Subtypes of paranoia in a nonclinical sample

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Introduction. Previous research has proposed that there may be subtypes of paranoia with different patterns of performance on symptom and clinical measures. However, there has been little empirical examination of whether distinct subtypes actually exist. Recent research has suggested that paranoia can be found in normal individuals and exists on a continuum. Thus, it is possible that evidence for subtypes of paranoia can be derived from nonclinical samples.

Methods. From a total of 723 participants, we identified 114 college students who showed elevated levels of paranoia as determined by two measures of paranoid ideation. The remaining sample of 609 persons served as the nonparanoid control group. All participants completed measures of depression, self-esteem, and social anxiety. Scores from the high subclinical group was subjected to cluster analysis to derive homogeneous subtypes. Participants also completed a measure of attributional style, the IPSAQ, which was used to validate the subtypes and was not used in the cluster analysis.

Results. Based on the cluster analysis, three subtypes were derived. Each subtype showed a different pattern of scores on measures of depression, self-esteem, and anxiety. There were also additional differences on the externalising and personalising bias scores from the IPSAQ between the subtypes.

Conclusions. We conclude that there is preliminary evidence for the presence of subtypes among nonclinical samples and discuss the patterns of performance in relation to previous research on subtypes of paranoia. The implications of these subtypes for the study of paranoia are discussed.

In the study of psychosis, there has been increasing interest in investigating specific symptoms (e.g., delusions, hallucinations) rather than broadly defined syndromes such as schizophrenia (Bentall, Jackson, & Pilgrim, 1988; van Os, Hanssen, Bijl, & Ravelli, 2000; Verdoux & van Os, 2002). One area that has benefited from a symptom-focused approach is paranoia (Combs & Penn, 2004). Persons with persecutory delusions have a variety of cognitive and attentional biases that appear to be specific for negative events especially in ambiguous situations (Combs, Penn, Wicher, & Waldheter, 2007; Freeman, Garety, et al., 2005; Garety & Freeman, 1999; Penn, Corrigan, Bentall, Racenstein, & Newman, 1997). For example, individuals with persecutory delusions tend to make decisions using less available evidence (i.e., jumping to conclusions bias) on both neutral and social probabilistic reasoning tasks (see Garety & Freeman, 1999, for a review) and are impaired on Theory of Mind (ToM) tasks when asked to infer the intentions and motivations of others (Brune, 2005). In addition, persons with persecutory delusions show differences in attributional style relative to normal and depressed control participants (Bentall, Corcoran, Howard, Blackwood, & Kinderman, 2001). Specifically, there is evidence for an exaggerated self-serving attributional bias, whereby individuals take credit for positive events and externalise responsibility for negative events; also, external attributions show a "personalising" bias in which individuals tend to blame other people rather than situations for negative outcomes (Bentall, 2001; Kinderman & Bentall, 1996, 1997). However, these attributional biases are not present in all persons with paranoia (Martin & Penn, 2002) and some persons do not blame others, but rather themselves (Freeman, Garety, & Kuipers, 2001; Peters & Garety, 2006). Similarly, the jumping to conclusions bias is not found in all studies of paranoia (Garety & Freeman, 1999; Yamasaki et al., 2005; Young & Bentall, 1997). Thus, it is possible that different subtypes of paranoia may exist, with different cognitive profiles, but little research on this topic has been conducted. Finding subtypes of paranoia may help further our understanding of the social and information processing biases found in paranoia and assist in developing treatments specific for different types of paranoia (Chadwick & Trower, 1996; Combs, Michael, & Penn, 2006; Garety & Freeman, 1999; Martin & Penn, 2001).

Zigler and Glick (1988) first proposed the idea of different types of paranoia based on similarities between paranoia and depression.

