



Paranoia, persecutory delusions and attributional biases

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Abstract

An influential model of persecutory delusions put forward by Bentall and colleagues hypothesizes that persecutory-deluded patients avoid the activation of negative self-beliefs by making externalising, personalising attributions for negative events. The first study reported here used a new instrument for the measurement of persecutory ideation, the Paranoid, Persecutory and Delusion-Proneness Questionnaire, to investigate whether attributional biases are associated with subclinical persecutory ideation. The second study extended this investigation by re-examining associations between attributional biases and persecutory delusions. Both studies used the Internal, Personal and Situational Attributions Questionnaire to measure attributional style. No evidence was found for a connection between attributional biases and subclinical persecutory ideation. Furthermore, there was no support for an association between persecutory delusions and an externalising bias, and only marginal support for the hypothesized relationship between persecutory delusions and a personalising bias. These results suggest that the putative link between persecutory ideation and attributional biases only manifests (if at all) when persecutory ideation is of delusional intensity, and that it is confined to a personalising bias.

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1. Introduction

Bentall and colleagues (e.g., Bentall et al., 1994; Bentall and Kaney, 1996; Kinderman and Bentall, 1996b, 1997) are influential advocates of a psychodynamically inflected model of persecutory delu-

sions. These authors assume that patients with persecutory delusions harbour latent negative self-beliefs that are susceptible to activation by negative life events. In this respect, persecutory-deluded patients are thought to be similar to depressed patients. Unlike depressed patients, however, patients with persecutory delusions are hypothesised to defend against the activation of negative self-beliefs by attributing negative events to the actions of other agents. Through such external–personalising attributions, individuals with persecutory delusions maintain their overt self-esteem by effectively projecting

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their latent negative self-representations onto others. The ensuing cost of maintaining self-esteem in this way, however, is that such individuals must live in a subjective world that is peopled with hostile, malevolent beings.

A variety of studies have investigated the notion that persecutory delusions are associated with abnormal attributions (for reviews, see [Garety and Freeman, 1999](#); [Bentall et al., 2001](#)). The research findings are somewhat equivocal, with some studies (e.g., [Kaney and Bentall, 1989, 1992](#)) suggesting that people with persecutory delusions display an exaggeration of the normal self-serving bias, attributing positive events excessively to internal causes and negative events excessively to external causes. Other studies (e.g., [Lyon et al., 1994](#)) have replicated only the latter part of this pattern (external attributions for negative outcomes), implying that persecutory-deluded patients do not differ from non-clinical control participants in taking excessive credit for positive events. [Kinderman and Bentall \(1997\)](#) found that persecutory delusions were associated not so much with a tendency to make external (as opposed to internal) attributions for negative events as with a tendency to make external–personal (as opposed to external–situational) attributions for these events. [Garety and Freeman \(1999\)](#) conclude that the attributional bias in persecutory delusions is thus most likely a personalising bias: a tendency to blame others for negative events.

Given that the model of Bentall and colleagues pertains specifically to persecutory delusions, it is important to ascertain whether the attributional abnormalities involved are specific to delusions with persecutory content, or whether they are associated with all delusions, irrespective of delusional theme. A study by [Sharp et al. \(1997\)](#) investigated this question by comparing different delusional subtypes in patients with delusional disorder. Their findings were that excessively external attributions for negative events were specific to persecutory and grandiose delusions. Other delusional themes (e.g., somatic delusions, delusional jealousy) were not associated with this bias. [Sharp et al. \(1997\)](#) suggest that attributional abnormalities are not involved in the genesis of delusions, per se, but that they may play a role in shaping the thematic content of delusions.

The results of [Sharp et al. \(1997\)](#) suggest that attributional biases do not have a primary aetiological

role in the genesis of delusions generally, but rather that they may be associated with ideation that is thematically specific—namely, persecutory (and grandiose) ideation. This suggestion raises the possibility that attributional biases may be associated with persecutory ideation in non-clinical populations. This hypothesis involves a dimensional approach to persecutory beliefs, in contrast to the traditional categorical approach of psychiatry. Dimensional models of psychosis-proneness conceptualise clinical symptoms in patients as extreme expressions of personality traits found within the normal adult population. Such approaches therefore provide a means of testing models of clinical symptoms using samples of non-clinical individuals, thus avoiding many potential confounds inherent in work with clinical patients (e.g., medication and institutionalisation; [Claridge, 1994](#)).

[Martin and Penn \(2001\)](#) examined the linear relationship between subclinical paranoid ideation and attributional style, as well as other clinical and social cognitive variables. The Paranoia Scale ([Fenigstein and Venable, 1992](#)), the Internal, Personal and Situational Attributions Questionnaire (IPSAQ; [Kinderman and Bentall, 1996a](#)), and a variety of other measures were administered to 193 undergraduates. Paranoid ideation was not associated with any particular attributional style, whether externalising or personalising. As [Martin and Penn \(2001\)](#) acknowledge, however, their study is limited in that it used a measure of general paranoid ideation (the Paranoia Scale) rather than persecutory ideation specifically. It may be that the attributional biases implicated in persecutory delusions are associated with persecutory ideation specifically, whereas the Paranoia Scale might be assessing other components of paranoia (e.g., ideas of reference) in addition to persecutory ideation. The findings of the study of [Sharp et al. \(1997\)](#) are consistent with the notion that an externalising attributional bias might be associated with persecutory ideation specifically rather than paranoid ideation generally. Sharp et al. found that an externalising bias for negative events was associated with persecutory delusions but not with morbid jealousy (a delusion that is paranoid but not persecutory).¹

¹ A third of the non-persecutory/non-grandiose group studied by Sharp et al. suffered from morbid jealousy.

