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Delusional discourse: An investigation comparing the spontaneous causal attributions of paranoid and non-paranoid individuals

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Research into the nature of attributional reasoning in paranoia has for the most part been restricted to questionnaire-based approaches. This fails to address the issue of whether a distinctive attributional style underpins the everyday talk of paranoid individuals. This study aimed to investigate whether attributional models of paranoid delusions applied to spontaneous attributions generated in the discourse of 12 paranoid and 12 non-paranoid speakers. Causal attributions for negative and positive life experiences were extracted from interview transcripts and rated using the Content Analysis of Verbatim Explanations (CAVE) technique. It was found that, as a proportion, paranoids made more attributions for negative events that were of an external-personal, stable and global nature (as attributional models would predict). They also made significantly more external-personal attributions for negative events and, in one of two datasets, showed a more external mean CAVE rating for negative events than the non-paranoid controls. This paper highlights important issues underlying the extraction of attributions from paranoid talk, and discusses the implications for attributional models of paranoia and future discourse-based research in this area.

Paranoid or persecutory ideas are the most common type of delusion reported by psychiatric patients, with 35% of a sample of 55 British psychiatric patients (Garety, Everitt, & Hemsley, 1988), and 37 out of a sample of 88 deluded patients in Denmark (Jorgensen & Jensen, 1994) expressing beliefs of this kind. Cross-culturally, psychiatric in-patients from Europe, the Caribbean, India, Pakistan, Africa, the Middle East and the Far East also report paranoid ideas more commonly than any other type of abnormal belief (Ndetei & Vadher, 1984; Stompe *et al.*, 1999).

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A number of psychological factors have been implicated in the formation of paranoid beliefs. Maher (1974, 1988) suggested that all delusions are the result of normal reasoning processes used to generate explanations for anomalous perceptual experiences (e.g. hallucinations). More recently, Garety and colleagues have argued that delusions result from a bias in probabilistic reasoning, which inevitably results in the paranoid individual jumping to conclusions when forming beliefs about events in their social world (Garety, Hemsley, & Wessely, 1991; Huq, Garety, & Hemsley, 1988). Frith and his colleagues, on the other hand, view paranoid delusions as resulting from a meta-representational problem whereby the individual is unable to understand the beliefs, thoughts and intentions of others (Corcoran, Mercer, & Frith, 1995; Frith, 1987, 1992).

The role of attributions, and attributional style in paranoid delusions has been well documented. Kaney and Bentall (1989) gave the Attributional Style Questionnaire (ASQ; Peterson *et al.*, 1982) to paranoid patients, psychiatric controls and normal participants, requiring each to generate possible causes for hypothetical positive and negative events (e.g. 'You go on a date and it turns out badly'; 'You win a prize'). The participants then rated their own causal statements on bipolar scales of internality, stability and globality. It was found that paranoid patients made excessively external, stable and global attributions for negative events, as well as excessively internal, stable and global attributions for positive events. Comparing a group of non-depressed paranoid patients, a group of non-paranoid depressed patients, and a group of patients who were both paranoid and depressed, Candido and Romney (1990) found support for Kaney and Bentall's (1989) findings. Paranoid patients again attributed positive events to themselves and negative events to others. The depressed patients exhibited the opposite attributional style, attributing negative events to themselves and positive events to others, while the patients who were both paranoid and depressed fell some where in between with regard to attributions for positive events but did not differ from the paranoid group in their attributions for negative events. Fear, Sharp, and Healy (1996) replicated Kaney and Bentall's (1989) findings with paranoid patients diagnosed as suffering from delusional disorder (a disorder characterized primarily by the presence one or more non-bizarre paranoid delusions). Won and Lee (1997) also reported similar results in paranoid patients living in South Korea. More recently, Kristev, Jackson, and Maude (1999) found that high suspiciousness ratings on the British Psychiatric Rating Scale (BPRS) correlated with an externalizing attributional style in first-episode psychotic patients. Using a new attributional measure, the Internal, Personal and Situational Attributions Questionnaire (IPSAQ), Kinderman and Bentall (1996a) reported that paranoid patients were especially likely to use external-personal (other-blaming) but not external-situational attributions for negative events. These findings are consistent with earlier research by Rosenbaum and Hadari (1985), who used Levenson's (1974) locus of control scale to demonstrate that paranoid patients believe that the course of life is influenced by powerful others, a finding that has more recently been replicated by others (Kaney & Bentall, 1989; Lasar, 1997).