They suggested that persecutory delusions may actually be a form of "camouflaged" depression that serves to protect or maintain self-esteem. For example, a person may fail an exam, but instead of blaming themselves for not studying they blame the professor, which prevents the self-attribution of failure and ultimately preserves self-esteem. Furthermore, Bentall and colleagues found support for the idea that blaming others for negative events protects self-esteem by reducing actual-ideal self-discrepancies (how I am versus how I should be) for negative information (Bentall, Kinderman, & Kaney, 1994)—a hypothesis derived from Higgins (1987). However, Trower and Chadwick (1995) observed that not all persons with persecutory delusions exhibit high self-esteem or blame others and they proposed two distinct types of paranoia. One type, labelled "poor me" or persecution paranoia, is characterised by a belief that they are being unjustly and undeservedly persecuted. Individuals experiencing this type of paranoia tend to blame others rather than themselves for negative events even if they are at fault. Because blaming others prevents awareness or reduces self-discrepancies of failure, this group shows high levels of self-esteem and low levels of depression (Kinderman & Bentall, 1996; Zigler & Glick, 1988). In contrast, persons with "bad me" or punishment paranoia are very much aware of their perceived failures and inferiorities and believe that others are punishing them with reason for some flaw or misdeed. These persons respond more like depressed persons and show low self-esteem, high levels of depression, high social anxiety, and high behavioural avoidance (Chadwick, Trower, Juusti-Butler, & Maguire, 2005; Trower & Chadwick 1995).

In general, there has been limited empirical study to support the existence of different subtypes of paranoia. Most of the studies conducted involved a small number of participants or were retrospective in nature. Recently, in a sample of 53 patients with paranoid beliefs, Chadwick et al. (2005) found evidence for three subtypes of paranoia that differed in levels of depression, self-esteem, anxiety, and content of paranoid beliefs (see Melo, Taylor, & Bentall, 2006, as well). Consistent with these findings, Freeman et al. (2001) reported that persons who believed they deserved to be harmed were also more depressed.

One useful approach to this area of study may come from the idea that paranoia lies on a continuum, ranging from clinical symptoms such as persecutory delusions to subclinical paranoid ideation that occurs in normal persons (American Psychiatric Association, 2000; Fenigstein & Vanable, 1992). There is now consistent research evidence that paranoid ideation is present in the normal population to varying degrees and persons with high levels of subclinical paranoia show many of the same cognitive, social-cognitive, and clinical characteristics of persons with persecutory delusions (Combs, Penn, & Mathews, 2003: Combs et al.,

2006; Ellet, Lopes, & Chadwick, 2003; Freeman, Dunn, et al., 2005; Gay & Combs, 2005; Martin & Penn, 2001; Taylor & Kinderman, 2002). For example, persons with high levels of subclinical paranoia exhibit paranoid-like behaviours such as increased social distance from others and tend to perceive others more negatively in both real and simulated virtual reality interactions (Combs & Penn, 2004; Freeman, Garety, et al., 2005). In addition, as subclinical paranoia increased there was also a rise in attributions of blame and hostility for ambiguous situations—a pattern found in clinical samples (Combs et al., 2007). Finally, persons high in subclinical paranoia show attentional biases to threatening stimuli and may be more sensitive in recognising negative emotional expressions (Combs et al., 2003; Davis & Gibson, 2000; Green & Phillips, 2004; see Combs et al., 2006, for an exception). Thus, it appears that persons high in subclinical paranoia perform similarly to individuals with persecutory delusions on a number of tasks (see Combs & Penn, in press).

Due to the similarities between subclinical and clinical paranoia, it is possible that different subtypes of paranoia can be found in analogue samples. Thus, this study is largely exploratory in terms of this issue. In this study, we sampled 723 participants and identified 114 who showed elevated levels of subclinical paranoia based on scores from the Paranoia Scale (Fenigstein & Vanable, 1992). The remaining 609 participants comprised the nonparanoid control group. All participants completed the Beck Depression Inventory–2, the Rosenberg Self-Esteem Scale, and the Fear of Negative Evaluation Scale. Scores from the 114 high subclinical participants were subjected to a cluster analysis to derive subtypes of paranoia. We did not except to find evidence of subtypes of paranoia in the nonparanoid control sample and did not include this group in the cluster analysis.