Moreover, many items on the Paranoia Scale pertain to past incidences of harm rather than present or future harm and so do not conform to the comprehensive criteria for persecutory beliefs set out by Freeman and Garety (2000). Martin and Penn (2001) suggest that their study be repeated using a measure of sub-clinical paranoia more suitable for assessing specifically persecutory ideation. The first of the two experiments reported here was designed to do just that by using a newly developed questionnaire, the Paranoid, Persecutory and Delusion-Proneness Questionnaire (PPDQ; McKay, 2004). The PPDQ was designed to tease out distinctions between the constructs of paranoid ideation, persecutory ideation and delusionality. This questionnaire avoids conflating persecution with other components of paranoia and comprises the following three valid and internally consistent subscales: Persecutory Paranoid Ideation, Non-Persecutory Paranoid Ideation and Non-Paranoid Delusion-Proneness. If externalising and personalising biases are associated with ideation that is specifically persecutory (irrespective of delusional intensity), then positive correlations would be expected between indices of these two types of attributional bias and the Persecutory Paranoid Ideation Index.

2. Study 1

2.1. Methods

2.1.1. Participants

Participants were 40 first year psychology undergraduates (11 males and 29 females) who participated in partial fulfillment of course requirements. The age range of the sample was 17–50 years, with a mean age of 19.7 years (S.D. = 5.18 years).

2.1.2. Self-report questionnaires

Paranoid and persecutory ideation: The Paranoid, Persecutory and Delusion-Proneness Questionnaire (PPDQ; McKay, 2004) is a 54-item questionnaire designed to tease out distinctions between the constructs of paranoid ideation, persecutory ideation and delusionality. Items are rated using a 5-point Likert scale (rated 0–4). This questionnaire avoids conflating persecution with other components of paranoia and comprises three valid and internally consistent sub-

scales: Persecutory Paranoid Ideation (8 items—items are simply summed; thus the range is 0–32), Non-Persecutory Paranoid Ideation (12 items, range 0–48) and Non-Paranoid Delusion-Proneness (12 items, range 0–48). The PPDQ is suitable for use across both clinical and non-clinical populations.

Attributional style: The Internal, Personal and Situational Attributions Questionnaire (IPSAQ; Kinderman and Bentall, 1996a) comprises 32 statements, each of which describes a hypothetical social event of either positive or negative valence. Respondents are instructed to vividly imagine each event and to write down the one most likely cause of each situation. Respondents subsequently categorise each cause as to whether it is primarily something about themselves (internal attribution), something about another person or group of people (external–personal attribution), or something about the situation (external–situational attribution). The questionnaire is scored by summing the number of internal, external–personal, and external–situational attributions for positive and negative events separately. Kinderman and Bentall (1996a) recommend that an externalising bias (EB) score be calculated by subtracting the number of internal attributions for negative events from the number of internal attributions for positive events. Positive EB scores thus represent a self-serving bias. A personalising bias (PB) score is also calculated as the proportion of external attributions for negative events that are external–personal rather than external–situational (i.e., external–personal/[external–personal + external–situational]). PB scores greater than 0.5 represent a tendency to blame others rather than situational factors for negative events. Kinderman and Bentall (1996a) report satisfactory internal reliability for the IPSAQ.

Depression: Levels of depression were assessed using the depression subscale of the Depression Anxiety Stress Scales (DASS; Lovibond and Lovibond, 1995). The DASS is a 42-item self-report instrument designed to measure the emotional states of depression, anxiety and stress. Each of the three DASS scales contains 14 items. Participants rate the extent to which they have experienced each state over the past week using 4-point severity/frequency scales. Scores for Depression, Anxiety and Stress are calculated by summing the scores for relevant items. The DASS has demonstrated internal consistency and con-

Table 1
Descriptive statistics for the study measures

Measure	Mean	S.D.	Range
PPDQ indices			
Persecutory paranoid ideation	7.38	5.46	0–23
Non-persecutory paranoid ideation	20.08	7.70	2–40
Non-paranoid delusion-proneness	9.85	6.50	0–25
IPSAQ indices			
Externalising bias (EB)	0.95	3.38	–7.0–8.0
Personalising bias (PB)	0.58	0.24	0.08–1.0
Depression	9.40	8.42	1–39

current validity in the acceptable-to-excellent ranges (Antony et al., 1998).

2.2. Results²

2.2.1. Attribution data

Table 1 presents descriptive statistics for the study measures, and Table 2 presents the results of correlation analyses. None of the PPDQ indices were associated with indices of attributional style (neither the EB nor the PB).³ Depression was also unrelated to attributional style. In view of the theoretical significance of any relationship between paranoia and depression (Zigler and Glick, 1988), we investigated the relationships between the PPDQ indices and depression (see again Table 2). Significant positive correlations were found between depression and each of the three PPDQ indices. All correlations between measures of attributional style and the PPDQ indices, partialling out levels of depression, were also non-significant.