Findings like these are, to some extent, aligned with earlier accounts of paranoid ideation that emphasize the defensive nature of persecutory delusions (Colby, Faught, & Parkinson, 1979; Zigler & Glick, 1988). This idea has been incorporated into attributional models of paranoia, with the central claim that paranoid patients have a negative self-schema but make a defensive externalizing attributional response when encountering a threatening event. It was argued that the external attributions made about negative events by paranoid patients have the function of minimizing the perceived gulf between the patients' representations of their actual self and their ideal self (Bentall, Corcoran, Howard, Blackwood, & Kinderman, 2001; Bentall & Kinderman, 1999; Bentall, Kinderman, & Kaney, 1994; Kinderman & Bentall, 1996b). This tendency to excessively attribute positive events to internal factors and negative events to external causes appears to be an exaggeration of the self-serving bias observed in ordinary people, especially when threatened (Campbell & Sedikides, 1999; Hewstone, 1989; Zuckerman, 1979).

More recently, Bentall *et al.* (2001) have emphasized the reciprocity and essentially dynamic relationship between attributions and self-representations in both ordinary people and psychiatric groups. They review evidence that attributions influence current self-representations, with internal attributions for negative events leading to more negative self-representations, and external-situational and external-personal attributions leading to more positive self-representations. However, they also argue that changes in an individual's representation of the self influence the subsequent attributions that the individual makes for negative and positive events.

The attributional style of paranoid patients has so far been investigated using questionnaires and hypothetical vignette measures, such as the ASQ and the IPSAQ. However, these instruments can be criticized for a variety of reasons. Reivich (1995) considered some of the possible shortcomings of the ASQ, highlighting in particular its poor internal consistency, test – retest reliability, construct validity and criterion validity. These limitations were acknowledged, to some extent, by Kinderman and Bentall (1996a) in their construction of the IPSAQ. However, all questionnaires claiming to measure attributional style are problematic for several other reasons. The participants need first of all to consent to the actual process of completing the questionnaire, and the effort expended when doing so is likely to vary considerably. More seriously, attributional questionnaires require participants to form their own subjective interpretation of the hypothetical events portrayed in the vignettes (Schulman, Castellon, & Seligman, 1989). This can potentially lead to nuances in meaning and comprehension that affect the attributional responses of the individual participants. Major problems with ecological validity exist in that the participants have no real stake or interest in the scenarios described, and therefore have nothing to lose with regard to the attributions they make. Hence, the causal attributions recorded this way are neither spontaneously generated nor entirely natural; they are actively required by the questionnaire itself rather than being products of the individual's own discourse. Questionnaires in general restrict the nature of the responses that participants are able

to give (Harré, 1979; Rosier, 1974), in some cases making it inevitable that they opt for responses that they would not spontaneously provide under other circumstances. With these limitations in mind, it seems crucial to examine the spontaneous attributions made by paranoid individuals, using more qualitative methodologies.

A number of previous investigators have used qualitative approaches to examine the speech of paranoid patients. For example, in her analysis of two interviews, Georgaca (2000) demonstrated that 'delusions' are argued and negotiated using the same constructive strategies used by ordinary people when avowing 'non-delusional' beliefs. Harper (1992) used interview data to argue for a social constructionist approach to the related concepts of 'paranoia' and 'delusion', concluding that psychiatric definitions of these terms are not only inconsistent and contradictory but also serve to meet political and professional interests. However, no qualitative studies have so far focused on attributional reasoning in the spontaneous talk of paranoid patients.

