'Jumping to Conclusions' and Attributional Style in Persecutory Delusions.

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Abstract

Persecutory delusions have been associated with a tendency to 'jump to conclusions' and an abnormal attributional style. We hypothesised that jumping to conclusions could account for the observed biases in attributional style. Individuals with persecutory delusions (n=24) were compared with matched depressed psychiatric (n=24) and non-psychiatric (n=24) comparison groups using a modified inductive reasoning task (John & Dodgson, 1994) on which participants requested information before making attributions for common social events. Both clinical groups 'jumped to conclusions' and made attributions on the basis of little evidence. This tendency was greatest in individuals with persecutory delusions. Differences were also found in the proportions of questions seeking internal, external and situational information. However, there were no significant differences between the groups in the final attributions made. These findings inform a model of persecutory delusions whereby a limited cognitive search strategy may influence attributional style.

Introduction.

After many years of neglect, the delusional beliefs of individuals with psychosis have become the subject of intensive research, leading to a number of theories about the psychological mechanisms responsible for them. It has been proposed that delusions in general arise as a consequence of the inability to gather and weigh data relevant to hypotheses (Garety, Hemsley, & Wessely, 1991), resulting in a tendency for individuals with delusions to 'jump to conclusions' and make decisions on the basis of very little evidence. Paranoid (persecutory) delusions, on the other hand, have been attributed to preferential attention to, and recall of, threat-related information (Bentall & Kaney, 1989; Kaney, Wolfenden, Dewey, & Bentall, 1992) and have also been linked to a deficit in 'theory of mind', the ability to understand the mental states of other people (Frith & Corcoran, 1996), and an abnormal style of reasoning about significant life events (Kaney & Bentall, 1989; Kinderman & Bentall, 1997). Given that there is at least some evidence to support each of these proposals (see Garety & Freeman, 1999, and Bentall, Corcoran, Howard, Blackwood, & Kinderman, 2001, for reviews) there is now a need to explore interactions between the different psychological processes identified in order to develop an integrative model of persecutory delusions. In the present paper, we describe a study designed to investigate a possible interaction between biased explanatory style and jumping to conclusions.

Explanatory style and persecutory delusions.

A number of studies have reported a relationship between persecutory delusions and attributional style. Kaney & Bentall (1989) compared individuals with persecutory delusions, depressed participants and controls on Peterson et al.'s (1982) Attributional Style Questionnaire (ASQ). They found that both clinical groups made excessively stable and global explanations for negative events. However, individuals with persecutory delusions showed a bias towards making excessively external attributions for negative events and internal attributions for positive events, a bias which is opposite to that commonly observed in depressed participants (Sweeny, Anderson, & Bailey, 1986). This finding has been replicated by a number of other investigators (Candido & Romney, 1990; Fear, Sharp, & Healy, 1996; Lee & Won, 1998) and using different methods (Kaney & Bentall, 1992; Kinderman &

Bentall, 1997; Lee, Beattie & Bentall, in press). An apparently inconsistent result was reported by Martin & Penn, (2002), who failed to find attributional differences between individuals diagnosed with schizophrenia experiencing persecutory delusions and individuals diagnosed with schizophrenia who were not experiencing persecutory delusions; however, in a correlational analysis these authors did find a relationship between paranoia scores and the number of external-personal attributions made.

The tendency to attribute the cause of negative events to external factors has been shown to maintain self-esteem in healthy individuals through the avoidance of responsibility (Campbell & Sedikides, 1999; Taylor, 1988) and the evidence suggests that this bias is exaggerated in individuals with persecutory delusions. In an attempt to explain this finding, Bentall, Kinderman, & Kaney (1994) proposed a cognitive model of paranoia, suggesting that externalizing attributions are triggered when threat-related information activates discrepancies between beliefs about the self and ideals. These externalizing attributions reduce the discrepancy between beliefs about the self and ideals but, when made consistently over a period of time, lead to a persecutory worldview in which others are believed to hold hostile views about the self. This idea that paranoid thinking arises from dysfunctional attempts to regulate low self-esteem is consistent with some psychodynamic accounts of paranoia (Colby, 1977; Hingley, 1992) and the idea of that paranoid schizophrenia is a form of 'camouflaged depression' (Zigler & Glick, 1988).

This hypothesis that persecutory delusions arise as a consequence of defensive processes has been contested by other researchers on the grounds that it predicts high self-esteem in individuals with paranoia (Garety & Freeman, 1999). However, Bentall et al. (2001) point out that a defensive account of persecutory delusions does not necessarily imply that self-esteem will always be high, as sometimes externalizing attributional biases may be insufficient to overcome feelings of low self-esteem. Instead, they suggest that individuals with persecutory delusions may suffer from highly unstable and fluctuating self-esteem. In fact, studies in which self-esteem has been measured in participants with persecutory

delusions and controls have yielded inconsistent results, some finding evidence of preserved self-esteem in paranoid participants (e.g. Lyon, Kaney, & Bentall, 1994) and some finding evidence of low self-esteem (Freeman et al., 1998). In a recent longitudinal study of a large group of first episode psychotic patients, Drake et al. (2004) found no consistent association between self-esteem and paranoid symptoms, but at each of four assessment points (beginning shortly after first admission and ending 18 month later) observed that depression appeared to be partly a response to paranoid beliefs.

Data gathering biases in individuals with delusions.

Hemsley & Garety (1986) argued that delusions might be the consequence of an inability to use probabilistic information when reasoning about hypotheses. This proposal was first investigated by Huq, Garety, & Hemsley (1988) and Garety et al., (1991) in studies in which participants were shown two jars each containing beads of two colors. In one jar, one color far outnumbered the other (85:15), and in the other jar the proportions were reversed. The jars were then hidden, a sequence of beads was presented and the participants were asked to guess which jar they had been drawn from. It was found that participants with delusions requested less information prior to making a decision, and were overconfident in their decisions, when compared to healthy controls and a psychiatric control group. Garety and her colleagues argued that individuals with delusions have difficulty integrating information over time when adjusting hypothesis. These authors found that this 'jumping to conclusions' reasoning style was also associated with lower IQ (Garety et al., 1991).