2.3. Discussion

Martin and Penn (2001) found that subclinical paranoid ideation was not associated with attributional style. Given that their study used a measure of general paranoid ideation (Fenigstein and Venable's Paranoia Scale) rather than persecutory ideation specifically,

the possibility that attributional biases might be associated with persecutory ideation in subclinical populations could not be ruled out. The present experiment follows on from Martin and Penn's (2001) study using a measure more suitable for assessing specifically persecutory ideation—the PPDQ.

The results of this investigation mirrored the findings of Martin and Penn (2001). Greater paranoid ideation (both persecutory and non-persecutory, as assessed using the PPDQ) was associated with greater depression. Neither index of paranoid ideation, however, was associated with any particular type of attributional style. Given that we used a measure designed to assess persecutory ideation specifically (in accordance with comprehensive criteria set out by Freeman and Garety, 2000), the present results fail to support the view that externalising and personalising biases are associated with subclinical persecutory ideation.

How are we to account for these results? One possibility is that the relatively small sample size in the present study precluded significant effects. The fact, however, that our findings generally replicated those of Martin and Penn (2001), who used a large undergraduate sample ($n=193$), suggests that sample size alone is unlikely to explain the present study's null results. Another possibility is that the dimensional approach to persecutory ideation is inappropriate in the context of understanding the role of attributional biases in persecutory delusion formation—that is, perhaps, in this context, there is discontinuity between some critical aspect of clinical persecutory ideation and subclinical persecutory ideation. The hypothesis that attributional biases would be associated with subclinical persecutory ideation was based on re-

Table 2
Correlations between the two attributional indices (EB and PB), the three PPDQ indices and depression

	EB	PB	Depression
PPDQ persecutory paranoid ideation	0.04	0.09	0.48**
PPDQ non-persecutory paranoid ideation	0.02	0.21	0.61**
PPDQ non-paranoid delusion-proneness	0.17	0.21	0.31**
DASS depression	0.07	0.14	–

^a $P < 0.1$; * $P < 0.05$; ** $P < 0.01$.

² Unless otherwise stated, all analyses in the present studies used two-tailed tests with $\alpha=0.05$.

³ Correlations were also calculated between the three PPDQ indices and the raw measures from the IPSAQ that are used to compute the attributional indices EB and PB (i.e., the total numbers of internal, external–personal and external–situational attributions for positive and negative events, respectively). All correlations were non-significant at $\alpha=0.05$ (all $P > 0.106$).

search findings of an association between attributional biases and persecutory delusions (e.g., Kaney and Bentall, 1989, 1992; Kinderman and Bentall, 1997) and involves conceptualising persecutory delusions in patients as extreme expressions of somewhat similar personality traits found within the subclinical population (Claridge, 1997).

Given the psychodynamic overtones of the model of persecutory delusions put forward by Bentall and colleagues, the fact that the dimensional approach is consistent with the view of psychodynamically oriented theorists seems appropriate. McWilliams (1994), for example, argues that paranoid personality organisation exists on a continuum of severity from psychotic to normal (see also Bell, 2003).

Blaney (1999), however, notes that the word “paranoid” appears in DSM-IV (American Psychiatric Association, 1995) as part of two disorders: the Axis I disorder schizophrenia, paranoid type and the Axis II condition paranoid personality disorder. He argues that while it may be tempting to view these conditions as existing on a continuum of paranoid thought disorder, there are reasons to suspect that this perspective may be misleading. For example, research indicates that many patients who develop paranoid schizophrenia did not have premorbid paranoid personality disorder (Yassa and Suranyi-Cadotte, 1993). Martin and Penn (2001, p. 264) noted in their conclusion that “the continuity of subclinical ideation with delusional belief is debatable and remains to be firmly established.” It may be that with respect at least to persecutory delusional belief, a fully dimensional perspective is mistaken. Furthermore, if attributional biases do not figure in the formation of persecutory delusions (e.g., if they are secondary to the presence of persecutory delusions), then we may not find them in subclinical paranoid populations.

Martin and Penn (2001) go even further and suggest that the evidence for any association between attributional biases and persecutory delusions is somewhat equivocal. Even if the dimensional approach is an appropriate way to conceptualise persecutory ideation, one would hardly expect attributional biases to be associated with subclinical persecutory ideation if claims that such biases are associated with clinical persecutory delusions are mistaken. Martin and Penn (2002) examined the attributional style of three groups: patients with schizophrenia and persecutory

delusions, patients with schizophrenia without persecutory delusions and a healthy control group. Many of the results that were expected on the basis of previous research failed to materialise. Although there was evidence of a self-serving attributional bias (reflected in a tendency to make more internal attributions for positive than for negative events and to make more external–personal attributions for negative than for positive events) in the persecutory-deluded participants (when participant self-ratings were analysed), this bias was not unique to persecutory-deluded participants—all groups showed it. No intergroup difference was found for levels of personalising bias either. However, when participants’ attributional statements were assessed by independent raters, a linear relationship was observed between clinical ratings of suspiciousness and a self-serving attributional style (reflected in a tendency to make more internal attributions for positive events and a reduced tendency to attribute such events to others), and there was a tendency (although non-significant) for patients with persecutory delusions to make more external–personal (relative to external–situational) attributions for negative events than the healthy control group did.