A number of attributional coding schemes are available; for example, the Leeds Attributional Coding System, which has been used to study family therapy processes (Stratton *et al.*, 1986), and the Content Analysis of Verbatim Explanations (CAVE; Reivich, 1995; Schulman *et al.*, 1989), which has been used to study political discourse (Zullow, Oettingen, Peterson, & Seligman, 1988) and depressive mood shifts in psychotherapy patients (Peterson, Luborsky, & Seligman, 1983). The CAVE was constructed as a means of applying the principles of the ASQ to naturally occurring discourse, and is therefore suitable for examining paranoid attributional processes, which have previously been studied using the ASQ (e.g. Kaney & Bentall, 1989). It offers a way of isolating spontaneous attributions and then rating them along dimensions of internality, stability and globality. It is flexible in the sense that it can be used to explore attributions made in written form, for example, in essays about negative life events (Peterson, Bettes, & Seligman, 1985) and in dysfunctional thought records (Riskind, Castellon, & Beck, 1989), or in verbal form, for example, psychotherapy sessions (Peterson *et al.*, 1983) and talk about war-time experiences (Peterson, Seligman, & Vaillant, 1988).

The present study was a direct test of the validity of attributional models of paranoia when applied to the spontaneous causal attributions generated by paranoid individuals for negative and positive life experiences. Using the CAVE method to analyse interview transcripts, it was predicted that paranoid individuals would make more external-personal attributions for negative life events, and especially external-personal attributions that are also highly stable and global, than non-paranoid individuals.

Method

Participants

The clinical sample consisted of 12 participants, 10 with a diagnosis of paranoid schizophrenia, 1 with a diagnosis of schizoaffective disorder and 1 with a diagnosis of delusional disorder according to DSM-IV criteria (American Psychiatric Association, 1994).

All were suffering from persecutory delusions at the time they were interviewed. Of these, six were receiving in-patient treatment, five were under the care of psychiatrists as out-patients, and one was receiving treatment from a clinical psychologist, after having refused to see a psychiatrist. All were in receipt of neuroleptic medication except the out-patient who was being seen by a clinical psychologist. Their mean age was 46.82 years ($SD = 12.69$) with nine being male and three being female. Current symptomatology was assessed using the Positive and Negative Syndromes Scale (PANSS; Kay, Opler, & Fiszbein, 1986), with the requirement that participants scored 4 or higher on each of the delusions and suspiciousness subscales. Level of education was recorded and current depressive symptomatology was assessed using the Beck Depression Inventory (BDI; Beck & Beamesderfer, 1974). The mean BDI score for this group was 21.70 ($SD = 14.23$).

A comparison sample consisting of 12 non-psychiatric control participants from the general population was recruited through opportunity sampling. Each was matched to a clinical participant for sex and approximately for age and level of education. Sampling was achieved by using informal contacts to identify people who were similar to the patients on the matching variables. Some were members of the University of Manchester administration and portering staff, and others were identified by asking departmental staff or informal contacts to nominate potential participants. Individuals trained in psychology or who were members of the mental health professions were excluded. The mean age of the group was 43.17 ($SD = 13.82$). Depressive symptomatology was also assessed using the BDI. The mean BDI score was 5.82 ($SD = 5.40$).

Consistent with previous findings, a significant group difference was found for BDI score, $t = 3.32$, $p < 0.01$, accounted for by the control sample scoring less than the clinical sample. Participants' ages ranged from 20 through to 68 years.