Based on previous research, we expected to find evidence of at least two well-defined subtypes that differed on measures of depression, self-esteem, and social anxiety (Chadwick et al., 2005; Melo et al., 2006; Trower & Chadwick, 1995). In order to validate the subtypes (i.e., answer the question: "Do the subtypes show differences on other theoretically important variables?"), we examined scores from a measure of attributional style, the IPSAQ, which was not used in the cluster analysis. The IPSAQ provides data on the locus of attributional judgements (self, others, situations) for positive and negative events. We predicted that there would be differences on IPSAQ externalising and personalising bias scores between the subtypes reflecting locus of blame. To facilitate an interpretation of the subtypes, scores on the measures will be compared both among the subtypes and with the nonparanoid control group.

METHOD

Participants

From a total of 723 undergraduate college students, we identified 114 participants who showed high scores on the Paranoia Scale (PS $\geq$ 53; 1+ SD), a commonly used measure of subclinical paranoid ideation. Normative scores on the PS were used to determine cutoff scores for classifying this group (Combs, Penn, & Fenigstein, 2002; Fenigstein & Vanable, 1992). We used this cutoff score since persons scoring at or above this level on the PS show cognitive, social, and behavioural biases similar to those observed in persons with persecutory delusions (see Combs & Penn, 2004; Combs et al., 2006; Fenigstein, 1997). The remainder of the sample ($n = 609$) comprised the control group. A summary of participant demographics by group membership can be found in Table 1. There was no difference between the high subclinical and controls on age, $t(722) = 1.9$, *ns*, educational level, $t(722) = 1.2$, *ns*, gender, $\chi^2(722) = 2.1$, *ns*, or ethnic composition, $\chi^2(720) = 5.6$, *ns*.

Measures

Paranoia Scale. The Paranoia Scale is a 20-item scale that measures subclinical paranoid ideation found in normal individuals in response to everyday events and situations (PS; Fenigstein & Vanable, 1992). The PS is scored on a Likert scale ranging from 1 ("not at all") to 5 ("extremely applicable") with scores ranging from 20 to 100. Higher scores reflect higher levels of subclinical paranoia. The PS was developed for use in analogue samples and was not intended for clinical or diagnostic use, but it has shown usefulness in persons with paranoid schizophrenia (Smari, Stefansson, &

TABLE 1
Summary of measures

Measure	High paranoia Mean (SD)	Controls Mean (SD)
N	114	609
Age	19.6 (3.4)	20.3 (3.6)
Educational level	14.0 (1.1)	14.2 (1.2)
Male (%)	44%	37%
White (%)	58%	67%
Paranoia Scale	59.3 (6.7)*	37.2 (8.1)
SCID-II Paranoia Subscale	4.5 (2.0)*	2.4 (1.9)
Beck Depression Inventory–2	14.9 (8.7)*	8.7 (7.3)
Rosenberg Self-Esteem Scale	29.6 (5.5)	30.1 (5.7)
Fear of Negative Evaluation Scale	36.1 (6.9)*	31.7 (6.6)

SCID- II = Structured Clinical Interview for DSM-IV Personality Disorders.*$p < .05$.

Thorgilsson, 1994). The scale has demonstrated good psychometric proper-
ties and has been widely used in paranoia research. In the current study, the
PS showed good internal consistency (Cronbach's alpha = .89).

*Structured Clinical Interview for DSM-IV Personality Screening
Questionnaire–II.*   The Structured Clinical Interview for the DSM-IV
Personality Screening Questionnaire–II (SCID-II; First, Gibbon, Spitzer,
Williams, & Benjamin, 1995) is a 110 item-screening test that assesses for the
presence of personality characteristics based on DSM-IV criteria. From this
scale, items that reflected the DSM-IV paranoid personality disorder were
selected for use in this study. Items are scored in a dichotomous "yes/no"
format. The paranoia subscale scores range from 0 to 8 with higher scores
reflecting greater paranoia. The SCID-II screening questionnaire as a whole
has demonstrated acceptable reliability (Cohen's Kappa = .78) and clinical
utility data (i.e., did not overdiagnose personality disorders and was a valid
screening measure; Ekselius, Lindstrom, von Knorring, Bodlund, &
Kullgren, 1994; Jacobsberg, Perry, & Frances, 1995). The SCID paranoia
subscale has correlated highly with both the PS and the PAI persecutory
ideation scale (Combs et al., 2002). For the current study, the internal
consistency of the SCID-II paranoia subscale was moderate (alpha = .68).