A number of investigators have replicated the finding that individuals with delusions perform poorly when asked to evaluate hypothesis in the light of sequentially presented information (Dudley, John, Young, & Over, 1997a, 1997b; Fear et al., 1996; John & Dodgson, 1994; Young & Bentall, 1997). However, the cognitive mechanisms responsible for this bias remain incompletely understood. John & Dodgson (1994) studied the reasoning and information gathering skills of individuals with delusions compared to depressed participants and controls, using a version of the '20 questions game'. Participants were allowed to ask up to 20

yes/no questions until they felt they had enough information to guess which object or famous person the interviewer was thinking of. Questions were coded as constraint-locating (those that served to narrow down the number of hypotheses) or direct hypothesis questions (those that directly tested a hypothesis). Individuals with delusions requested less information than controls before making a decision, using less constraint-locating questions before making their first guess. John and Dodgson suggested that, by jumping to conclusions, those participants with delusions were able to complete the task with minimum cognitive effort. Dudley et al. (1997) similarly noted that early decisions reduced the cognitive demands placed upon participants and their overall personal investment in the task, suggesting that this was the source of deluded participants' motivation to jump to conclusions. They demonstrated that increasing the emotional salience of the test material led to increased evidence of jumping to conclusions across all three groups of participants, a finding that was replicated by Young & Bentall (1997).

It has more recently been suggested that the jumping to conclusions reasoning style might be motivated by an intolerance of ambiguity. The term 'need for closure' has been coined by Kruglanski (1989, p.14) to describe "the desire for a definite answer on some topic, any answer compared to confusion and ambiguity". Bentall & Swarbrick (2003) measured need for closure in currently deluded paranoid participants, remitted paranoid participants, and healthy controls using a simplified version of Kruglanski's Need For Closure Scale (NFCS). The paranoid and remitted participants scored significantly higher on need for closure than the control group. However, although Colbert & Peters (2002) found that 'delusion-prone' healthy individuals (defined as scoring in the upper quartile on the Peters Delusions Inventory) also scored highly on the NFCS, they found that NFCS scores did not correlate with the jumping to conclusions reasoning style.

Relationship between attributional judgments and jumping to conclusions.

Given that attributional style and jumping to conclusions have both been implicated in persecutory delusions, it is possible that these are not completely unrelated phenomena. When generating attributions, individuals engage in a mental search strategy that is terminated on the retrieval of an appropriate causal

construct, this process being influenced by a number of cognitive constraints and decision rules (Kinderman & Benn, 2002). Gilbert, Pelham, & Krull (1988) have shown that more cognitive effort is required to generate situational attributions compared to internal or personal (other-blaming) attributions. Individuals with a tendency to 'jump to conclusions' might be expected to make attributional decisions on the basis of less mental search and limited evidence. This in turn is likely to lead to relatively few situational attributions. We therefore hypothesize that individuals with persecutory delusions : i) when offered the opportunity to obtain more information when making an attributional judgement will tend to reach premature conclusions ii) when asking questions, will seek more information specifically about other people and iii) will reach conclusions which excessively implicate the involvement of others. In the present experiment, we therefore adapted the guessing game paradigm of John & Dodgson (1994) to assess whether individuals with persecutory delusions were, as predicted, more likely to jump to conclusions when making causal attributions than depressed participants

Method

Measures

Depressive symptomatology was measured using the Beck Depression Inventory II (BDI II) (Beck, Steer & Brown, 1996). This is a well established tool in measuring the severity of depression in clinical samples (Beck, Steer and Brown, 1996). The validity, reliability and internal consistency of the measure have been established in primary care medical patients (Amau et al, 2001) and psychiatric outpatients (Steer et al, 1997).

The National Adult Reading Test (NART) (Nelson and O'Connell, 1978), a brief measure of verbal intelligence, was used to establish intellectual comparability between the groups. The NART closely correlates with other measures of intelligence (Crawford, Parker, Allan, Jack & Morrison, 1991).

The Rosenberg Self-Esteem Scale (Rosenberg, 1965) is a measure of global self-esteem consists of ten statements which participants endorse on a 4 point

scale (from 'strongly agree' to 'strongly disagree'). Baumeister et al. (2003; Psychological Science in the Public Interest) DISCUSS REL AND VAL

The Need for Closure Scale (Kruglanski, Webster & Klem, 1993). : The need for closure scale consists of 42 items measuring the desire for predictability, preference for order and structure, decisiveness, close-mindedness and discomfort with ambiguity. Participants indicated how much they agreed with each statement on a six point likert scale ranging from 1 (strongly disagree) to 6 (strongly agree). Higher scores indicate a greater need for closure. Webster and Kruglanski (1994) report that the scale has demonstrated high internal consistency (Cronbach's alpha = .841) and a high test-retest reliability (r = .861).

The Paranoia Scale (Fenigstein & Vanable, 1992) : The paranoia scale was designed for administration to non-patient participants and has good internal consistency and test-retest reliability.

An interview-based measure of psychotic symptomatology, the KGV (Krawiecka, Goldberg & Vaughn, 1977), was also administered, in order to provide clinical information on the participants

The Twenty Questions Reasoning Task.

The reasoning task involved five negative items taken from the Internal, Personal and Situational Attributions Questionnaire (IPSAQ; Kinderman & Bentall, 1996a). The IPSAQ is a 32 item questionnaire measuring causal attributions. It contains 16 positive events, e.g. 'a friend helped you with the gardening' and 16 negative events e.g. 'a friend talked about you behind your back.' Participants are required to read situation, try to imagine it and then write down their one most likely causal attribution. Participants are given three options, internal (concerned with them), external-personal (concerned with other people) and situational (concerned with circumstances or chance). The five negative items taken from the IPSAQ to form the reasoning task were: a friend talked about you behind your back, a friend refused to help you with a job, a friend made an insulting remark to you, a friend ignored you and a friend picked a fight with you

A ‘twenty questions game’ design was then used drawing on previous work by John and Dodgson (1994). This enables measurement of the amount of information requested prior to making a decision and also allows exploration of the type of information that is requested. The format a game was intended to be ‘user friendly’ and helpful in minimizing motivation problems (John & Dodgson, 1994).

The general procedure for the reasoning task was that the participants were asked if they had ever played the 20 questions game, and an example of the game was demonstrated as a practice item, e.g. (“I’m thinking of an object. You must guess what I’m thinking of by asking up to twenty questions that I can only answer ‘yes’ or ‘no’.”) This ensured that the participant understood what was required of the game and helped to engage and motivate them towards the task. The participants were then informed that the reasoning task was adapted from the game. They were told that they were to be presented with a situation that they were required to imagine happening to them (i.e. A friend refused to help you with a job). They were informed that they were to try to think of the cause of the event, and that in order to do this they could ask up to 20 questions about the event but that the researcher could only answer ‘yes’ or ‘no’ to each question. They were then told that, when they had decided on the cause, this should be categorized as either internal (concerned with them), external-personal (concerned with other people) or situational (concerned with circumstances or chance).