Interview

All participants were interviewed using a semi-structured interview schedule. This involved asking them to think about both positive and negative events that they had experienced throughout their lives and to talk about them in detail. The interviewer generally began the interview by asking the participant to talk about happy or positive times, before moving on to negative or unhappy times, and then concluding with a discussion of recent events. In order to maintain the pace of the interview, the interviewer asked for clarification of specific points, and gave prompts where necessary. Closed questions, which implied a particular attributional response, were avoided but open questions designed to elicit causal statements (e.g. 'Why do you think that happened?') were asked. The general goal was to keep the participants talking about their experiences so as to facilitate the spontaneity of the attributions that they provided. The interview was concluded when the interviewer felt that the participant was running out of things to say but had provided sufficient detail about their experiences to allow attributional coding. This was usually after about half an hour.

Analysis of interviews

All interviews were analysed by two researchers, the first author and a paid postgraduate who had considerable experience in attributional coding, using the Content Analysis of Verbatim Explanations (CAVE; Reivich, 1995; Schulman *et al.*, 1989). This involved a two-stage process:

1. Extraction of attributions

Attributions were extracted from each interview by both researchers independently. In this case, an attribution was defined as an 'event-explanation' unit or any instance where the participant explicitly describes an event of some sort, that is either followed or preceded by an attempt to explain or assign causality for its occurrence. Events included those that were mental (e.g. 'I was afraid'), social (e.g. 'I got a pay rise') or physical (e.g. 'I got in a car accident'). It was necessary for these to be unambiguously good or bad from the individual's perspective, although they may have occurred in the past, present or hypothetical future. Events that contained both good and bad elements, neutral events, and events that did not affect the individual in any way were not extracted. When extracting, the researchers noted whether the events were positive or negative, and ignored any for which this was ambiguous. Explanations were those causal statements made by the individual for the event in question. They were not simply agreements with or quotes from another person. A clear causal relationship between the explanation and the event was deemed necessary. Mere descriptions of event sequences were not extracted. The researchers then worked together to agree on the attributions extracted from each interview.

Because of the complex nature in which participants constructed accounts of their experiences, the extraction of attributions was not a straightforward process. On occasion, one rater would identify a passage of speech as an attribution whereas the other would not. For example:

> **Event:** He got wind (found out) that I grassed him up (informed the police)
>
> **Explanation:** He murdered someone I knew and he obviously thought I fried him (informed on him) 'cos eleven times he came to kill me

This was initially extracted by one researcher and was only agreed upon by the other researcher after subsequent discussion. In other instances, extractions were later rejected, as they appeared to be explanations for why the event was either negative or positive rather than for why the event had actually occurred. For example:

> **Event:** The last twenty-five years (been particularly negative time)
>
> **Explanation:** I lost that (job) contract so then after that I'm an informer (labelled as such)

Because of these kinds of difficulties, it was decided that two separate databases of identified attributions were required. The 'core' attribution dataset contained 'consensus' attributions, or those that both researchers had independently identified,

and were therefore already agreed upon. The 'extended' attribution dataset contained 'consensus' attributions as well as 'agreed' attributions, or those that only one researcher had extracted when working independently, but that were agreed to be attributions on subsequent discussion. A small proportion of attributions initially identified by any one researcher were rejected at this stage. The dataset of core attributions was known as the core dataset. The dataset of core attributions together with agreed attributions was known as the extended dataset.

The percentage of all statements initially considered as attributions, which were extracted by both researchers independently, varied between 15.38% and 72.73% for the 24 interviews (mean = 40.50%). The percentage of attributions extracted by only one researcher, which were later agreed to be attributions by the second researcher and hence included in the extended dataset, varied between 26.00% and 100.00% (mean = 73.90%). The percentage of statements originally identified as attributions by at least one researcher, which were subsequently included in the extended dataset across all 24 interviews, was 81.22%.

2. Rating of attributions

Once identified, all attributions were rated by the researchers independently. This required scoring each explanation unit along a 7-point continuum across the dimensions of externality-internality, unstability-stability and specificity-globality.

Externality-internality referred to the extent to which the attribution implied either an external (other persons or situational factors) or internal (self-related) cause. A distinction was also drawn between external attributons that implied causality on behalf of another person or group of persons (external-personal) and those that implied situational or circumstantial causality (external-situational). This was done with the researchers independently classifying each attribution which had been initially coded external as either personal or situational.