Martin and Penn’s (2002) results provide rather weak support for the hypothesised association between persecutory delusions and attributional biases. Moreover, the strongest evidence that such biases exist was garnered from the ratings of the independent judges, which somewhat contradicts the results of Kinderman et al. (1992), who found that independent ratings of the statements of persecutory-deluded individuals on The Attributional Style Questionnaire (ASQ; Peterson et al., 1982) were less self-serving than the ratings of the patients themselves. In view of some of the inconsistencies in recent research findings, we decided to conduct a new clinical investigation into these issues, to determine whether attributional biases are associated with persecutory ideation of specifically delusional severity (in which case application of the dimensional hypothesis to persecutory delusional belief is inappropriate) or whether they are not (as previously thought) reliably associated with persecutory delusional belief at all.

Consistent with Martin and Penn (2002), we hypothesised that individuals with acute persecutory

delusions would show evidence of self-serving/externalising⁴ and personalising biases relative to both individuals with persecutory delusions in remission and healthy controls. Given our findings in Study 1 that attributional biases were not associated with non-delusional persecutory ideation, we did not anticipate any differences between the remitted patients and the controls. We also decided to contrast the results based on participants' own ratings with those based on the ratings of independent judges in an attempt to shed more light on the nature of reported discrepancies between participant ratings and independent ratings (Bentall et al., 2001). In contrast to the study of Martin and Penn (2002), the present study also assessed levels of depression so as to ensure that any putative group differences in attributional style could not be attributed simply to group differences in depression levels (Garety and Freeman, 1999).

3. Study 2

3.1. Methods

3.1.1. Participants

The clinical sample comprised 25 participants, 10 males and 15 females, who were either suffering from persecutory delusions at the time of testing or who had previously experienced persecutory delusions as indicated by case note data. Participants were community outpatients, recruited either via the Neuroscience Institute of Schizophrenia and Allied Disorders (NISAD) participant register, or via the Macquarie Centre for Cognitive Science (MACCS) Belief Formation Project participant register. The breakdown of participant diagnoses, according to DSM-IV criteria (American Psychiatric Association, 1995) was as follows: schizophrenia–19, bipolar disorder–3, schizoaffective disorder–3. All but two participants were in receipt of neuroleptic medication, and one of the remaining participants was in receipt of anti-depres-

sant medication. The mean age of the clinical sample was 40.00 years (S.D.=10.42). The mean age of illness onset was 23.12 years (S.D.=8.28), while the mean illness duration was 16.70 years (S.D.=8.01).

The control sample comprised 19 psychiatrically healthy participants, 7 males and 12 females (mean age=35.89 years, S.D.=11.71), recruited from the general population. Control participants were screened using the Affective and Psychotic Screening Modules of the Structured Clinical Interview for DSM-IV Axis I Disorders (SCID-I; First et al., 1997) and did not differ significantly from the clinical group in terms of age, gender or (National Adult Reading Test) IQ (see Table 2).

Exclusion criteria for both samples included history of serious head injury and/or central nervous system disease, current substance abuse (as per DSM-IV criteria: all participants were administered the substance use disorders screening module of the SCID-I), previous persistent substance abuse (having met DSM-IV criteria for more than 2 of the past 5 years) and fewer than 8 years of formal education.

3.1.2. Clinical symptoms

The Scale for the Assessment of Positive Symptoms (SAPS) and the Scale for the Assessment of Negative Symptoms (SANS; Andreasen and Grove, 1986) were used to assess the current symptomatology of the clinical sample and to confirm history of persecutory delusions.

Thirteen of these participants, seven males and six females, with a mean age of 42.23 years (S.D.=9.78), met criteria for inclusion in the acute persecutory delusions group, which was a score of 2 (mild) or more on Item 8 (Persecutory Delusions) of the SAPS. The mean age of illness onset for this group was 26.19 years (S.D.=9.31), while the mean illness duration was 16.08 years (S.D.=8.76).

The 12 clinical participants who did not meet criteria for current persecutory delusions (scoring below 2 on Item 8 of the SAPS) constituted the remitted persecutory delusions group (recall that all participants in the clinical sample were either suffering from persecutory delusions at the time of testing or had previously experienced persecutory delusions). This group comprised three males and nine females, with a mean age of 37.58 years (S.D.=10.98). The mean age of illness onset for this group was 19.79

⁴ A note about this somewhat confusing terminology: the *externalising* bias is based on internal attributions (positive internal minus negative internal), and a positive value of this bias is, by its very nature, self-serving. The *self-serving* bias, however, is a broader construct, which also incorporates external attributions (for example, a preference for external–personal attributions for negative events would be self-serving but not externalising).

Table 3

Demographics, NART IQ, and self-report measures for depression and the various aspects of paranoid ideation and delusion-proneness for patients with current persecutory delusions, patients with persecutory delusions in remission and healthy control participants (S.D. in parentheses)

Measure	Group			Statistics
	Current (<i>n</i> =13)	Remitted (<i>n</i> =12)	Control (<i>n</i> =19)	
Age	42.23 (9.78)	37.58 (10.98)	35.89 (11.71)	$F=1.31$; $P=0.280$
Gender (male/female ratio)	7/6	3/9	7/12	$\chi^2=2.24$; $P=0.327$
NART estimated full-scale IQ	108.23 (12.09)	112.08 (8.76)	109.05 (8.65)	$F=.540$; $P=0.587$
DASS depression ^a	17.08 (10.70)	6.50 (5.98)	7.37 (5.74)	$F=7.84$; $P=0.001$
PPDQ scores				
Persecutory paranoid ideation	14.85 (6.68)	6.12 (5.83)	2.21 (2.70)	$F=24.53$; $P<0.001$
Non-persecutory paranoid ideation	20.93 (6.35)	14.58 (8.40)	12.53 (6.80)	$F=5.50$; $P=0.008$
Non-paranoid delusion-proneness	13.54 (8.88)	11.83 (6.79)	3.42 (3.24)	$F=11.88$; $P<0.001$

^a One of the currently deluded participants did not complete the DASS, so the DASS statistics reported for this group were calculated on 12 participants.

years (S.D.=5.62), while the mean illness duration was 17.38 years (S.D.=7.44). Six members of this group were suffering from delusions with themes other than persecution at the time of testing (grandiose delusions, religious delusions, delusions of reference and loss of boundary delusions).