Participants were informed that there was no right or wrong answer and that it was their actual thinking process that was of interest. The first individual item taken from the IPSAQ was presented on a piece of card and was described as an imaginary situation. Participants were given another card displaying the three possible causes (as above). They were reminded that they had up to 20 questions to decide the cause of the event but that the researcher could only answer ‘yes’ or ‘no’. They were informed that there were no right or wrong answers. The ‘game’ was then commenced. Any further explanation required to clarify the task was given.

When a question was asked, the researcher responded with a pre-prepared ‘yes’ or ‘no’ answer, which had been generated by the use of random

numbers. However, if a participant asked the same question on more than one occasion, a consistent answer, rather than the next randomly generated answer was given. The researcher recorded the number of questions asked and the actual questions. The questions were later coded in terms of attribution implied, ie. internal, external-personal, situational or deemed uncodeable. The process and rules for the coding of attributional questions are outlined below.

Internal: Questions were coded as internal if the question implied that the individual participant might be the cause of the event, for example, if the participant asked *'Had I done something wrong?'* This question would be coded as internal.

External-personal: Questions were coded as external-personal if the participant implied that another person or group of people might have caused the event, i.e. the question *'Are they just a horrible person?'* would be coded as external-personal.

Situational: Questions were coded as situational if the participant implied that the situation was connected to the event. Therefore, questions such as *'did this happen at work?'* or '*were we at a party*?' would be coded as situational.

Uncodeable: Those questions which did not indicate any attributional hypotheses were deemed uncodeable.

All coding was completed blindly and independently by the first author and the third author. 82 % inter-rater agreement was reached. Disagreements were discussed and the final codings mutually agreed.

Participants were encouraged to continue asking questions until they felt that they were in a position to make a decision about causality. Summaries of questions asked and answers received were given after every five questions, or when requested. When the participant indicated that they had made a decision, they were asked if they were sure and their decision concerning causality was noted (internal, external-personal or situational). The next item was then administered until all 5 vignettes had been presented. The five vignettes were presented in counter-balanced order across the participants. Following the final vignette, participants were asked to rate their confidence in the decisions they had made on a 0-10 scale, where 0 = not at all confident and 10 = totally confident.

Participants

Three groups of participants were employed, matched for age and sex. In the clinical groups, diagnostic classifications were made using DSM IV criteria (DSM-IV: American Psychiatric Association, 1994) by the first author, based on signs and symptoms reported and observed in clinical interviews, supported by case note data.

The experimental group consisted of 24 participants experiencing persecutory delusions. Seventeen had a diagnosis of schizophrenia, six, schizo-affective disorder, and one bipolar disorder. Persecutory delusions were defined according to the criteria suggested by Freeman & Garety (2000) and their presence was confirmed by the medical records, the reports of nursing staff, the participants' self reports and presentation during the KGV interview. All participants scored above 3 on the delusions subscale of the KGV. During the delusions section of the KGV interview, when participants disclosed persecutory delusions, they were asked whether they felt they deserved to be persecuted or harmed, so that they could be later divided into 'poor me' and 'bad me' groups as described by Trower & Chadwick (1989).

There were 17 men and 7 women in the experimental group. The mean age was 38.21 (SD = 11.26) with a range of 43 from 20 - 63 years. 11 were outpatients at local day hospitals and 13 were inpatients on acute psychiatric wards. The mean number of years in education was 11.29 (SD = 1.57) and their mean NART IQ was 107.09 (SD = 11.01). The mean duration of illness was 63.55 months (SD = 98.32), and the mean number of admissions to psychiatric hospital was 2.63 (SD = 4.00). A record was kept of the main delusional themes of participants in this group.

The psychiatric control group consisted of 24 participants with a diagnosis of major depressive disorder. All participants within this group were non-psychotic, with no participant scoring above 1 on the delusions section of the KGV. There were 17 men and 7 women. The mean age was 44.79 years (SD = 11.12) and the range was from 17 - 58 years. 18 were outpatients at local day hospitals and 6

were inpatients on acute psychiatric wards. The mean number of years in education was 11.21 (SD = 2.08) and their mean NART IQ was 104.92 (SD = 13.19). The mean duration of illness was 82.09 months (SD = 86.30), and mean number of psychiatric admissions was 2.08 (SD = 2.54).

A normal control group of 24 participants with no psychiatric history was recruited from informal contacts to approximately match the experimental participants for age and sex. There were 14 men and 10 women. Their mean age was 38.13 years, (SD = 10.61) with a range of 30 from 26 - 56 years. The mean number of years in education was 13.46 (SD = 2.59) and their mean NART IQ was 115.5 (SD = 5.82). All participants in this group scored 0 on the KGV delusions subscale.

98 people were asked to take part in the study, nineteen (19.39 %) refused and three (3.06%) dropped out at some point during the testing period.

Results

Demographic Variables

Demographic data are presented in Table 1. The three groups did not differ significantly in mean age ($F(2,69) = 2.90$, $p = .06$) or gender (Chi-square = 1.13, $p = .57$). Analysis of the clinical data for the two patient groups revealed no significant difference in length of time since first diagnosis, ($z(46) = -1.6$, $p = .11$). There were also no significant differences between the two clinical groups in their numbers of previous psychiatric admissions ($t(46) = 0.56$, $p = .58$).

The three groups differed with regards to KGV total scores ($F(2,69) = 136.58$, $p < .0001$), National adult reading test (NART) scores ($F(2, 66) = 6.80$, $p < .005$), Beck Depression scale (BDI – II) scores ($F(2,68) = 45.60$, $p < .0001$), self-esteem scores ($F(2,67) = 48.55$ $p < .0001$) and paranoia scores ($F(2,68) = 85.98$, $p < .0001$). Pairwise comparisons (*post hoc* Tukeys HSD), revealed that the paranoid group had higher KGV total and paranoia scores than the other two groups, and

that the depressed group had higher KGV total scores than the control group (p< .05 for each comparison) but that differences on the NART, BDI-II and self-esteem measure were entirely accounted for by differences between the control group and the two clinical groups (p < .05 for each comparison). The paranoid and depressed group did not differ from each other on any of these measures (p > .05).

'Jumping to Conclusions.'

The mean number of questions asked by participants, across the five separate vignettes, prior to their decisions about causality are shown in Table 2. A one way analysis of variance (ANOVA) was conducted on the these data. A significant main effect for group was found, revealing that, as predicted, the three groups differed significantly with regards to the mean number of questions asked on the reasoning task ($F(2,69) = 23.48$, $p < .0005$).

