.54$, $p = .46$, $\eta_p^2 = 0.005$. No SSD participant was in a frank psychotic phase.

2.2. Instruments

The Peters et al. *Delusions Inventory – Brief* (PDI-B; Peters et al., 2004) is a 21-item measure of delusional ideation. Participants answer “yes” or “no” to whether the experiences listed happens to them. Affirmative responses are followed-up with three delusional characteristics (preoccupation, distress and conviction) responded to on a five-point Likert scale (e.g., not at all distressing – very distressing). This questionnaire has good psychometric properties (Peters et al., 2004). Given the PDI-B does not include subscales capturing the content of delusional beliefs, a principal component analysis (PCA) was conducted to explore the structure of the questionnaire and its components were used for the present study.

The *Dissociative Experiences Scale* (DES; Carlson and Putnam, 1993) is a 28 item self-report measure of the frequency of dissociative experiences and symptoms rated from 0 (never) to 100 (always) in 10-point increments. Whilst equivocal, some studies report the DES has three discrete subscales; amnesia, absorption and depersonalization. Furthermore, 8-items form the DES-Taxon (DES-T), a subscale assessing pathological dissociation (Waller et al., 1996). The DES has firmly established psychometric properties in clinical and non-clinical populations (e.g., Collins and Jones, 2004).

The *Childhood Trauma Questionnaire – Short Form* (CTQ-SF; Bernstein et al., 2003) measures childhood abuse (physical, emotional, & sexual) and neglect (physical & emotional) over 28-items on a scale from 1 (Never true) to 5 (Very often true). It has good internal consistency and validity (Bernstein et al., 2003). It was used in this study to assess childhood abuse and neglect frequency and if these variables predict delusional beliefs and characteristics.

In the current study, the internal consistencies for the PDI-B were: SSD $\alpha = 0.83$; DID $\alpha = 0.79$. For the CTQ the internal consistencies were: SSD $\alpha = 0.72$; DID $\alpha = 0.81$; and for the DES the internal consistencies were: SSD $\alpha = 0.96$; DID $\alpha = 0.94$.

2.3. Procedure

An invitation letter with reply slip outlining the study was given to potential participants via a mental health professional involved in their care (e.g., their psychiatrist or psychiatric nurse). All questionnaires were randomly presented across participants and read aloud in structured interview format. Upon completion, participants were debriefed and given a voucher for \$10 for their participation. The study was approved by the relevant Human Ethics Committees.

2.4. Design and analysis

The study utilized an observational cross-sectional design to compare the two diagnostic groups on different delusional beliefs and characteristics. Furthermore, it explored if childhood trauma and dissociation predicted delusional beliefs and characteristics in each diagnostic group. Data were analysed using Statistical Package for Social Sciences (SPSS; version 23). Statistical significance level was set at $p < .05$. One-way ANOVAs/MANOVAs were carried out for the first three hypotheses. A principal component analysis was performed to explore the structure of the PDI-B and select components to use as dependent variables for the second and third hypothesis. For the fourth hypothesis, regression analyses were conducted for each group using dissociation and trauma variables as predictors. Delusional beliefs and characteristics were used as the dependent variables.

3. Results

One-way MANOVAs across diagnostic groups showed consistent with previous work (Dorahy et al., 2009; Laddis and Dell, 2012), dissociation (i.e., DES total, absorption, amnesia & depersonalization), $F(5, 94) = 13.92, p < .001, \eta_p^2 = 0.42$, and childhood trauma, $F(6, 86) = 21.73, p < .001, \eta_p^2 = 0.60$ were significantly higher in the DID sample than the SSD sample. Univariate ANOVAs revealed the DID sample were higher for all variables (Table S1).

For the first hypothesis, a one-way MANOVA showed a multivariate main effect, $F(4, 91) = 2.62, p = .04, \eta_p^2 = 0.10$, for differences between the diagnostic groups on total PDI scores and delusional characteristics (e.g., conviction, distress, and preoccupation). The SSD group had significantly higher PDI total scores compared to the DID group, $F(1, 96) = 4.73, p = .03, \eta_p^2 = 0.05$. No differences were evident for delusional characteristics between groups (Table 1).