Stability-unstability referred to the transience or persistence in time of the cause, whether chronic (stable) or temporary (unstable). The general question addressed by the researchers when examining the transcripts was: given the event, how long-lasting or transient was the described cause? Four interacting criteria were considered that helped to determine the stability rating: *the tense of the cause*, *probability of future reoccurrence of the cause* and *whether the cause was, or would be, intermittent* (e.g. the weather) or *continuous* (e.g. a physical trait).

Globality-specificity referred to the extent to which a cause may have affected an individual's whole life (global) or just a few areas (specific). Although this is intercorrelated with stability-unstability to some extent, it was important to hold time constant when rating this. As a heuristic, the researchers tried to establish the overall impact that the cause may or may not have had on the individual's life, by considering two major categories, those of *achievement* and *affiliation*.

After rating the attributions independently, the researchers then worked together to agree on a rating for each. In this particular instance, scores of 1, 2 or 3 were deemed to lie to one end of the continuum (e.g. external), 4 was deemed to be a neutral value (e.g. neither exclusively external nor internal) and 5, 6 and 7 were deemed to lie at the other end (i.e. internal).

The inter-rater reliability for the independent ratings was generally good. For the extended dataset, Pearson's product moment correlation coefficients were $r = .82$ for the internality-externality dimension, $N = 479$, $p < .001$; $r = .31$ for stability-unstability, $N = 479$, $p < .001$; and $r = .59$ for globality-specificity, $N = 479$, $p < .001$. Cohen's κ for the classification of external attributions as either personal or situational was .64, $p < .001$, $N = 255$. For the core dataset, $r = .87$ for internality-externality, $N = 203$, $p < .001$; $r = .49$ for stability-unstability, $N = 203$, $p < .001$; $r = .63$ for globality-specificity, $n = 203$, $p < .001$; and $\kappa = .65$, $N = 108$, $p < .001$ for external attributions classified as either personal or situational. Thus, agreement on the characteristics of the attributions was generally higher for the core dataset than for the extended dataset.

The transcription of interviews, extraction of attributions and attributional coding were all lengthy research procedures requiring approximately 9 person-hours per interview in total.

Results

The mean number of words spoken by the paranoid participants was 2,533.50 ($SD = 1,806.77$) and the mean number spoken by the controls was 1,325.75 ($SD = 488.83$). This difference was significant ($t = 2.24$, $df = 12.60$, $p < .04$).

For the core attribution dataset, no significant differences were found in the mean internality, stability or globality CAVE ratings for either positive events or negative events. However, although no significant differences were observed in the total number of attributions made for either positive or negative events, significant differences were observed when the different types of attributions were considered (as shown in Table 1). Because very specific predictions had been made about the types of attributions expected of each group, one-tailed tests were employed unless otherwise specified. The paranoid patients made fewer internal attributions for positive events than the controls ($t = 2.21$, $p < .05$, two-tailed). There was a trend for them also to make fewer external-situational attributions for negative events ($t = 1.66$, $p < .06$). As predicted, they also made more external-personal attributions for negative events ($t = 2.72$, $p < .005$). When the number of attributions, either positive or negative as appropriate, were included as a covariate, the difference between the number of external-personal attributions made for negative events by the two groups remained significant ($p < .05$) but the other differences were no longer significant.

Table 1. Core attribution dataset. Mean values for number of attributions, type of attributions, and the proportion of attributions of an external-personal, stable and global nature for paranoid individuals and non-paranoid controls (*SD* in parentheses)

		Type of attribution			Proportion of attributions that are External-Personal, Stable and Global
Type of event	Number of Attributions	Internal	External-Situational	External-Personal	
Positive events					
Paranoid	2.58	0.67	0.67	0.252	2.08
	(2.02)	(0.78)	(0.78)	(0.45)	(7.22)
Control	3.83	1.45	1.36	0.18	0.00
	(2.17)	(0.93)	(1.21)	(0.40)	(0.00)
Negative events					
Paranoid	6.00	1.00	1.25	3.33	0.11
	(2.59)	(0.85)	(1.42)	(2.23)	(0.20)
Control	4.42	1.08	1.58	1.33	0.00
	(2.68)	(1.16)	(2.19)	(1.23)	(0.00)