Pair-wise comparisons (*post hoc* Tukey HSD tests), revealed that the control group asked significantly more questions than both the depressed (p < .005) and paranoid groups (p < .0001). The paranoid group asked significantly fewer questions than both the depressed (p < .005) and the control group (p < .0001). Thus, the hypothesis that individuals with persecutory delusions will 'jump to conclusions' was supported.

'Jumping to Conclusions' and depressed mood.

The possible role of depressed mood in contributing to the observed pattern of results was further investigated using a regression analysis. To conduct this analysis, a dummy variable was created of 'paranoid vs not paranoid' with all the participants in the 'paranoid' group scoring 1, and all other participants scoring 0. A regression analysis was then conducted with number of questions asked as the dependent variable and depressed mood, as measured by the BDI as a predictor in block 1, and the new dummy variable as a predictor in block 2.

The overall regression equation was significant ($F(2,68) = 23.86$, $p <.0005$) and a lower level of depressed mood was a significant predictor of the number of questions asked (beta = .36, t = 3.73, p <.005). The presence or paranoia was also a significant predictor of the number of questions asked (beta = .44, t = 4.50, p <.005). The 'R-squared-change' term was also significant, ($F(1,68)=20.23$, p <

.0005) indicating that paranoia predicted jumping to conclusions independently of and additionally to the presence of depressed mood.

A second, similar, analysis was conducted using paranoia scale scores rather than the dummy variable representing presence or absence of paranoia. The results of this analysis paralleled the first, with scores on the paranoia scale (beta = -.45, t = -2.82, $p < .01$) predicting the number of questions asked independently of and additionally to the presence of depressed mood.

'Jumping to Conclusions' and Pre-morbid IQ.

There was a significant association between total NART score and number of questions asked (Pearson's $r = .46$ $p < .0005$, df = 67). No significant association was found between number of questions asked and participants age, number of previous admissions, and length of time since diagnosis although a significant association was found between number of questions asked and number of years in education ($r = .32$ $p = .007$, df = 70).

An analysis of covariance (ANCOVA) was considered to be an inappropriate means of eliminating the extraneous effect of IQ (Lord, 1967). We therefore selected, from the three groups, high-functioning participants whose estimated IQ was greater than or equal to 100. This resulted in 16 people remaining in the paranoid group, 15 in the depressed group and 24 in the control group, with no significant group differences remaining for IQ. The ANOVA on mean number of questions asked was then re-run. Again, the groups differed, ($F(2,54) = 14.90$, $p < .0005$). Tukey HSD tests revealed that the paranoid group asked significantly fewer questions than both the depressed ($p < .05$) and control groups ($p < .005$).

Within this selected sub-group, however, there remained a significant correlation between estimated IQ and mean number of questions asked, ($r = .35$, $p < .01$, df = 55). Therefore, as a final investigation of the relationship between paranoia, IQ and jumping to conclusions, a multiple regression analysis was carried out on the complete data set with mean number of questions asked as the dependent variable. Estimated IQ and whether paranoid or not were entered simultaneously as predictor variables. The regression equation was significant,

(F(2,66) = 27.16, p <.0005). Both estimated IQ, (beta = .39, t = 4.29, p <.005), and whether paranoid or not, (beta = -.50, t = -5.40, p <.005), were significant predictors of jumping to conclusions.

Confidence in Decisions.

The mean confidence ratings of each group were as follows: control 6.33 (sd 2.12), depressed 5.50 (sd 2.13) and paranoid 5.95 (sd 2.56) The three groups did not differ significantly in their expressed level of confidence in decisions made during the reasoning task ($F(2,64) = 0.77$, $p < .47$).

Pearson's correlation revealed no relationship between confidence ratings and the mean number of questions asked ($r = .11$, $p = .37$, $df = 65$).

Need for Closure.

Need for closure scores are shown in Table 1. The three groups did not differ significantly on these scores ($F(2, 66) = 0.34$, $p < .717$). No relationship was found between need for closure and the mean number of questions asked ($r = -0.06$, $p < .63$, $df = 67$).

Reliability / Validity Of Reasoning Task.

A reliability analysis was conducted on the total number of questions asked on each of the five vignettes of the reasoning task. This yielded an adequate level of internal reliability (Cronbach's alpha = .76), indicating that participants were consistent in the number of questions they asked on each of the five separate vignettes.

Although the attributional vignettes were presented in counter-balanced order, it was possible that the number of questions asked changed over the repeated presentation of the task. The changes over time in the number of questions asked in the three groups were examined in a repeated measures analysis of variance. This revealed significant change over time (Greenhouse-Geisser $F(2.65, 182.83) = 8.61$, $p < .0005$), with a significant linear trend ($F(1, 69) = 10.74$, $p > .002$), and a significant interaction between time and group (Greenhouse-Geisser $F(5.30, 182.83) = 2.70$, $p < .05$). Examination of the mean number of items asked by each group for each of the five (counterbalanced)

vignettes, also presented in Table 2, reveals that the two clinical groups, but not the control group, asked fewer questions in response to later items.

Attributional Questions.

There were differences in the number of questions asked over time, which produced inequality of variance. Therefore, in order to eliminate this, the proportion of internal, external-personal and situational questions, relative to the total number of questions asked, were calculated, and these scores are shown in Table 3. A multivariate analysis of covariance (MANCOVA) was used to examine differences between the three groups in these proportions. Significant differences between the three groups were found in the relative proportion and type of attributional questions asked, (Wilks' lambda $F(6,134) = 4.82$, $p < .0005$). There was a significant difference between the three groups in terms of the proportion of situational ($F(2,69) = 8.42$, $p < .001$), internal ($F(2,69) = 5.01$, $p < .01$) and external-personal ($F(2,69) = 3.72$, $p < .05$) questions. Pairwise comparisons, (Tukey HSD) revealed that the paranoid and depressed groups differed in the proportion of internal questions asked ($p < .01$), with the paranoid group asking a lower proportion of internal questions than the depressed group. Also, the paranoid and control groups differed from each other with regards to the proportion of external-personal questions ($p < .05$), with the paranoid group asking a higher proportion of external-personal questions than the control group. The control group differed from both the depressed ($p < 0.05$) and paranoid group ($p < .001$) in the proportion of situational questions asked, with the control group asking a significantly higher proportion of situational questions than both clinical groups.

Attributional Decisions.

The attributional decisions reached by the three groups are shown in Table 2; there was no significant difference between the three groups in the attributional decision reached (Wilks Lambda, $F(4,136) = 0.95$, $p = .44$).