The two clinical groups did not differ significantly in sex distribution, age, age of illness onset or duration of illness (see Tables 3 and 4).

3.1.3. IQ

The National Adult Reading Test (NART; Nelson, 1982) was used to assess premorbid IQ.

3.1.4. Self-report questionnaires

Study 2 used the same three self-report questionnaires used in Study 1: The PPDQ (McKay, 2004) to assess paranoid and persecutory ideation, the IPSAQ (Kinderman and Bentall, 1996a) to assess attributional style and the depression subscale of the DASS (Lovibond and Lovibond, 1995) to assess levels of depression. A pair of independent raters, without knowledge of study hypotheses, later rated the participants' causal statements on the IPSAQ using the same forced choice options that were available to participants (internal attribution, external–personal attribution or external–situational attribution). The initial agreement between these raters was 82%. After conferring, however, the two raters reached a consensus on 99% of participant statements. The remaining contentious statements were excluded from attribution calculations.

3.2. Results

Table 3 presents demographics, NART estimated full-scale IQ, levels of depression, and PPDQ scores for paranoid ideation and delusion-proneness for the three participant groups. A significant intergroup difference was found for depression, accounted for by the acute persecutory delusions group, which scored higher than both the remitted persecutory delusions group ($P=0.001$) and the control group ($P=0.001$). In view of the theoretical significance of any covariation between paranoia and depression (Zigler and Glick, 1988), our main analyses were therefore conducted both with and without depression as a covariate.

Significant intergroup differences were also found for the three PPDQ indices (see Table 3). For Persecutory Paranoid Ideation, the acute persecutory delusions group scored higher than the remitted persecutory delusions group ($P<0.001$) and the healthy control group ($P<0.001$). The difference in levels of persecutory ideation between the remitted and the healthy control groups did not reach statistical significance ($P=0.041$ ⁵). The pattern was the same for differences in levels of Non-Persecutory Paranoid Ideation; the acute persecutory delusions group scored higher than the remitted and the healthy control groups combined ($P=0.003$) with no significant difference between the two control groups ($P=0.439$). The pattern of intergroup differences for Non-Paranoid Delusion-Prone-

⁵ Non-significant using Bonferroni corrections for Type-I error (i.e., $\alpha=0.017$).

Table 4

Age of illness onset, duration of illness and symptom ratings for patients with current persecutory delusions and patients with persecutory delusions in remission (S.D. in parentheses)

Measure	Group		Statistics
	Current (<i>n</i> =13)	Remitted (<i>n</i> =12)	
Age of illness onset	26.19 (9.31)	19.79 (5.62)	$t=-2.06$; $P=0.051$
Duration of illness	16.08 (8.76)	17.38 (7.44)	$t=0.40$; $P=0.695$
Hallucinations	1.92 (1.98)	1.38 (1.49)	$t=-0.78$; $P=0.445$
Delusions	3.00 (1.22)	1.25 (1.42)	$t=-3.30$; $P=0.003$
Bizarre behaviour	1.00 (1.00)	0.92 (1.31)	$t=-0.18$; $P=0.859$
Positive formal thought disorder	0.92 (1.32)	1.00 (1.41)	$t=0.14$; $P=0.889$
Overall negative symptoms	1.06 (0.81)	1.28 (0.71)	$t=0.72$; $P=0.477$

Ratings used are the SAPS global ratings and the average of the SANS global ratings.

ness was quite different; in this case, the two patient groups did not differ on levels of Non-Paranoid Delusion-Proneness ($P=0.505$), and the acute and remitted persecutory delusions groups combined scored higher than the healthy control group ($P<0.001$).

Table 4 summarises age of illness onset, duration of illness and symptom ratings for the two patient groups. The two clinical groups did not differ significantly in mean duration of illness, although there was a non-significant tendency for the current persecutory-deluded group to have been older at illness onset. All intergroup symptom ratings differences were non-significant with the exception of clinical ratings of delusions; not surprisingly, the group with acute persecutory delusions scored higher than the group with remitted persecutory delusions on the global rating for delusions.