As it was predicted that the paranoid patients would make more external-personal, stable and global attributions for negative events, the proportion of attributions for positive and negative events alike that were of this kind were calculated. In the case of positive events, very few attributions of this kind were made and no difference was observed ($t = .96$, $p = .18$). However, for negative events the difference was highly significant ($t = 1.86, p < .001$) with approximately 11% of the attributions made by the paranoid patients being of this kind, whereas no attributions of this sort were made by the controls.

The same analyses were carried out in the extended attribution dataset (see Table 2). A significant difference was found in the mean internality CAVE rating for negative events, with paranoid patients making more external attributions ($t = -.59$, $p < .02$, one-tailed). Paranoids also made significantly more attributions for negative events than controls ($t = 2.01, p < .001$) with a slight trend for controls making more attributions for positive events ($t = -1.67, p < .10$). Again, paranoid patients made more external-personal attributions for negative events than controls ($t = 2.42, p < .001$). When the number of attributions for negative events was included as a covariate, however, this difference was no longer significant ($p = .24$).

As in the core attribution dataset, the proportion of attributions for negative and positive events alike, that were external-personal, stable and global in nature, were calculated. Again, in the case of positive attributions, few attributions of this kind were made and no difference was observed ($t = -2.47$, $p = .59$). The difference was again significant, however, for negative events ($t = 2.12, p < .001$), with approximately 5% of

Table 2. Extended attribution dataset. Mean values for number of attributions, type of attributions, and the proportion of attributions of an external-personal, stable and global nature for paranoid individuals and non-paranoid controls (*SD* in parentheses)

		Type of attribution			Proportion of attributions that are External-Personal, Stable and Global
Type of event	Number of Attributions	Internal	External-Situational	External-Personal	
Positive events					
Paranoid	5.25	1.42	1.50	0.67	0.01
	(2.34)	(1.38)	(0.90)	(0.78)	(0.02)
Control	7.17	2.58	1.92	0.58	0.02
	(3.24)	(1.68)	(1.44)	(0.67)	(0.06)
Negative events					
Paranoid	16.75	3.08	3.33	8.42	0.05
	(9.36)	(2.23)	(3.55)	(6.47)	(0.20)
Control	4.42	1.08	1.58	1.33	0.00
	(2.68)	(1.16)	(2.19)	(1.23)	(0.00)

the attributions made by the paranoid patients being of this kind. Again, no attributions of this sort were made by the controls.

In total, 13 attributions for negative events (from the paranoid sample) were rated as external-personal, stable and global. These are shown in Table 3.

Discussion

There has been some debate about the epistemological status of delusions. Although some authors in classical and modern psychiatry have argued that the abnormal beliefs of psychiatric patients are meaningless and qualitatively different from normal beliefs and attitudes (Berrios, 1991; Jaspers, 1913/1963), many recent authors have questioned whether this is the case or whether, indeed, any coherent account of the concept of a 'delusion' can be given (Georgaca, 2000; Harper, 1992). The position of cognitive psychologists (e.g. Bentall *et al.*, 2001) investigating abnormal beliefs lies somewhere between these positions, arguing that 'delusional' statements are not different in kind from other beliefs and attitudes, but that they might differ in degree by virtue of various cognitive deficits and biases. The analysis we have reported in this paper is neutral with respect to these positions, as we have made no attempt to distinguish between 'delusional' and 'non-delusional' speech-acts.