'Poor Me' & 'Bad Me' Paranoia.

In an exploratory investigation, participants in the paranoid group were divided into either 'poor me' (n = 13) or 'bad me' (n = 7), according to whether they believed that they deserved to be persecuted. Those individuals who were unsure

about whether they deserved to be persecuted (n = 4) were not included in subsequent investigations. Because of the small sample sizes involved, these data were not analysed but are presented in Table 4.

Examination of Table 4 indicates a trend for the 'bad-me' paranoia group to have poorer self-esteem (as indicated by higher total Rosenberg self esteem scale scores), but few differences in KGV scores, paranoia scale scores, need for closure scale scores or Beck depression scale (BDI-II) scores.

The two sub-groups did not appear to differ markedly in the total number of questions asked on the reasoning task, or in the proportions of questions which implied internal, external-personal, situational or uncodeable attributions. Table 4 does suggest, however, that the 'bad me' paranoid subgroup made more internal attributional decisions.

Discussion

This study investigated 'jumping to conclusions' in respect to causal attributions made by people with persecutory delusions. It revealed that participants with persecutory delusions asked significantly fewer questions than both depressed and non-patient participants before making causal attributions about personally salient hypothetical events. Depressed participants also asked fewer such questions than non-patient participants. The finding that individuals with persecutory delusions 'jump to conclusions' is consistent with previous research (Dudley, John, Young & Over, 1997 a,b; Fear & Healy, 1997; John & Dodgson, 1994), although this is the first study to examine the possible relationship between attributional style and 'jumping to conclusions'. Although there was clear evidence that the tendency to jump to conclusions was influenced by intelligence, with more intelligent participants making less hasty attributional decisions, this effect did not explain the observed differences between the paranoid patients and the comparison groups. The findings also do not seem to be explicable in terms of greater confusion in the clinical participants, as the three groups expressed similar levels of confidence in their judgements, and there was no correlation between the number of questions asked and reported confidence.

The findings of the present study are consistent with a recent interpretation of attributional processes in paranoia (Kinderman, 2001), which is based on Kruglanski & Webster's (1994) account of normal attributional reasoning. In that model it is suggested that people employ search strategies, which are attempts to find possible or plausible explanations for events, and termination rules, which are heuristics for making a final choice about attributional locus. Kinderman, (2001) argued that search strategies are deficient in paranoia, possibly as a result of low cognitive resources or other deficits, and that termination rules are biased in favor of self-protective or self-enhancing causes for negative events. The findings of the present study partially support such an account, as the fewer number of questions asked by the deluded participants is consistent with the hypothesis of a deficient search strategy. In addition, however, the nature of the questions asked was also biased in line with the defensive model of paranoid attributions. This interpretation of the findings is similar to that offered by John and Dodgson (1994), who suggested that their deluded group displayed a cognitive style which reflected a "*difference in cognitive processing style which limits the extent to which deluded subjects request information to help them form a decision*" (p.45). It is possible that attributional decisions place particular strain on the search strategies employed by the persecutory delusions group.

We initially hypothesized that need for closure, which might be expected to affect the termination rules employed during an attributional search, might explain deluded patients' tendency to 'jump to conclusions'. However, there were no significant differences found between the three groups on this measure. This finding is in conflict with those of Bentall and Swarbrick, (2001) and Colbert and Peters (2002), who both found higher need for closure scores in paranoid participants. However, like us, Colbert and Peters found no relationship between 'jumping to conclusions' and need for closure (Colbert & Peters, 2002). Thus, the idea that need for closure is a motivational factor involved in 'jumping to conclusions' is not supported. It must be considered that the termination rules for attributional search strategies are unlikely to be limited to "closure", and may

involve other motivational goals such as the avoidance of negative affect and the maintenance of a positive self concept (Kinderman & Benn, 2002).

Our findings are, of course, open to various further interpretations. One possible alternative hypothesis could be that the differences found on the reasoning task were indicative of motivational difficulties within the clinical groups. Participants reduced the number of questions asked as the task proceeded. This may indicate either decreasing motivation or increasing skill at the task. Further possible alternative explanations include the possibilities that the results could implicate effects of tiredness, impatience, thought disorder, poverty of speech, difficulty sustaining attention, or neurocognitive deficits other than low intelligence. These considerations do not, however, undermine the validity of the findings. Such motivational difficulties or deficits have previously been identified as potential causes of deficient attributional search strategies (Kinderman, 2001). If it were the case that participants with paranoid or depressive problems arrived at attributional conclusions following a restricted search for evidence because they were unmotivated, preoccupied or otherwise impaired, this would carry important implications for how they employ search strategies and arrive at decisions in everyday life.

The present study also revealed data gathering biases in participants with persecutory delusions, with a greater proportion of questions directed at external-personal loci. This is again consistent with Kinderman's (2001) model of dysfunctional attributional search strategies. However, the prediction that there would be a difference between the three groups with regards to the final attributional decisions reached was not supported – there were no significant differences between the three groups in the number of external-personal, internal, and situational attributional decisions made. This finding fails to replicate previous studies which have consistently found significant differences between the three groups, with depressed participants arriving at more internal attributions, control participants arriving at more situational attributions and paranoid participants arriving at more external-personal attributions, for negative events (Bentall, Kaney & Dewey, 1991; Candido & Romney, 1990, Fear, Sharp & Healy, 1996; Kaney &

Bentall, 1989; Kinderman & Bentall, 1997a; Lyon, Kaney & Bentall, 1994). One possible reason for the present lack of significant findings is the fact that only a small number of vignettes were used, and hence a small amount of decisions reached by each participant, with the consequence that there was low statistical power to detect differences in the relative proportions of attributional decisions made to the three loci. Only five vignettes were chosen because of the level of demand they placed upon participants and the length of time involved in administering each.

The present study also took no account of the dynamic nature of attributional judgments and the possibility that attributional judgments may vary across time and according to circumstance (Bentall, Corcoran, Howard, Blackwood & Kinderman, 2001). Bentall and Kaney (2005) have recently reported that the attributional judgements of paranoid patients are highly labile, and become much more internal for negative events immediately following the experience of failure. A broader examination of attributional dimensions in paranoia, focusing on how attributional judgements change over time, may be a fruitful area for further research.

The depressed and deluded participants in the present study appeared to ask questions relating to their negative beliefs about themselves and the world. It would appear that both clinical groups were attempting to directly test out or confirm their beliefs. The bias exhibited in the persecutory delusions group towards asking more external-personal questions could be seen as a possible defensive strategy and a tendency to avoid attributing blame to the self (Bentall & Kinderman, 1998; Bentall, Kinderman & Kaney, 1994).