Beck Depression Inventory–2.   The Beck Depression Inventory–2 (BDI-
2) is a 21-item scale that measures the severity of self-reported depressive
symptoms (Beck, Steer, & Brown, 1996). The scale is rated on a Likert scale
from 0 to 3 with scores ranging from 0 to 63. Higher scores reflect an
increased severity of depressive symptoms. The BDI-2 has demonstrated
good reliability, substantial convergent validity (correlates highly with other
validated measures of depression), and good discriminant validity, and has
been widely used in research. For this study, the internal consistency of the
BDI-2 was very good (alpha = .88).

Rosenberg Self-Esteem Scale.   The Rosenberg Self-Esteem Scale (RSES)
is a 10-item scale used to assess self-esteem level (Rosenberg, 1965). This
scale is scored on a Likert scale of 1 ("strongly disagree") to 4 ("strongly
agree") with scores ranging from 10 to 40; higher scores reflect increased
levels of self-esteem. Internal consistency of the RSES has been shown to be
excellent across several studies (Combs et al., 2002; Martin & Penn, 2001).
This scale has good validity data and correlates highly with other measures
of self-esteem (Robinson & Shaver, 1973). For this study, the internal
consistency was very good (alpha = .89).

Brief Fear of Negative Evaluation Scale.   The Brief Fear of Negative
Evaluation scale (FNES; Leary, 1983) is a 12-item scale that measures social

anxiety, fear of criticism, and fear of negative evaluation in social settings. The FNES is scored on a Likert scale ranging from 1 ("not at all") to 5 ("extremely"). Total scores can range from 12 to 60 with higher scores reflecting greater social anxiety. In previous research, the internal consistency of the FNES was found to be excellent (alpha = .90; Leary, 1983). Validity data showed that the brief FNES positively correlated with other clinical and structured interview measures of social anxiety and behavioural avoidance (Leary, 1983). For this study, the internal consistency was found to be very good (alpha = .82).

Internal, Personal, and Situational Attributions Questionnaire. The Internal, Personal, and Situational Attributions Questionnaire (IPSAQ; Kinderman & Bentall, 1996, 1997) is a 32-item questionnaire that is comprised of 16 positive social situations and 16 negative social situations. The participant has to determine if the outcome (e.g., someone pays them a complement) is due to them (internal attribution), other people (external-personal attribution), or situational factors (external-situational attribution). The primary indices of interest on the IPSAQ were Externalising Bias (EB), which reflects the tendency for the person to take credit for positive events and externalise responsibility for negative events (i.e., self-serving bias) and Personalising Bias (PB), which reflects the tendency for the person to blame others, rather than situations, for negative outcomes. For this study, the IPSAQ had an adequate level of internal consistency (alpha = .70).

Procedure

To obtain a sizeable sample of participants for the cluster analysis, we abstracted data from our previous studies on social behaviour and paranoia (Combs & Penn, 2004; Combs et al., 2002, 2007). Thus, all participants were part of previous studies. Two state-funded public universities served as primary data collection sites. Participants completed all of the measures in a single session that lasted approximately 1–1.5 hours. Participants received extra credit for participation and all measures were randomised prior to administration.

Data analytic plan

First, we compared scores on two measures of paranoia to validate our group classification method. Second, we examined bivariate correlations between the paranoia, affective, and attributional measures for the entire sample ($N = 723$). Third, we attempted to derive subtypes of paranoia using cluster analysis. Cluster analysis is a family of data analytic