The fact that some statements were extracted as attributions by both researchers (i.e. consensus attributions), whereas others were not, suggests that some statements were more easily identifiable as explanatory than others according to the conservative

Table 3. External-personal, stable, and global attributions for negative events in the paranoid sample, including interview extracted from, whether each was an agreed or consensus attribution, and final dimensional ratings

Event	Explanation	Interview	Agreed/ Consensus attribution	Externality rating	Stability rating	Globality rating
1) 18 months of diarrhoea, 8 months of sat in a chair only being able to say 'yes' and 'no' because my vocabulary had been totally shattered	What the mental health service have done to me	M	Agreed	1	7	7
2) They won't ever accept my version of events	Because in the mental health service you are deemed to be the mental patient	M	Agreed	1	7	7
3) Never did fit in	Quite a lot of bad attitude	M	Consensus	1	5	6
4) Never did fit in	Of course the stage voice, they say I'm mentally ill for that	M	Agreed	2	6	6
5) I cashed her giro	'Cos she's that untogether	M	Agreed	1	6	6
6) I've had to run to the loo again	Because of the side effects of medication that I'm forced to take	M	Consensus	1	6	6
7) I don't really fit in R. (town)	They're not like me, they're different than me	H	Consensus	2	6	5
8) Things had deteriorated quite drastically	Well I'd been sexually assaulted at twelve	E	Consensus	1	5	7
9) I think they're putting this earth at risk by leaving me here	'Cos there's some absolute maniacs in here	E	Consensus	1	5	5
10) I sold me van. . . spent all the money on drugs	When she left me	P(2)	Agreed	1	5	6
11) He got wind (he found out) that I grassed him up (informed the police of him)	'Cos he murdered someone I knew and he obviously (thought) I fried him (told the police) cos eleven times he came to kill me	P(2)	Agreed	2	5	6
12) I've turned down four flats you know what I mean	'Cos as soon as they find out where I am, they're gonna come and kill me	P(2)	Agreed	1	6	7
13) But she (biological mother) took our J., you know what I mean. She never took me and our kid	'Cos obviously her new partner says all 'Oh take J., but we can't have all that baggage cos I want my own kids'	P(2)	Agreed	1	5	6

criteria employed in the CAVE technique. Some statements appeared to occupy a 'grey' area in which elements of the verbal behaviour recorded were ambiguous in implying a causal inference. Consistent with this notion, the inter-rater reliabilities of the ratings for consensus attributions (the core attribution dataset) were generally higher than for the ratings of both consensus and agreed attributions together (the extended attribution dataset). In other words, those statements that were unambiguously explanatory were also those that most explicitly contained information that allowed them to be coded as external (or internal), stable (or unstable) and global (or specific). Whereas these statements appear to fit the mould of 'attribution' as defined by the CAVE technique, other statements seem to be more implicitly geared towards the function of attribution.

Despite these difficulties in extracting attributions, it is important to note that the coding of attributions along the various attributional dimensions was mainly achieved with an acceptable level of inter-rater reliability for both datasets. Overall, the density of attributional statements within our sample appeared to be relatively high. As an average across both the paranoid and non-paranoid groups, an attribution was generated every 97 words. It should be noted, however, that the paranoid patients spoke nearly twice as many words as the controls and yet made only slightly more attributions. Paranoid patients therefore generated an attribution, on average, every 115.2 words, and the controls every 74 words. These proportions are consistent with previous estimates (Zullow *et al.*, 1988).

The data reported broadly support the attributional model of paranoia. In general, paranoid patients made more external-personal attributions for negative events (although this was not significant when the number of attributions for negative events was entered as a covariate in the extended attribution dataset). More important, the finding that paranoids made significantly more external-personal, stable and global attributions for negative events than the non-paranoids (who did not make any) in both datasets is in direct keeping with the attributional model. That these accounted for low proportions of the attributions for negative events in both datasets (core dataset = 11%, extended dataset = 5%), however, suggests that the attributional model may not account for as much of the data as might have been expected. Of course, it is difficult to decide how many attributions of this kind actually constitute a psychologically significant amount. As the controls did not make any at all, a relatively small number may be sufficient to contribute to the building of a paranoid worldview. Certainly, if this style of attributional reasoning is maintained over a considerable period of time, attributions of this sort will be substantial in number. Moreover, as many statements for negative events fell only slightly short of the conservative external-personal, stable and global criteria employed, it is possible that we have considerably underestimated the extent to which patients describe their experiences in this way. (For example, attributions rated as external-personal and global yet neutral on stability, or possibly external-personal, stable, yet more specific than global, were not included in our analyses.)