The attributional differences observed between the so called ‘poor me’ and ‘bad me’ forms of paranoia warrant further attention. It is possible that there are two distinct types of paranoia associated with different psychological and attributional biases. Therefore, it is possible that the personalizing / defensive stance described by Kaney, Bentall and Kinderman (1994) is only true for ‘poor me’ paranoia. However, it has recently been suggested that ‘poor me’ and ‘bad me’ paranoia may be manifestations of the same process, with ‘bad me’ occurring when attempts to avoid internal attributions for negative events fail, so that the

individual becomes overwhelmed by negative beliefs about the self (Bentall, Corcoran, Howard, Blackwood & Kinderman, 2001). Consistent with this account, Melo, Bentall, & Taylor (in press) have recently found that some patients show marked changes in their judgements about the extent to which their persecution is deserved over relatively short periods of time (a few days). Few definite conclusions about the two types can be reached on the basis of the present data, because of the low numbers available in each of the groups.

A possible criticism of the present study is that the patients in our deluded group had a range of diagnoses, the majority suffering from schizophrenia and a minority suffering from schizoaffective or bipolar disorder. However, these diagnostic categories have been criticized for their poor scientific validity, with a number of researchers arguing either for a unitary psychosis concept or for a continuum between schizophrenia symptoms and bipolar symptoms (as reviewed in Bentall, 2003). Moreover, the research strategy of targeting particular classes of behaviour and experience ('symptoms') for investigation is now well-established. Given the doubts about the boundaries between schizophrenia and other psychoses, it seems unparsimonious to assume that different processes will lead to persecutory delusions in the different diagnostic groups. In fact, supplementary analyses, not reported here, in which only schizophrenia patients were included, and in which inpatients with delusions were compared to outpatients, did not undermine the findings of the analyses that we have reported in detail.

A further, related criticism might be that the diagnostic classifications, and the identification of the presence or absence of delusional beliefs, were made by the first author, who was clearly not blind to the experimental investigation. It is therefore not possible to establish with certainly that other raters would have made the same decisions. In particular, it is possible that unconscious experimenter bias could have led to possible candidate participants being inappropriately included or excluded. Although therefore less than perfect, such an approach is common in research of this kind. Support for the validity of this approach is also evident in the presented data. That is, the scores of the different participant groups on measures of paranoia and depressed mood are wholly consisted with the experimental

classification. In terms of psychotic symptomatology, scores on the KGV also supported the experimental classification. That is, although the KGV was developed nearly twenty years prior to the publication of the DSM-IV, and is a measure of clinical phenomena rather than a diagnostic tool, participants' scores on this measure validated the diagnostic judgments.

Despite recent advances in our understanding of the psychology of delusional beliefs, several key questions remain. The results of this study, and many of those that have preceded it, are unable to specify the extent to which the present findings are limited to individuals with persecutory delusions versus individuals who experience other delusions and the inclusion of another control group could possibly have clarified this issue. The results here are also essentially descriptive and do not indicate how such cognitive differences arise in individuals with persecutory delusions. It is not known whether attributional style and probabilistic reasoning difficulties precede, coincide or follow paranoid symptomatology. Investigations of patients in remission, developmental studies of high-risk individuals, and studies of 'psychosis prone' healthy individuals may help to clarify these issues.

An obvious clinical implication of the present findings is that therapy for individuals with persecutory delusions should pay particular attention to the possibility of a 'jumping to conclusions' thinking style. It may be possible to use tasks similar to the one used in this study to investigate or assess this phenomena in individual clients. Where indicated, therapy may attempt to directly address this style by encouraging individuals to become aware of their tendency to make hasty decisions and to take time prior to making decisions, carefully considering and evaluating any evidence before doing so. Cognitive-behavioural interventions designed to improve patients' attributional skills, which encourage patients to carefully consider the evidence supporting their attributional judgements, may be particularly useful (Kinderman, 2001, Kinderman & Benn, 2002, Kinderman & Bentall 1997b).

References

American Psychiatric Association (1994). Diagnostic and statistical manual for mental disorders. (4th Edition). Washington DC.

Beck, A.T., Ward, C.H., Mendelson, M., Mock, J., & Erlbaugh, J. (1961). An inventory for measuring depression. Archives of General Psychiatry, 4, 561-571.

Beck, A,T., Steer, R.A., & Brown, G.K. (1996). Beck Depression Inventory Manual. (2nd Ed.) San Antonio. TX : Psychological Corporation.

Bentall, R.P. (1994). Cognitive biases and abnormal beliefs : Towards a model of persecutory delusions. In David, A.S. and Cutting, J.C. (eds.) The Neuropsychology of Schizophrenia. (pp. 337-360). London. Lawrence Erlbaum.

Bentall, R.P. (1999). Commentary on Garety and Freeman III : Three psychological investigators and an elephant. British Journal Of Clinical Psychology, 38, 323-327.

Bentall, R.P. (2001). Social cognition and delusional beliefs. In P.W Corrigan & D.L. Penn (Eds). Social Cognition and Schizophrenia. (pp.123-148.) American Psychological Association. Washington.

Bentall, R.P. (2003). Madness explained: Psychosis and human nature. London: Penguin Press.

Bentall, R.P., Corcoran, R., Howard, R., Blackwood, N., & Kinderman, P. (2001). Persecutory delusions : A review and theoretical integration. Clinical Psychology Review, 21(8), 1143-92.

Bentall, R. P., & Kaney, S. (1989). Content-specific information processing and persecutory delusions: An investigation using the emotional Stroop test. British Journal of Medical Psychology, **62**, 355-364.

Bentall, R. P., & Kaney, S. (2005). Attributional lability in depression and paranoia: Psychopathology and the attribution - self-representation cycle. British Journal of Clinical Psychology, 4, 475-488.

Bentall, R.P., Kaney, S., & Dewey, M.E. (1991). Persecutory delusions : An attribution theory analysis. British Journal of Clinical Psychology, **30**, 13-23.

Bentall, R.P., & Kinderman, P. (1998). Psychological processes and delusional beliefs : Implications for the treatment of paranoid states. In Wykes, T., Tarrier, N. & Lewis, S. (Eds.) Outcome and Innovation in the Psychological Treatment of Schizophrenia. (pp. 119-144.) Chichester. Wiley.

Bentall, R.P., Kinderman, P., & Kaney, S. (1994). The self attributional processes and abnormal beliefs : Towards a model of persecutory delusions. Behaviour Research and Therapy, **32**, 331-341.