3.2.1. Attribution data⁶

3.2.1.1. *Participants' ratings.* In accord with the approach adopted by Martin and Penn (2002), we

⁶ One participant—a clinical patient with delusions in remission—was unable to complete the IPSAQ. The attribution analysis was thus conducted with 13 participants from the current persecutory delusions group, 11 from the remitted persecutory delusions group and 19 from the control group.

first tested the prediction that the current persecutory delusions group would show an externalising bias compared with the other two groups, by using a 2 (event: positive vs. negative) \times 3 (group: current persecutory delusions, remitted persecutory delusions and controls) analysis of variance (ANOVA) with number of self-attributions as the dependent variable (see Table 5). This analysis revealed a significant main effect for event, $F(1,40)=9.0$, $P=0.005$, such that all participants were more likely to take the credit for positive than negative events. All groups thus showed an externalising bias. The analysis also revealed a significant effect for group, $F(2,40)=4.50$, $P=0.017$, accounted for by the patients with current persecutory delusions making a greater number of self-attributions overall than the other two groups combined ($P=0.015$). No

Table 5

Means and standard deviations of participants' and independent judges' ratings on the IPSAQ for patients with externalizing and personalizing bias in the groups with current persecutory delusions, persecutory delusions in remission and controls

Measure	Group		
	Current (<i>n</i> =13)	Remitted (<i>n</i> =11)	Control (<i>n</i> =19)
<i>Participants' ratings</i>			
Positive internal	8.38 (2.14)	7.45 (2.38)	7.26 (3.38)
Negative internal	7.69 (2.32)	5.91 (3.30)	4.16 (3.06)
Positive external–personal	4.23 (2.45)	4.91 (2.39)	3.21 (2.48)
Negative external–personal	6.08 (1.80)	6.45 (3.24)	6.58 (3.40)
Positive external–situational	3.38 (2.14)	3.64 (2.87)	5.53 (3.55)
Negative external–situational	2.23 (2.17)	3.64 (3.32)	5.26 (4.34)
Externalising bias (EB)	0.69 (2.84)	1.55 (2.66)	3.11 (4.76)
Personalising bias (PB)	0.76 (0.22)	0.63 (0.27)	0.59 (0.29)
<i>Independent judges' ratings</i>			
Positive internal	6.46 (2.88)	6.27 (1.85)	5.47 (2.12)
Negative internal	7.15 (3.16)	6.64 (2.16)	5.76 (2.80)
Positive external–personal	8.00 (3.00)	8.09 (2.12)	7.18 (3.63)
Negative external–personal	7.38 (2.75)	8.36 (2.34)	8.59 (2.67)
Positive external–situational	1.38 (1.19)	1.64 (1.50)	3.35 (2.18)
Negative external–situational	1.00 (1.00)	0.82 (0.98)	1.59 (1.42)
Externalising bias (EB)	-0.69 (3.20)	-0.36 (2.34)	-0.29 (3.31)
Personalising bias (PB)	0.88 (0.11)	0.91 (0.15)	0.85 (0.13)

significant difference was observed in total number of self-attributions (collapsed across positive and negative events) between the remitted patients and the healthy controls ($P=0.242$). The group \times event interaction was not significant, $F(2,40)=1.66$, $P=0.203$.

When this analysis was repeated with depression as a covariate, the main effect of event remained near significant, $F(1,38)=3.44$, $P=0.072$, whereas the group effect became non-significant, $F(2,38)=1.97$, $P=0.154$. The group \times event interaction remained non-significant, $F(2,38)=1.17$, $P=0.321$. That is, there was a tendency for all participants to internalise positive events more than negative events, independent of levels of depression; whereas the higher number of self-attributions (collapsed across positive and negative events) in the current persecutory delusions group could be accounted for solely by higher levels of depression in this group.

Similar 2 (event) \times 3 (group) ANOVAs were conducted with the number of external–personal attributions and the number of external–situational attributions as the dependent variables (see again Table 5). The external–personal analysis revealed a significant main effect for event, $F(1,40)=17.61$, $P<0.001$, such that all participants were more likely to blame others for negative than positive events. The external–situational analysis revealed a significant effect for group, $F(2,40)=3.45$, $P=0.042$, accounted for by the healthy controls making more external–situational attributions than the other two groups combined ($P=0.017$) with no difference between the two clinical groups ($P=0.481$).

When the external–personal analysis was repeated with depression as a covariate, the effect for event remained significant, $F(1,38)=4.86$, $P=0.034$, again such that all participants were more likely to blame others for negative than for positive events. When the external–situational analysis was repeated with depression as a covariate, however, the main effect of group became non-significant, $F(2,38)=2.02$, $P=0.147$. That is, all participants were more inclined to attribute negative, rather than positive, events to other people, independent of depression, whereas lower levels of depression in the healthy control group seemed to account for the greater tendency of these individuals to take situational factors into account.

Measures of Externalising Bias (EB) and Personalising Bias (PB) were also calculated as outlined in

Section 3.1.4 method (see Table 5). One-way ANOVAs failed to reveal any significant intergroup differences in levels of either EB, $F(2,41)=1.60$, $P=0.215$, or PB, $F(2,41)=1.68$, $P=0.198$. However, single sample t -tests did reveal that only the currently persecutory-deluded group showed levels of PB significantly greater than 0.5: $t(12)=4.17$, $P=0.001$. In contrast, levels of PB in the remitted group and the healthy control group did not differ significantly from 0.5 ($P=0.080$ and $P=0.218$, respectively).

3.2.1.2. Independent judges' ratings. Similar analyses were conducted using the ratings of independent judges as the dependent variables (see Table 5). Only the external–situational analysis revealed significant effects. There was a significant main effect of event, $F(1,38)=10.13$, $P=0.003$, such that all participants were more likely to make external–situational attributions for positive rather than negative events, and a significant main effect of group, $F(2,38)=6.25$, $P=0.004$, such that healthy controls were more likely to attribute events, whether positive or negative, to external–situational factors, when compared with both clinical groups ($P=0.001$). This was precisely the same pattern found when participant ratings of external–situational attributions were analyzed. The event \times group interaction was non-significant, $F(2,38)=1.96$, $P=0.155$. Results remained the same when the analysis was repeated with depression as a covariate.⁷

No results for EB or PB scores based on independent ratings were significant. Single-sample t -tests revealed, however, that all three groups showed PBs, as assessed using independent ratings; that is, the PB scores of all groups were significantly greater than 0.5 (all $P<0.001$).