As a foundation to assessing specific delusional content, a principal component analysis (PCA) with orthogonal rotation (varimax) was performed to examine the structure of the 21 items PDI-B, given it did not include subscales for types of delusional beliefs. The Kaiser-Meyer-Olkin (KMO) measure verified the sampling adequacy for the analysis, $KMO = 0.68$ (Field, 2009), and KMO values for individual items were

Table 1

Means and standard deviations (in parentheses) and between group effects for PDI-B total and delusional characteristics, PCA delusional components and Self-Referential and Highest delusional characteristics ($N = 100$).

	Mean		df	F	p	η_p^2
	DID	SSD				
PDI-B						
PDI-B Total	8.1 (4.0)	10.0 (4.9)	1,96	4.33	.03	.05
Distress	3.4 (0.8)	3.2 (0.9)	1,96	2.90	.14	.02
Preoccupation	3.3 (0.8)	3.1 (1.0)	1,96	.61	.44	.006
Conviction	3.7 (0.9)	3.9 (0.8)	1,96	1.04	.29	.01
PCA-Delusional Components						
Self-Referential	1.1 (1.4)	2.9 (1.9)	1,89	28.57	<.001	.24
Mistrust	2.3 (0.9)	1.8 (1.1)	1,89	5.57	.03	.05
Delusion of Control	.91 (1.0)	1.2 (1.0)	1,89	1.46	.23	.02
Thought Interference	1.2 (.83)	1.2 (1.1)	1,89	.06	.80	.001
Self-Referential Characteristics						
Conviction	4.09 (1.00)	11.9 (1.00)	1,98	30.81	<.001	.23
Distress	2.85 (.89)	8.56 (.89)	1,98	20.53	<.001	.17
Preoccupation	3.36 (.98)	10.3 (.98)	1,98	25.10	<.001	.20
Highest Delusional Characteristics (Mistrust: DID; self-referential: SSD)						
Conviction	2.67 (1.30)	2.03 (1.39)	1,98	5.15	.02	.05
Distress	2.74 (1.38)	1.52 (1.32)	1,98	18.78	<.001	.17
Preoccupation	2.64 (1.47)	1.83 (1.47)	1,98	6.99	<.01	.07

>0.5 with the exception of 3 variables which were >0.417, and near the acceptable limit of 0.5 (Field, 2009). Bartlett's Test of Sphericity indicated that correlations between items were sufficiently large for PCA, $\chi^2(210) = 554.94, p < .001$. Seven components had eigenvalues over Kaiser's criterion of 1 and in combination explained 64.24% of the variance (See Tables S2–S6 for Factor loadings, percentage of explained variance, inter-item correlations and reliability for each component).

Guided by the conceptual cohesiveness and interpretability of the items grouped into each component, we selected components 1 (Self-Referential – six items assessing ideas of reference; $\alpha = 0.79$), 3 (Mistrust – three items assessing ideas that others are dangerous and not what they seem; $\alpha = 0.56$), 4 (Delusion of Control – three items assessing losing control of actions, self and existence; $\alpha = 0.56$) and 5 (Delusion of Thought Interference – three items assessing thoughts of feeling alien, influenced, or echoed; $\alpha = 0.49$) for the analysis.

A one way MANOVA across diagnosis with the four components of the PDI-B showed a significant multivariate main effect, $F(4, 86) = 13.84, p < .001, \eta_p^2 = 0.39$. The univariate effects showed higher self-referential beliefs in the SSD group, $F(1, 89) = 28.57, p < .001, \eta_p^2 = 0.24$; and heightened mistrust (e.g., seeing others as deceiving) in the DID group, $F(1, 89) = 5.29, p = .03, \eta_p^2 = 0.05$ (Table 1). There were no differences across groups for delusions of control and thought interference. Fig. 1, using error plot bars for each diagnostic sample, shows that mistrust was significantly higher (i.e., confidence interval bars do not overlap) than all other delusions in the DID sample whereas self-referential was higher than all others for the SSD sample.