Bentall, R.P., & Swarbrick, R. (2003). The best laid schemas of paranoid patients : Sociotrophy, autonomy and the need for closure. Psychology and Psychotherapy, **76(2),** 163-171.

Brewin, C.R. (1985). Depression and causal attributions : What is their relation? Psychological Bulletin, **98**, 297-309.

Campbell, W. K., & Sedikides, C. (1999). Self-threat magnifies the self-serving bias: A meta-analytic integration. Review of General Psychology, **3**, 23-43.

Candido, C.L., & Romney, D.M. (1990). Attributional style in paranoid vs. depressed patients. British Journal of Medical Psychology, **63**, 355-363.

Colbert, S.M., & Peters, E.R. (2002). Need for Closure and jumping to conclusions in delusion-prone individuals. Journal of Nervous and Mental Disease, **190**(1), 27-31.

Colby, K. M. (1977). Appraisal of four psychological theories of paranoid phenomena. Journal of Abnormal Psychology, **86**, 54-59.

Crawford, J.R., Parker, D.M., Allan, K.M., Jack, A.M., & Morrison, A (1991). The short NART : Cross validation, relationship to IQ and some practical considerations. British Journal of Clinical Psychology, **30**, 223-229.

Drake, R. J., Pickles, A., Bentall, R. P., Kinderman, P., Haddock, G., Tarrier, N., & Lewis, S. W. (2004). The evolution of insight, paranoia and depression during early schizophrenia. Psychological Medicine. 34, 285-292.

Dudley, R.E.J., John, C.H., Young, A.W., & Over, D.E. (1997a). Normal and abnormal reasoning in people with delusions. British Journal of Clinical Psychology, **36**, 243-258.

Dudley, R.E.J., John, C.H., Young, A.W., & Over, D.E. (1997b). The effect of self referent material on the reasoning of people with delusions. British Journal of Clinical Psychology, **36**, 575-584.

Fear, C.F., Sharp, H., & Healy, D.(1996). Cognitive processes in delusional disorders. British Journal of Psychiatry, **168**, 61-67.

Fenigstein, A., & Vanable, P.A. (1992). Paranoia and self-consciousness. Journal of Personality and Social Psychology, **62**, 129-138.

Freeman, D., Garety, P., Fowler, D., Kuipers, E., Dunn, G., Bebbington, P., & Hadley, C. (1998). The London-East Anglia randomized controlled trial of cognitive-behaviour therapy for psychosis IV: Self-esteem and persecutory delusions. British Journal of Clinical Psychology, 37, 415-430.

Freeman, D., Garety, P., & Kuipers, E. (2001). Persecutory delusions : Developing understanding of belief maintenance and emotional distress. Psychological Medicine, **31,** 1293-1306.

Frith, CD., & Corcoran, R. (1996). Exploring 'theory of mind' in people with schizophrenia. Psychological Medicine, **26,** 521-530.

Garety, P.A., & Freeman, D. (1999). Cognitive approaches to delusions : A critical review of theories and evidence. British Journal of Clinical Psychology, **38**, 113-154.

Garety, P.A., Hemsley, D.R., & Wessely, S. (1991). Reasoning in deluded schizophrenic and paranoid patients. Biases in performance of a probabilistic reasoning task. Journal of Nervous and Mental Disease, **179**, 194-201.

Garety, P.A., Kuipers, L., Fowler, D., Freeman, D., & Bebbington, P.E (2001). A cognitive model of the positive symptoms of psychosis. Psychological Medicine, **31**, 189-195.

Gilbert, D. T., Pelham, B. W., & Krull, D. S. (1988). On cognitive busyness: When person perceivers meet persons perceived. Journal of Personality and Social Psychology, **54**, 733-740.

Hemsley, D.R., & Garety, P.A. (1986). Formation and maintenance of delusions : A bayesian analysis. British Journal of Psychiatry, **149**, 51-56.

Hingley, S. (1992). Psychological theories of delusional thinking : In search of integration. British Journal of Medical Psychology, **65**, 347-356.

Huq, S.F., Garety, P.A., & Hemsley, D.R. (1988). Probabilistic judgements in deluded and non-deluded subjects. Quarterly Journal of Experimental Psychology, **40**A, 801-812.

John, C.H., & Dodgson, G. (1994). Inductive reasoning in delusional thought. Journal of Mental Health, **3**, 31-49.

Kaney, S., & Bentall, R.P. (1989). Persecutory delusions and attributional style. British Journal of Medical Psychology, **62**, 191-198.

Kemp, R., Chua, S., McKenna, P., & David, A. (1997). Reasoning and delusions. British Journal of Psychiatry, **170**, 398-405.

Kinderman, P. (2001). Changing causal attributions. In P.W. Corrigan & D.L. Penn (eds). Social Cognition and Schizophrenia. (pp.195-211). American Psychological Association. Washington.

Kinderman, P. & Benn, A. (2002). Attributional therapy : A case of paranoia and hallucinations. In P.Morrison (Ed). A Casebook of Cognitive Therapy for Psychosis. (pp.197-217). Brunner-Routledge. Sussex.

Kinderman, P., & Bentall, R.P. (1996a). The development of a novel measure of causal attributions : The internal, personal and situational attributions questionnaire. Personality and Individual differences, **20**, 261-264.

Kinderman, P., & Bentall, R.P. (1997a). Causal attributions in paranoia and depression : Internal, personal and situational attributions for negative events. Journal of abnormal Psychology, **106**, 341- 345.

Kinderman, P., & Bentall, R.P. (1997b). Attribution therapy for paranoid delusions : A case study. Behavioural and Cognitive Psychotherapies, **25**, 269-280.

Kinderman, P., & Bentall, R.P (1999). The clinical implications of a psychological model of paranoia. In Sanavio, E. (Ed). Behaviour and cognitive therapy today : Essays in honour of Hans J.Eysenck. (pp.131-162). Oxford, England : Elsevier Science Ltd.

Krawiecka, M., Goldberg, D., & Vaughn, M. (1977). A standardised psychiatric assessment scale for rating chronic psychotic patients. Acta Psychiatrica Scandinavica, **55**, 299-308.

Kruglanski, A. W. (1989). Lay epistemics and human knowledge: Cognitive and motivational bases. New York: Plenum.

Kruglanski, A.W. & Webster, D.M (1996). Motivated closing of the mind : “Seizing” and “freezing”. Psychological Review, **103**, 263-283.

Kruglanski, A.W., Webster, D.M., & Klem, A. (1993). Motivated resistance and openness to persuasion in the presence or absence of prior information. Journal of Personality and Social Psychology, **65**, 861-876.