3.2.2. Comparison of participant ratings with ratings of independent judges

Comparison of participants' ratings of their own attributions with the ratings of independent judges revealed some systematic differences between the two. Firstly, the ratings of participants were in general more self-serving than those of the independent

⁷ In contrast, group differences in participants' self-ratings of external–situational attributions could be accounted for solely by group differences in depression.

judges:⁸ when participants' own ratings were analysed, there was a tendency for all participants to internalise positive events more than negative events, and all participants were more inclined to attribute negative, rather than positive, events to other people. These tendencies were independent of depression and were not found the ratings of independent judges.

Secondly, inspection of the values in Table 5 suggested that the independent raters made more external–personal ratings overall than the participants, and fewer external–situational ratings overall. To verify this, a 2 (rater: participant vs. independent judge) \times 2 (rating: external–personal vs. external–situational) mixed design ANOVA was conducted on the attribution ratings, collapsed across experimental group and event valence (see Table 6).

This analysis revealed a significant main effect of rating, $F(1,86)=67.62$, $P<0.001$, indicating that a greater number of external–personal than external–situational ratings were made overall. This effect was modified by a significant interaction between rating and rater, $F(1,86)=37.64$, $P<0.001$, indicating that it was only the independent judges (and not the participants themselves) who made more external–personal than external–situational ratings ($P<0.001$). The interaction also reflected the fact that independent judges made more external–personal ($P<0.001$) and fewer external–situational ($P<0.001$) ratings than participants. The main effect of the rater was non-significant, $F(1,86)=0.34$, $P=0.563$.

Independent-samples *t*-tests revealed significant differences between the ratings of participants and independent judges for both EB ($t[86]=3.07$, $P=0.003$) and PB ($t[61^9]=-4.94$, $P<0.001$) as well; the ratings of independent judges yielded a greater personalising bias and a lower externalising bias than those of participants.

3.2.3. Correlational analyses

The relationships between attributional variables and delusions of persecution were explored further in correlational analyses. All attributional ratings

Table 6

Mean number of external–personal and external–situational attribution ratings made by participants and by independent judges

Rating	Rater	Mean	S.D.
External–personal	Participant	5.09	2.08
External–personal	Independent judge	7.80	2.33
External–situational	Participant	4.21	2.97
External–situational	Independent judge	1.77	1.25

(participant rated and independently rated) were firstly correlated with participant age, full-scale IQ estimate, age of onset, duration of illness and depression levels within the clinical group (currently deluded and remitted patients combined). All correlations were non-significant. All attributional variables were subsequently correlated with the SAPS Persecution rating and with the three indices of the PPDQ within the clinical group. The only significant correlations obtained were with the PPDQ Non-Persecutory Paranoid Ideation Index, which correlated positively with the PB derived from participants' ratings, $r=0.46$, $P=0.025$,¹⁰ and negatively with the external–situational dimension (derived from participants' ratings) for both positive ($r=-.43$, $P=0.034$) and negative ($r=-0.53$, $P=0.007$) events.

3.3. Discussion

Bentall and colleagues (Bentall and Kaney, 1996; Kinderman and Bentall, 1996b, 1997) have suggested that persecutory delusions arise when individuals attempt to maintain their self-esteem by attributing negative events to the actions of other people. The recent evidence for an association between attributional biases and persecutory delusions, however, is somewhat equivocal. A recent investigation by Martin and Penn (2002) found only tenuous support for this link, and what evidence they did find was only observed when the attributional statements of participants were assessed by independent judges, and these independent ratings analysed.

⁸ Note here that *self-serving* means “participant-serving”; thus, the extent to which the ratings of the independent judges are “self-serving” refers to the extent to which those ratings implicate self-serving tendencies on behalf of the participants.

⁹ *t* adjusted for unequal variances was used here.

¹⁰ Note that the PPDQ Persecutory Paranoid Ideation Index also correlated positively (but non-significantly) with the PB derived from participants' ratings, $r=0.26$, $P=0.229$. There was no significant difference between the PB/Persecutory Paranoid Ideation correlation and the PB/Non-Persecutory Paranoid Ideation correlation, $t(21)=-1.41$, $P=0.172$ (Steiger, 1980).

The present study was designed to further investigate the role of attributional biases in persecutory delusions. Consistent with [Martin and Penn \(2002\)](#), we hypothesised that persecutory-deluded individuals would display evidence of self-serving/externalising and personalising attributional biases relative to both a remitted delusions group and a group of healthy controls. We did not anticipate any differences between remitted patients and controls.

As with the study of [Martin and Penn \(2002\)](#), the results of the present study provide only limited support for the above hypotheses. Firstly, no support was found for the predicted association between current persecutory delusions and a self-serving/externalising bias. In this respect, our results were virtually identical to those of [Martin and Penn \(2002\)](#): all participants showed a self-serving bias, being more likely to take the credit for positive than for negative events and more likely to externalise the blame for negative than for positive events. The groups did not differ in these respects.