Exploring differences between the characteristics of delusions (conviction, distress and preoccupation) for each delusion type between groups, a series of one way MANOVAs were carried out. For Self-Referential delusional characteristics, a significant multivariate main effect was evident, $F(3, 96) = 10.08, p < .001, \eta_p^2 = 0.25$. The SSD group had higher Conviction, $F(1, 98) = 30.81, p < .001, \eta_p^2 = 0.23$; Distress, $F(1, 98) = 20.53, p < .001, \eta_p^2 = 0.17$; and Preoccupation, $F(1, 98) = 25.10, p < .001, \eta_p^2 = 0.20$ for self-referential ideas than the DID group. No multivariate effect was found for Mistrust delusions characteristics, $F(3, 96) = 1.99, p = .12, \eta_p^2 = 0.05$, delusions of control, $F(3, 96) = 0.71, p = .54, \eta_p^2 = 0.02$, nor for characteristics of Thought Interference delusions, $F(3, 96) = 0.28, p = .83, \eta_p^2 = 0.009$.

To explore whether SSD and DID participants differed on delusional characteristics for the delusion they experienced the most (i.e., their highest scored delusion), a one-way MANOVA compared mistrust delusions for DID with self-referential delusions for SSD. Given Self-Referential and Mistrust components differ on their number of items, each delusional characteristic was calculated using mean scores. A significant multivariate effect of delusional characteristics was found, $F(3, 96) = 10.35, p < .001, \eta_p^2 = 0.24$, with the DID group endorsing higher degrees of conviction, preoccupation and distress than the SSD group (Table 1).

Finally, to examine the dissociative and trauma predictors of self-referential delusions in the SSD sample, and mistrust delusions in the DID sample hierarchical multiple regressions were carried out. The predictor variables were the highly correlated variables (Table S7) with delusional type and its characteristics in each group. Regressions were carried out in two steps. In the DID group highly correlated dissociation variables (i.e., depersonalization, absorption, DES-T) were entered in a first step, with childhood trauma variables (i.e., emotional abuse, physical neglect) added in the second step. In the SSD group the same two step procedure was used, with dissociation variables entered first (i.e., depersonalization, DES-T) and trauma variables (i.e., emotional abuse, physical and emotional neglect) then added.

In the DID group the first model explained 19% of the variance $R^2 = 0.19, F(3, 40) = 4.93, p = .009$. Depersonalization was the only variable predicting mistrust beliefs ($\beta = 0.76, p = .03$). This association remained ($\beta = 0.77, p = .03$) after adding the childhood trauma variables in the second step, $R^2 = 0.16, F(3, 40) = 2.60, p = .04$, although the overall model fit did not improve significantly ($\Delta R^2 = 0.007, p = .82$; Table 2).



Fig. 1. Error plot bar reflecting means with 95%CI for PCA delusional components for each diagnostic group.

Table 2

Multiple regression analyses between childhood trauma, dissociation variables and mistrust delusion for the DID sample.

Variable	Model 1				Model 2			
	B	β	t	p	B	β	t	p
Depersonalization/Derealization	.02	.76	2.30	.03	.03	.77	2.25	.03
Absorption	.01	.25	1.32	.19	.01	.24	1.23	.23
DES-T	-.02	-.53	-1.52	.13	-.02	-.58	-1.60	.12
Emotional Abuse					.008	.03	.21	.83
Physical Neglect					.01	.07	.44	.66
Adj. R^2	.19						.16	
F change for R^2	4.39**						.188	

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

Regarding delusional characteristics of mistrust, regression models revealed no significant dissociative or trauma predictors for conviction, $F(2,43) = 1.33$, $p = .27$, distress, $F(2,43) = 2.46$, $p = .09$, and preoccupation, $F(2,43) = 2.53$, $p = .09$.

The SSD group regression models were not significant for Self-Referential content, $F(2,41) = 2.76$, $p = .07$, conviction, $F(2,45) = 0.76$, $p = .47$, distress, $F(2,45) = 1.14$, $p = .32$, and preoccupation, $F(2,45) = 0.76$, $p = .47$.

4. Discussion

This study examined if 1) the SSD group would endorse overall more delusional beliefs with them being more firmly held, preoccupying and distressing than the DID sample, 2) the DID group experienced more delusions of control and thought interference and the SSD group more persecutory and self-reference delusions, and 3) dissociative phenomena would predict delusional subtypes in the DID group but not in the SSD group. Results showed that people with SSD scored higher overall on delusional beliefs than people with DID, consistent with previous work (e.g., Laddis and Dell, 2012). However, no differences were found overall for conviction, preoccupation and distress. Thus, partially supporting hypothesis one, the SSD had more fixed beliefs, but they were not held with greater conviction, were not more preoccupying, and did not create more distress than fixed beliefs in DID.