Our conclusion that the data offer support for the attributional model must be further qualified in two ways. First, despite the observed group differences, there was

considerable variability in the extent to which the different paranoid patients generated attributions of the predicted type. Indeed, only four patients generated attributions that were coded as external-personal, stable and global. These differences may reflect the insensitivity of the CAVE coding technique as described above. We have already acknowledged the difficulties of identifying attributions in discourse. By specifying in advance that we were seeking external-personal, stable and global attributions, we excluded from our analysis attributions which may have been important in paranoia by virtue of some subset of these characteristics. It is therefore possible that the attributional coding scheme employed here does not capture the peculiarities of patients' discourse in a way that is completely satisfactory, and that a more valid approach will appear in the future. Alternatively, the differences in the number of attributions recorded may reflect genuine individual differences. For example, it is possible that abnormal attributions contribute to a clinician's judgment that patients are deluded in only some cases, and that factors other than attributions may be important in some patients. Further studies using qualitative methodologies may enable the explication of these possibilities.

Second, given that much of the verbal behaviour generated by the participants was not explicitly attributional, it remains possible that there are differences in the way that paranoid people and non-paranoid people construct their accounts of the world and their experiences that are not captured by the attributional model. It is possible that a more qualitative approach to the data may also be illuminating in this respect.

Our sample size of 12 participants in each group may possibly be singled out as a limitation on the study. It might be argued that it is particularly difficult to generalize from the findings obtained from the control group, as this group was a convenience sample and therefore not truly representative of the population as a whole. To get a more representative sample it would have been necessary to randomly select a much larger group of individuals from the population, which would have precluded our intensive analysis of the data (although it may be possible in the future to use a simplified version of the approach with speech samples from larger groups, possibly, recruited from controlled treatment trials or other large-scale studies). Moreover, we studied group differences across 479 attributional statements, with each control participant matched to a participant in the clinical group for age, sex and level of education, and with ages ranging from 20 to 68 years. With these considerations in mind, our sample size seems to be appropriate for the kind of analysis we carried out.

As we have already indicated, the problems alluded to with regard to extracting attributions appear to highlight issues of the complex nature of paranoid talk, and of how some segments of talk, whilst appearing to contain attributional elements, do not always fit neatly into the CAVE technique's extraction criteria. Rather than reflecting a limitation of the study, these can be taken as particularly illuminating in themselves and as offering directions for future research. The sufficiently high levels of inter-rater reliability for the attributional rating also provides evidence that there was no real overriding problem in the actual application of the CAVE technique by the researchers.

In conclusion, the main strong point of this study is its ecological validity. Attributions were produced spontaneously for events in which the speakers actually held a substantial degree of personal stake and interest. This stands in contrast to the customary administration of questionnaires containing hypothetical scenarios that the individual is asked to empathize with before making attributional inferences (e.g. the Attributional Style Questionnaire). The way in which the data were collected is therefore representative of many situations in which individuals may actually contribute to their own paranoid worldview through talking to others and generating attributions of a particular nature.

The findings have direct implications for psychological interventions for paranoid delusions, specifically cognitive-behaviour therapy. Essentially, the therapist may be able to assist the client in pinpointing instances in which 'paranoid' attributions are spontaneously generated, and work with them to explore other interpretations and attributions for the event in question. A case study that takes this approach has been described by Kinderman and Bentall (1997). It is possible that the systematic analysis of speech following therapy sessions could be used as a means of enhancing this approach.

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