procedures that can be used to identify homogenous groups or subtypes of individuals who show similar characteristics (Aldenderfer & Blashfield, 1985; Diekoff 1992). The BDI-2, RSES, and FNES served as the dependent variables of interest in the cluster analysis. Scores on these measures were transformed into standardised Z scores (the Z score conversion was based on the scores from the entire sample), as cluster analysis can be impacted by measures with different raw score ranges. Hierarchical agglomerative clustering, which places cases into increasingly larger clusters based on their proximity or distance from each other, was used to derive the clusters. Cases that are closest (or most similar) to each other are combined into a cluster and this process continues until all cases have assigned to a cluster. Hierarchical agglomerative cluster analysis is appropriate for samples with less than 200 participants and has been extensively used in psychological research (Aldenderfer & Blashfield, 1985). Ward's method was used to assign cases to clusters and the distance measure was the squared Euclidean distance, which is appropriate for interval level data. Stability of the cluster solution was examined using a split-half replication method-that is, the sample was randomly divided into two groups and the cluster analysis was repeated on each sample to determine if similar results were found. Finally, external validation of the subtypes was accomplished using the IPSAQ Externalising and Personalising Bias scores. To facilitate comparisons, we have provided data from the control participants as well.

RESULTS

To check the validity of the group assignment based on scores from the Paranoia Scale, we compared the high subclinical group ($n = 114$) with the remainder of the sample ($n = 609$) on a second measure of paranoid ideation, the SCID-II paranoia scale. A comparison t-test revealed that the two groups significantly differed on this measure, $t(720) = 9.1$, $p < .0001$, which lends support to our group classification method for identifying persons high in subclinical paranoid ideation (see Combs & Penn, 2004, for similar procedures). For the other symptom measures, there were significant differences between the high subclinical group and controls on the BDI-2, $t(720) = 8.0$, $p < .0001$, and FNES, $t(720) = 6.3$, $p < .0001$, but not on the RSES, $t(720) = 0.77$, ns. In terms of correlational relationships among the measures, paranoia was modestly related with depression, anxiety, and self-esteem, but was not consistently related to attributional style (i.e., personalising bias) (Table 2). This pattern was also generally found across the other affective (depression, etc.) measures as well.

TABLE 2
Correlations among paranoia, affective, and attributional measures ($N = 723$)

Measure	PS	SCID-II	BDI-2	RSES	FNES	IPSAQ EB	IPSAQ PB
PS	–	.58**	.46**	−.13**	.38**	−.12*	.01
SCID-II	–	–	.40**	−.17**	.39**	−.06	.01
BDI-2	–	–	–	−.24**	.40**	−.13**	.01
RSES	–	–	–	–	−.21*	.06	.02
FNES	–	–	–	–	–	−.09	.02
IPSAQ Externalising Bias (EB)	–	–	–	–	–	–	−.13**
IPSAQ Personalising Bias (PB)	–	–	–	–	–	–	–

PS = Paranoia Scale; SCID-II = Structured Clinical Interview for DSM-IV Personality Disorders, paranoia subscale; BDI-2 = Beck Depression Inventory-2; RSES = Rosenberg Self-Esteem Scale; FNES = Fear of Negative Evaluation Scale; IPSAQ = Internal, Personal, and Situational Attributions Questionnaire.
*$p < .05$; **$p < .01$.

We conducted the cluster analysis on the 114 participants with high levels of subclinical paranoia. For the cluster analysis, the agglomeration schedule suggested that the ideal number of clusters present in the data was three (Diekoff, 1992). Scores from the BDI-2, RSES, and FNES were then subjected to the agglomerative clustering procedure. A graph of the three-cluster solution grouped by test scores is presented in Figure 1. To provide
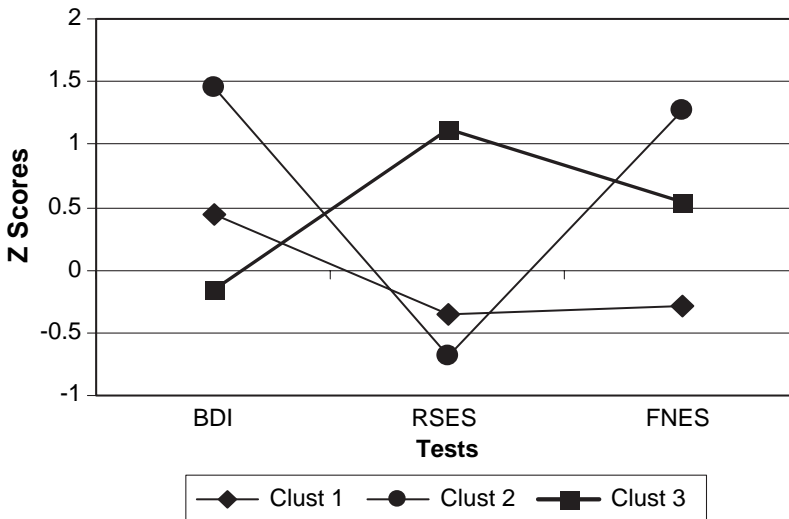