Subtypes of delusional beliefs associated with control and thought interference did not differ across groups. This was inconsistent with hypothesis two, where previous work anticipated the DID group endorsing higher beliefs regarding delusions of control and thought interference (Renard et al., 2017). Yet, the components that measured delusions of thought interference and control in this study presented the lowest reliability scores in comparison to the sub-scales assessing self-referential and mistrust delusions. Thus, these sub-scales may not have reliably measured their assigned constructs.

SSD participants endorsed significantly more self-referential beliefs and had greater conviction, preoccupation and distress associated with such beliefs than the DID group. Self-referential delusional beliefs in this study involved ideas of reference such as hidden messages on TV or magazines written especially for the person, being chosen and particularly close to God, being destined to be someone very important, and being the victim of a conspiracy. Patients with SSD are characterised by low self-esteem and negative views about themselves (Bentall et al., 2001), and thus self-referential delusions may serve to overcompensate for low self-esteem and other negative affective processes by believing that mere innocuous experiences have a strong personal significance. These types of beliefs might be held more firmly as they may serve a defensive function against a vulnerable self (Bentall et al., 2001; Bentall and Fernyhough, 2008; McKay et al., 2007) and hence cause more preoccupation. Yet despite any defensive value these beliefs may be

distressing in patients with SSD (given for example their disconnection from reality, erosion of internally generated positive life goals, or frightening content).

DID patients experienced more mistrust beliefs than the SSD group. Elevated scores on mistrust beliefs in the DID sample may reflect heightened incidences of interpersonal childhood trauma and chronic violations of trust in this group as evidenced here and in many other studies (e.g., Dorahy et al., 2016; Lewis et al., 1997). Such experiences are likely to lead to the core belief that people are not what they seem and cannot be trusted. Resultantly, such beliefs may have their origin in previous experience and reflect projections from past onto present, and are perhaps better described as fixed beliefs than true delusional beliefs untethered from objectivity. In this way, DID patients may be less prone to bizarre delusions in the absence of a comorbid psychotic disorder (see Şar and Öztürk, 2019), given reality testing remains intact (Armstrong and Loewenstein, 1990) and autobiographical experience may be more closely connected to the delusion content.

Whilst participants in the SSD group scored significantly higher on self-referential delusional conviction, preoccupation, and distress; no differences across groups were found for the characteristics of other delusion subtypes. However, when comparisons were made concerning the characteristics of the highest scored delusional subtype in each group (mistrust for DID; self-referential for SSD), levels of conviction, distress, and preoccupation were significantly higher in the DID group. This finding indicates the degree to which people with DID hold beliefs associated with mistrust; they are more engaging, disturbing and firmly held than self-referential beliefs in those with a psychotic illness who are not in an acute phase. Mistrust beliefs involved ideas of people not being what they seem to be, people dropping hints about the person and communicating with double meanings, and perceptions of being mistreated. Chronic and severe interpersonal maltreatment, double binds, and betrayal early in life in DID are likely to set the internal template that other people cannot be relied upon to provide safety and will undermine, oppress and harm. Based on lived experience supporting them, such beliefs are convincing and highly preoccupying given the ubiquity of interpersonal engagement. Interpersonal relationships, including with the therapist, therefore are very difficult (Chu, 2011; Danylchuk and Connor, 2016; Nijenhuis, 2017; Steele et al., 2017). In short, mistrust beliefs are not easy to erode in DID, just like delusional beliefs in SSD are not easily altered.

Only depersonalization/derealization was significantly associated with mistrust beliefs in the DID sample. This relationship remained after controlling for trauma variables and accounted for just under one fifth of the variance in mistrust, suggesting dissociation, and especially depersonalization/derealization is an important associate of such beliefs in DID. Consistent with hypothesis three, no significant association was found for the SSD sample between self-referential beliefs and dissociation and trauma variables. A recent meta-analysis found a moderate-to-strong association between dissociation variables and paranoia in non-clinical and clinical samples (Longden et al., 2020). The PCA did not show a paranoia component, and so this was not assessed directly in this study, nonetheless mistrust is regarded as an important element of fearful (paranoid) thinking (Bell & O'Driscoll, 2018; Freeman, 2007). Although the current study only found this association in the DID sample, and only with depersonalization/derealization, the findings are tentatively in line with the conclusion that dissociation is associated with at least some forms of paranoid delusions. Certain fixed beliefs have been proposed to arise from trauma-linked dissociation characteristics (e.g., intrusions) that are not recognised as such and which resultantly foster delusional interpretations (Foote and Park, 2008; Longden et al., 2020). The DES has few items assessing intrusions, so the nuances of this particular account were not investigated.