Lee, H. J., & Won, H. T. (1998). The self-concepts, the other-concepts, and attributional style in paranoia and depression. Korean Journal of Clinical Psychology, **17**, 105-125.

Lord, F.M. (1967). A paradox in the interpretation of group comparisons. Psychological Bulletin, **68,** 304-305.

Lyon, H.M., Kaney, S., & Bentall, R.P. (1994). The defensive function of persecutory delusions : Evidence from attribution tasks. British Journal of Psychiatry, **164**, 637-646.

Martin, J. A., & Penn, D. L. (2002). Attributional style in schizophrenia: An investigation in outpatients with and without persecutory delusions. Schizophrenia Bulletin, **28**(131-142).

Melo, S., Taylor, J., & Bentall, R. P. (in press). 'Poor me' versus 'bad me, paranoia and the instability of persecutory ideation. Psychology & Psychotherapy - Theory, Research, Practice.

Nelson, H.E. (1982) National adult reading test (NART) test manual. Windsornfer. Nelson.

Peterson, C., Semmel, A., Von Baeyer, C., Abramson, L., Metalsky, G. I., & Seligman, M. E. P. (1982). The Attributional Style Questionnaire. Cognitive Therapy and Research, **3**, 287-300.

Roberts, G. (1991). Delusional belief systems and meaning in life : A preferred reality? British Journal of Psychiatry, **159**, (suppl. 14), 19-29

Rosenberg, M. (1965). Society and the adolescent self image. Princeton. Princeton University Press.

Rosenberg, M., Schooler, C., Schoenbach, C., & Rosenberg, F. (1995). Global Self-esteem and specific self esteem : Different concepts, different outcomes. American Sociological Review, **60**, 141-156.

Sweeny, P., Anderson, K., & Bailey, S. (1986). Attributional style and depression : A meta-analytic review. Journal of Personality and Social Psychology, **50**, 774-791.

Taylor, S.E. (1988). Positive illusions. New York : Basic Books.

Trower, P., & Chadwick, P. (1995). Pathways to defence of the self : A theory of two types of paranoia. Clinical Psychology : Science and Practice, **2**, 263-278.

Webster, D.M & Kruglanski, A.W. (1994). Individual differences in need for cognitive closure. Journal of Personality and Social Psychology, **67**, 1049-1062.

Williams, J.G., Barlow, D.H & Agras, W.S (1972). Behavioural measurement of severe depression. Archives of General Psychiatry, **27,** 330-333.

Young, H.F., & Bentall, R.P. (1997). Probabilistic reasoning in deluded, depressed and normal subjects : Effects of task difficulty and meaningful versus non meaningful material. Psychological Medicine, **27**, 455-465.

Zigler, E., & Glick, M. (1988). Is paranoid schizophrenia really camouflaged depression ? American Psychologist, **43,** 284-290.

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Table 1 : Demographic Data.

	Group		
	Control	**Depressed**	**Paranoid**
Age	38.13 (10.61)	44.79 (11.12)	38.21 (11.26)
Gender male	14	17	17
Female	10	7	7
Number of years in education	13.46 (2.59)	11.21 (2.08)	11.29 (1.57)
Months since 1st diagnosis	-	82.09 (86.30)	63.53 (98.32)
Previous psychiatric admissions	-	2.08 (2.54)	2.63 (3.97)
KGV total	2.08 (0.93)	11.00 (3.32)	18.67 (4.94)
NART	115.50 (5.82)	104.92 (13.19)	107.10 (11.01)
BDI – II	4.67 (5.18)	33.83 (13.94)	29.78 (13.17)
Self-esteem	16.17 (4.51)	29.46 (4.73)	27.59 (5.85)
Paranoia	31.83 (8.69)	29.56 (4.73)	27.59 (5.85)
Need for closure	166.88 (14.61)	165.39 (17.29)	169.50(19.10)

Table 2: Mean and standard deviations (in parentheses) of the number of questions asked, and attributional decisions reached, by group on the reasoning task.

	Group		
	Control	**Depressed**	**Paranoid**
Mean number of questions	5.10 (1.86)	3.43 (1.67)	1.81 (1.45)
Item 1	7.67 (4.08)	4.79 (4.62)	2.17 (3.21)
Item 2	4.17 (2.43)	3.42 (1.79)	1.63 (1.50)
Item 3	4.79 (3.28)	3.33 (1.49)	2.13 (2.05)
Item 4	3.75 (2.51)	3.13 (2.56)	1.67 (1.71)
Item 5	5.54 (3.39)	2.50 (1.98)	1.50 (1.53)
Attributional decisions			
Internal	1.38 (.77)	1.79 (1.35)	1.71(1.20)
External-personal	1.63 (.65)	1.58 (1.18)	1.71(1.37)
Situational	2.00 (.66)	1.63 (.82)	1.58(1.06)

Table 3 : Means for the proportion of internal, external-personal and situational questions asked on the reasoning task.

	Mean	Std Error	confidence interval +95	-95
Internal				
Control	.36	.04	.29	.44
Depressed	.41	.04	.33	.49
Paranoid	.24	.04	.16	.31
External-Personal				
Control	.35	.05	.27	.44
Depressed	.38	.05	.29	.47
Paranoid	.51	.05	.42	.60
Situational				
Control	.28	.03	.23	.34
Depressed	.17	.03	.12	.22
Paranoid	.13	0.3	.01	.19

Table 4: 'Poor me' / 'Bad me' Paranoia : Means and standard deviations (in parentheses) of psychometric measures, number of questions asked, the attributional nature of questions and final attributional decisions, of the paranoid group divided into 'poor me' and 'bad me' paranoia.

	'Poor me'	**'Bad me'**
KGV	17.62 (5.20)	19.71 (4.72)
BDI-II	27.50 (11.87)	33.43 (17.55)
Self-esteem	25.45 (5.89)	31.71 (5.25)
Paranoia scale	72.75 (11.53)	68.14 (9.10)
Need for closure	172.27 (23.48)	168.29 (16.38)
Number of questions.	1.65 (1.42)	2.49 (1.72)
Proportion of Internal questions	.25 (.21)	.19 (.26)
Proportion of External-Personal Questions	.42 (.29)	.61 (.36)
Proportion of Situational questions	.17 (.16)	.05 (.07)
Internal Decisions	1.08 (.95)	2.43 (1.27)
External-personal Decisions	2.08 (1.50)	1.14 (1.21)
Situational Decisions	1.85 (1.07)	1.43 (1.13)