Figure 1. Subtypes of paranoia.

additional information for the interpretation of results, mean scores for each measure in their original units of measurement (before Z score conversion) along with scores from the control group are presented in Table 3. As expected, there were significant differences among the subtypes and control participants on level of depression, $F(3, 709) = 43.0$, $p < .0001$, self-esteem, $F(3, 709) = 24.0$, $p < .0001$, and social anxiety, $F(3, 709) = 33.7$, $p < .0001$. Post hoc comparisons using Tukey's Honestly Significant Difference revealed that all three clusters were significantly different from each other on the BDI-2; there was no difference between cluster 3 and controls. Moreover, cluster 2 showed the highest level of depressive symptomatology. On the RSES, cluster 3 showed significantly higher levels of self-esteem than all groups, including controls; there was no difference between cluster 1 and the controls or cluster 2. Finally, all three clusters were significantly different from each other on the FNES, with cluster 2 showing the highest level of social anxiety; there was no difference between cluster 1 and controls.

Table 4 presents scores for the groups on the IPSAQ, and there were significant differences between the groups on the Externalising Bias (EB) score, $F(3, 414) = 3.9$, $p < .01$, and Personalising Bias (PB) score, $F(3, 414) = 2.6$, $p < .05$. On average, cluster 3 showed the highest scores and cluster 2 the lowest across both bias scores with cluster 1 and the controls in the middle. More specifically, cluster 2 showed a significantly lower EB (i.e., self-serving bias) score than cluster 1 and cluster 3, but was no different from controls. Furthermore, cluster 3 showed a significantly greater PB score (i.e., tendency to blame others rather than situations for negative events) as compared to cluster 2, but not cluster 1 or controls.

A split-half replication method was used to examine the stability of the cluster solution. The sample was randomly divided into two groups ($n = 57$; $n = 57$) and subjected to subsequent cluster analysis using the same procedures described above (Morris, Blashfield, & Satz, 1981). Overall, 87% of participants were correctly assigned to their original cluster, which is considered an excellent rate of classification and supports the stability of the cluster solution.

TABLE 3
Summary scores by cluster membership

Measure	Cluster 1	Cluster 2	Cluster 3	Controls
N	39	43	32	609
Beck Depression. Inventory–2	13.2 (7.8)	21.3 (7.9)	8.5 (4.1)	8.7 (7.3)
Rosenberg Self-Esteem Scale	27.9 (3.5)	26.1 (4.0)	36.2 (2.5)	30.1 (5.7)
Fear of Negative Evaluation Scale	30.3 (3.6)	41.2 (4.6)	36.1 (6.9)	31.7 (6.6)

TABLE 4
IPSAQ scores by group membership

Measure	Cluster 1	Cluster 2	Cluster 3	Controls
Externalising Bias	4.0 (3.2)	1.2 (5.8)	5.3 (3.1)	3.2 (3.8)
Personalising Bias	0.58 (0.22)	0.48 (0.31)	0.77 (0.18)	0.58 (0.25)
IPSAQ components				
Positive internal	9.0 (2.1)	7.5 (3.6)	8.8 (2.9)	8.6 (2.9)
Positive other	4.4 (2.3)	5.2 (3.7)	3.2 (2.4)	4.3 (2.7)
Positive situational	2.5 (1.6)	3.0 (3.1)	4.0 (2.7)	2.8 (2.1)
Negative internal	5.0 (2.6)	6.3 (3.6)	3.5 (3.2)	5.4 (3.2)
Negative other	6.2 (2.5)	4.6 (2.9)	9.5 (3.3)	6.0 (3.2)
Negative situational	4.7 (2.8)	5.0 (3.8)	2.9 (2.6)	4.3 (3.3)

EB = positive internal – negative internal; PB = negative other/(negative other + negative situational).