Yet, the prediction of mistrust beliefs in DID by depersonalization/derealization require exploration. Depersonalization and derealization reflect dissociative processes, or what some call detachment experiences (Holmes et al., 2005), that operate to disrupt perception and cognition

(e.g., Chefetz, 2015). The association between dissociative process/detachment experience and mistrust in this study may be tentatively explained by these dissociative processes altering or disconnecting an individual with DID from their affective, cognitive, perceptual and behavioral experience (Chefetz, 2015; Putnam, 1997). When episodes arise where their mistrust beliefs are not supported (e.g., with a respectful, attentive therapist) depersonalization/derealization processes may alter the person's ability to take ownership of, and experience more fully, the sense of not being hurt or betrayed. Thus, these dissociative processes may separate the person from representations of how they were treated, how that felt and in what way it contradicted mistrust beliefs, reinstalling those earlier beliefs as the default interpersonal perspective. Here the person's trust in their current experience is undermined by dissociative processes, so schemas (e.g., mistrust in others) based on old real experiences remain dominant.

This study included two quite large clinical samples and was the first to our knowledge comparing different delusional beliefs and their characteristics between SSD and DID patients. However, this study has limitations. There was low reliability in most of the delusional subscales from the PCA. This may be explained by the small number of items in all but the self-referential subscale ($\alpha = .79$). Yet, according to Briggs and Cheek (1986) an acceptable range for inter-item correlations within subscales is between 0.20 and 0.40, with all items in the self-referential and mistrust subscales either within or surpassing this range, and the majority of items in the two other subscales in this range (Tables S3–S6). Future studies should incorporate instruments that include subtypes of delusions. The cross-sectional design of this study does not allow conclusions about causality. Therefore, the regression results should be interpreted with caution. Regarding the sample, 95% of the DID group were female, while just over half the SSD sample were male. These figures are consistent with clinical practice and most studies examining these populations (Dorahy et al., 2009; Honig et al., 1998; Laddis and Dell, 2012; Renard et al., 2017). Future work should assess reality testing and thought disorder across these groups. While other dimensions of fixed beliefs seem to be similar from the current data, these feature may differentiate DID and SSD. Şar and Öztürk (2019) suggest for example, that reports of dissociative identities in DID are a reflection of the structure of the internal world, rather than reflecting a primary thought disorder, while such a belief in SSD would have its origin in primary thought disorder.

No SSD participant was experiencing an acute psychotic episode, which may have tempered their current experience. Nonetheless, many evidenced strong delusional beliefs during the study, and while they showed more overall delusional beliefs than the DID sample, who were also stabilized and not experiencing acutely overwhelming symptoms, the latter held their fixed beliefs with a similar strength and distress as delusional beliefs in SSD.

Delusional content differs between DID and SSD samples and at least in the current study depersonalization/derealization experiences were related to mistrust beliefs but no other delusional forms, and only in the DID, not SSD, sample. These key findings warrant exploration of different psychological mechanisms (e.g., mistrust perception, self-referential processing) in laboratory settings as well as in detailed phenomenological inquiries (e.g., boundaries between private and public worlds) in clinical settings. Nuanced exploration of the robustness of higher self-referential content in SSD and higher mistrust content in DID may assist differential diagnosis.

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Credit author contribution statement

Anton P. Martinez: Writing - original draft, Formal analysis. **Martin J. Dorahy:** Conceptualization, Methodology, Data curation, Project administration, Writing - original draft, Supervision. **Amy Nesbit:** Data

collection, Data curation, Writing - review & editing. **Rachael Palmer:** Data collection, Data curation, Methodology, Writing - review & editing, Conceptualization. **Warwick Middleton:** Methodology, Writing - review & editing, Conceptualization.

Appendix A. Supplementary data

Supplementary data to this article can be found online at <https://doi.org/10.1016/j.jpsychires.2020.09.015>.

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