The collective tendency to make self-serving attributions disappeared when depression was taken into account, which is consistent with the established link between depression and attributional biases ([Abramson et al., 1978](#)). Moreover, consistent with [Martin and Penn \(2002\)](#), the self-serving bias was only observed in the analysis of participants' own ratings of their attributional statements—it disappeared completely (for all groups) when the independent ratings were analysed. This finding is to an extent consistent with that of [Kinderman et al. \(1992\)](#), who found that independent ratings of the attributional statements of persecutory-deluded individuals were less self-serving than the ratings of the patients themselves. In the present study, however, there was no difference between groups, so although the present discrepancy between participant and independent ratings is interesting, it fails to illuminate the processes underpinning persecutory delusions.

As for the predicted specific association between persecutory delusions and a personalising attributional bias for negative events, analysis of the participants' own ratings failed to reveal any intergroup difference in this respect, which is again consistent with the findings of [Martin and Penn \(2002\)](#). It should be noted, however, that the only group to

show a significant personalising bias was the group with acute persecutory delusions. To clarify, although there was no significant difference between the three groups in terms of PB (all groups showed PBs greater than 0.5), the persecutory-deluded group was the only group to show a PB significantly greater than 0.5 (0.5 indicates an equal tendency to blame other people or circumstances for externalized negative events). One might argue that this finding provides modest support for the predicted association between a personalising bias and persecutory delusions. Consistent with this suggestion, paranoid ideation (albeit non-persecutory) was positively correlated with PB scores derived from participants' ratings.

When the independent ratings of the participants' attributional statements were analysed, there was again no intergroup difference for PB. In this instance, however, the PBs of all groups were significantly greater than 0.5. Interestingly, the patients with persecutory delusions (acute and remitted combined) were found to make fewer external-situational attributions overall than the control group. This result is consistent with our finding that paranoid ideation (albeit non-persecutory) correlated negatively with the external-situational dimension (derived from participants' ratings) for both positive and negative outcomes. It is also consistent with the results of a recent study by [Randall et al. \(2003\)](#), who found that patients with acute persecutory delusions produced more attributions that independent judges rated as external-personal than did healthy control participants. No intergroup difference was found for participants' ratings of their own attributions.

How are we to account for the apparent preference of paranoid participants for external-personal attributions over external-situational attributions? Drawing on research by [Gilbert et al. \(1988\)](#), [Bentall et al. \(2001\)](#) suggest that external-personal attributions are a kind of psychological default when attributing events to external causes, and that external-situational attributions (which tend to be more psychologically benign, especially where attributions concern negative events) require greater cognitive effort. [Randall et al. \(2003\)](#) suggest that the putative "theory of mind" deficits in paranoid patients (see, e.g., [Frith and Corcoran, 1996](#)) may impair the abil-

ity of such patients to make situational attributions, thus increasing the probability of external–personal attributions.

The major difficulty with this formulation is that the evidence in the present study (see also [Martin and Penn, 2002](#); [Randall et al., 2003](#)) connecting persecutory patients and external–personal attributions was found only when the ratings of independent judges were analysed. In the present study, independent judges made more external–personal ratings than did participants, and fewer external–situational ratings. If a disproportionate number of external–personal attributions reflected some kind of mentalising deficit on the behalf of the persecutory patients, why this bias would only emerge in the ratings of independent judges is unclear. Another possibility is that the tendency for independent judges to rate the attributions of persecutory patients as personalising merely indicates how difficult it is for independent judges to make these ratings. It may be that the attributional statements of persecutory patients are in general more vague (providing less contextual information) than those of control participants. If this is the case, then the tendency of independent judges to select external–personal rather than external–situational may simply reflect the fact that they are operating with the psychological default in a situation of impoverished context ([Bentall et al., 2001](#); [Randall et al., 2003](#)).

This last point highlights one of the major methodological difficulties with attributional research: it is not obvious which type of measure–self-ratings or independent ratings–reflects patients' causal beliefs with greater accuracy. Self-ratings are vulnerable to defensive and presentation biases, whereas independent ratings cannot take into consideration the rich tapestry of contextual information available to (but not articulated by) the participant ([Bentall et al., 2001](#); [Randall et al., 2003](#)). Further research is needed to resolve these issues.

4. Conclusion

The studies reported here were designed to investigate the role of attributional biases in both subclinical and clinical persecutory ideation. Consistent with [Martin and Penn \(2001\)](#), we did not find any evidence

in our first study of an association between attributional biases and subclinical persecutory ideation. One possible implication of this result is that the dimensional approach to investigating the role of attributional biases in persecutory delusions is limited.

The results of our second study, however, are consistent with those of [Martin and Penn \(2002\)](#) in that they provide only tenuous support for the hypothesized link between full-blown persecutory delusions and attributional biases. We suggest, therefore, that the failure to find an association between attributional style and subclinical persecutory ideation does not undermine the assumption of dimensionality with respect to persecutory symptoms, but rather reflects the fact that the connection between acute persecutory ideation and attributional style is itself weak. An effect that is difficult to detect in a clinical population will naturally be even more difficult to detect in a subclinical population, dimensionality assumptions notwithstanding.

In conclusion, the present study found no support for an association between persecutory delusions and a self-serving/externalising bias, and only very limited support for an association between persecutory delusions and a personalising bias. No evidence was found for an association between attributional biases and subclinical persecutory ideation. These results suggest that the link between persecutory ideation and attributional biases is rather weak, appearing only when persecutory ideation is of sufficient intensity and (as per [Kinderman and Bentall, 1997](#)) being confined to a personalising bias.

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