DISCUSSION

This study sought to determine if scores on measures of depression, anxiety, and self-esteem could be used to identify distinct subtypes of paranoia in a nonclinical sample. This is one of the first studies to take a data-driven approach to subtype identification and derivation. Previous studies have used raters to classify clinical participants into subtypes based on the content of their delusional beliefs (Chadwick et al., 2005) and we felt that an alternative and possibly stronger analysis would be to see if subtypes could be derived from the data in an inductive manner. Also, the use of cluster analysis as a data analytic strategy is supported by our findings that paranoia was related to the affective variables, but less so with attributional style and suggests that a subtype approach may be beneficial.

Consistent with our predictions, we found evidence for three distinct subtypes. All the subtypes showed different patterns of performance on the measures with cluster 2 showing high depression and anxiety and low self-esteem. In contrast, cluster 3 showed high self-esteem, low depression, and moderate anxiety. We derived a third subtype, which showed no elevations and appears to comprise a neutral performing subtype. This subtype may be similar to a recent study by Chadwick et al. (2005), which identified a group that showed no distinct patterns of performance on symptom measures. Based on the pattern of scores, we speculate that clusters 2 and 3 are similar to Trower and Chadwick's (1995) "bad me" and "poor me" types of paranoia, but without a measure of deservedness, we cannot be entirely certain. However, the notion that nonclinical samples appear similar to clinical samples on affective and attributional variables could provide support for Trower and Chadwick's model of paranoia and is consistent with emerging research that paranoia exists on a continuum. In addition, the

subtypes also showed differences on the ISPAQ, with cluster 3 showing s strong personalising bias for negative events. Showing that the subtypes differ on other theoretically important variables not used in the cluster analysis is an important step in the use of cluster analysis and provides a form of external validation of the subtypes (see Aldenderfer & Blashfield, 1985). Finally, to examine subtype stability, we employed a split-half replication procedure which suggested that the cluster solution was not an artifact of the clustering algorithm (Diekoff, 1992). We will now discuss each subtype in terms of characteristics and symptom patterns in more detail.

Cluster 1 (*n* = 39): This cluster showed relatively normal levels of depression, self-esteem, and social anxiety (all scores were within +/− 1 standard deviation compared to nonparanoid control participants). Thus, there were no significant elevations of note with this group. Furthermore, on the IPSAQ, there were no differences between this subtype and controls on the externalising and personalising bias scores from the IPSAQ. There are a few possible interpretations of the data that may shed light on the actual characteristics of this group in relation to subtypes of paranoia. First, although all of the participants in this group showed high levels of subclinical paranoia based on the Paranoia Scale, it is possible that these persons are not actually distressed by their paranoia and are not reporting additional symptoms. We suspect that this group may have better coping skills for dealing with their concerns, but this needs to be empirically examined. Alternatively, due to the subclinical nature of the sample, it is possible that some persons in this group may be classified into a different subtype if tested again (Bentall, 2001; Freeman, Dunn, et al., 2005; Freeman, Garety, Kuipers, Fowler, & Bebbington, 2002; Melo et al., 2006; Peters & Garety, 2006).

Cluster 2 (*n* = 43): Participants in this subtype showed elevated levels of depression and social anxiety and below average self-esteem. Scores on the BDI-2 were in the moderate range of distress and these individuals showed significant social anxiety and fear of scrutiny. Thus, this subtype shows a significant amount of general negative affectivity. Furthermore, this group showed the lowest IPSAQ externalising bias score, which suggests that these persons do *not* exhibit an *excessive* self-serving bias found in other paranoia studies (Bentall et al., 1994; Kinderman & Bentall, 1996). As evident in Table 4, these persons attribute both positive and negative events to the self in a relatively evenhanded manner, and the data did not show a clear pattern of self versus other blame. It is possible that some of these persons were actually depressed or anxious due to normal life events (e.g., racism, poor grades, failure experiences, unemployment, or relationship problems; see Bentall et al., 2001; Combs et al., 2006). Thus, care is needed in interpreting the significance of these relationships as being due only to paranoia (Chadwick & Trower, 1997; Freeman, Dunn, et al., 2005).

Cluster 3 ($n = 32$): Participants in this subtype showed high levels of self-esteem, moderate anxiety, and a relative absence of self-reported depressive symptoms. In terms of an externalising or self-serving bias, it is evident from Table 4 that this subtype reported less self-blame for negative events as compared to positive ones. However, a very strong personalising bias was found for this subtype in which individuals in this cluster placed blame on others for negative events. In fact, about 77% of attributions for negative events were towards others instead of situations. This combination of high self-esteem and high personalising bias (blaming others) may be consistent with the idea that for some persons, paranoia defends the self against negative threats (Bentall et al., 1994).

There are some limitations of the study that should be mentioned. First, we used the Paranoia Scale (PS) as our primary measure of paranoia and this measure may be prone to an overendorsement of paranoid traits (Combs et al., 2007). The PS has been criticised because it contains items that may not directly relate to paranoia, and thus, the scale may not be a pure measure of persecutory ideation (Freeman, Dunn, et al., 2005; Freeman & Garety, 2000). We attempted to compensate for this limitation of the PS by using a second measure of paranoia, the SCID-II, which supported our classification of participants according to paranoia level. Second, we did not include a measure of deservedness of harm, which would have allowed a more direct test of the Trower and Chadwick paranoia typology. Third, the sample was cross-sectional and we did not conduct a long-term follow-up to determine if the subtypes were stable over time (Peters & Garety, 2006). For example, Melo et al. (2006) demonstrated that the poor me or bad me classification was unstable over time, which may have reflected an ambivalence over the origin of paranoia. Furthermore, more recent attributional models (e.g., Attribution Self-Representation Cycle) posit a more reactive, dynamic formation of paranoid beliefs (Bentall et al., 2001). Ultimately, these studies may suggest that subtypes of paranoia may be dimensional constructs instead of dichotomous/categorical ones. This is especially important since cluster analysis places individuals into categorical subtypes. Fourth, we included only affective variables in the cluster analysis due to the emphasis on these variables in paranoia research (see Ellet et al., 2003; Martin & Penn, 2001; Trower & Chadwick, 1995) and more comprehensive examination of subtype performance (e.g., social skills and functioning) in others areas would be informative. Also, we did not include controls in the cluster analysis as it is unclear if low paranoia groups would have some of the subtype characteristics. For this study, we took a conservative approach and assumed that paranoia scores needed to be elevated to examine the emotional and affective correlations, but future studies may wish to cluster analysis low to normal scoring participants as well. Finally, because all the participants were volunteers, it is possible that

persons with the highest levels of subclinical paranoia did not participate, perhaps limiting the generalisability of the findings to less symptomatic individuals. The current sample was comprised of college students who may have different life circumstances, stress levels, and coping resources than persons with psychiatric disorders. An interesting area for future research would be to follow subclinical participants over time to see what factors (if any) lead to the development of more severe persecutory ideation/delusions to assess the commonality of experiences in both groups (see Freeman et al., 2002).

In closing, paranoia has a variety of negative interpersonal, cognitive, and emotional correlates. In this study, there was evidence that even participants high in nonclinical paranoia showed some characteristics reflective of emotional disturbance, social anxiety, and low self-esteem (see Ellett et al., 2003, for example). These results are consistent with increasing evidence that paranoia exists on a continuum in both clinical and nonclinical participants. It would be useful to replicate this data in a clinical sample; however, due to the problems in obtaining sizeable numbers of participants with paranoia and persecutory delusions this may require collaboration across research programmes. As we gain more detailed information about the characteristics of paranoia, we hope to provide more effective treatments and improve the early identification of individuals who may be at risk for the development of various levels and types of paranoid ideation.

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