

Attributional style and delusions: an investigation based on delusional content

HM Sharp¹, CF Fear², D Healy^{1*}

¹Department of Psychological Medicine, Hergest Unit, Bangor, North Wales LL57 2PW; ²Wotton Lawn Hospital, Gloucester, UK

(Received 8 June 1996; accepted 4 November 1996)

Summary – Individuals with persecutory delusions have been reported to make external and stable attributions for negative events and to have a tendency towards internal attributions for positive events. It remains unclear whether this abnormality is present in individuals with non-persecutory delusions. Using the Attributional Style Questionnaire, we assessed the attributional style of 19 individuals with persecutory or grandiose delusions (PG), 12 individuals whose delusional beliefs were non-persecutory and non-grandiose (NPG) and 24 controls. The PG group displayed externality in their causal attributions for bad events but those in the NPG group did not differ from controls. Both deluded groups were significantly more stable in their attributions for bad events in comparison to controls. Such findings argue against a primary role for attributional biases in the genesis of delusions, although a role in shaping delusional content and maintaining the disorder and a role for external attributions in defending against reductions in self-esteem cannot be excluded.

psychosis / delusions / causal attributions

INTRODUCTION

Attribution theory concerns the way in which people attribute causes to significant events which occur in their lives. A number of dimensions have been proposed (Försterling, 1988), but the three most commonly measured are internal/external, stable/unstable and global/specific. The Attributional Style Questionnaire (ASQ) (Peterson et al, 1982) was developed for use in patients who are depressed and it has been found that such patients consistently make more internal, global and stable attributions than controls, especially for negative events (Sweeney et al, 1986).

The observation that patients with persecutory delusions tend to blame circumstances and others for their failures and to take exaggerated credit for their successes has led to an investigation of attributional styles in patients with persecutory delusions (Kaney and Bentall, 1989; Candido and Romney, 1990). Such subjects have been found to make abnormally global and stable responses but,

in contrast to depressives, they show significantly more external attributions for bad events, and a tendency towards internal attributions for good events (Kaney and Bentall, 1989; Candido and Romney, 1990). These results support the view of Zigler and Glick (1988) that paranoia is a form of 'camouflaged depression' and that persecutory delusions reflect an accentuation of the self-protective cognitive bias seen in normal subjects in response to stress (Taylor, 1983). Bentall et al (1994; Bentall, 1994) inferred from this that persecutory delusions represent a defence against low self-esteem.

However, while these studies have involved subjects with both paranoid schizophrenia and delusional disorders, they pose two sets of problems. First, schizophrenia, by definition, entails a greater range of psychotic phenomena than simply delusions. Second, the delusional contents investigated were only persecutory and the findings may not generalize to other delusional contents. A priori, it would seem that this attribu-

* Correspondence and reprints.

tional style might account for the genesis of persecutory mental states or delusions but not for persecutory delusions only. Before erecting a general theory to account for the role of attributions in the formation of delusions, it is particularly important to establish whether a similar attributional style is found specifically in delusional disorders and in particular whether it is found in deluded individuals with non-persecutory belief contents.

The concept of delusional disorder (DD) was first included in DSM-III-R (APA, 1987). It was predicated upon a notion of individuals who harbour well-structured delusional systems in the absence of a deterioration of personality or prominent associated psychopathology. The inclusion criteria and subtypes of DD closely resemble older concepts of paranoid psychosis but the new name suggests an intention to distinguish the disorder from paranoid schizophrenia. Distinguishing DD from schizophrenia makes it possible to study a group of patients with primarily delusional phenomena in the gross absence of other symptomatology. As such, they represent the 'purest' available sample for the study of delusions.

Fear et al (1996) studied the cognitive biases of a group of 29 patients who satisfied DSM-III-R criteria for DD. They found the DD group to be more external and more stable in their attributions for bad events in comparison to controls, suggesting that this attributional style was potentially a characteristic of patients with DD. Within the DD group patients with persecutory (PD) and non-persecutory delusional (NP) contents did not differ significantly from each other. However, five of the nine subjects in the NP group had grandiose delusions. Given Kaney and Bentall's (1989) finding that individuals with persecutory delusions also show a tendency towards a grandiose attributional style, attributing good events more internally than matched controls in addition to bad events externally, and given the large proportion of individuals with grandiose beliefs in the non-persecutory deluded group in the Fear et al (1996) study, it is perhaps not surprising that no differences were found in the attributional style of the PD and NP groups. The question of whether or not individuals with non-persecutory/non-grandiose delusions differ in their attributional style from individuals with persecutory/grandiose delusions therefore remains unanswered. The aim of the present study, therefore, was to compare the attributional style of DD subjects with persecutory or grandiose delusions to those DD subjects with other delusional contents.

METHOD

Subjects

Thirty-one patients currently meeting DSM-III-R (APA, 1987) criteria for DD were recruited from psychiatrists across North Wales. All were currently living in the community. The diagnostic classification of the subjects was made on the basis of interview and case note data. They were divided into two groups according to delusional content: a persecutory/grandiose group (PG), in which there were 19 subjects, 14 with persecutory delusions and five with grandiose delusions, and a non-persecutory/non-grandiose group, in which there were 12 subjects, eight with somatic delusions and four with morbid jealousy. A group of 24 normal controls were enrolled in the study, selected from hospital staff and the non-professional acquaintances of the authors. They were group matched to the PG and NPG deluded groups on the basis of age and sex.

Assessments and procedure

The interviewing and testing of subjects was completed by one investigator (CFF). Each individual completed one or two 1 hour testing sessions and the following measures were administered in a standard order. First, a number of measures of psychopathology were administered in order to characterize the two deluded groups more fully. The Maudsley Assessment of Delusions Schedule (MADS) (Wessely et al, 1993) was used as a standardized interview to identify and rate aspects of the deluded individual's abnormal beliefs. The Beck Depression Inventory (BDI) (Beck and Beamesderfer, 1974) was used to measure co-morbid depressive symptom levels as these are known to affect attributional style. The Magical Ideation Scale (MIS) (Eckblad and Chapman, 1983), a 30 item true/false self-report scale, was administered to assess levels of schizotypal ideation. These were followed by the Dysfunctional Attitude Scale (DAS) (Weissman, 1979), a 40 item questionnaire developed for use with depressed patients in which the participant responds to propositions (such as "I must be a useful, productive, creative person or life has no meaning"), on a seven point scale, indicating degree of agreement or disagreement. The first of the above four measures was given only to the deluded individuals as it cannot be administered in the absence of a firm delusional belief; however, the remaining three measures were completed by all subjects.

Finally, all subjects completed the 12 item ASQ (Peterson et al, 1982) which consists of six hypothetical 'good events' (eg, "You become very rich.") and six hypothetical 'bad events' (eg, "A friend comes to you with a problem and you don't try to help."). For each

Table I. Demographic and descriptive data for all three study groups together with summary statistic for group comparison on each variable.

Variable	Control (n = 24)	PG (n = 19)	NPG (n = 12)	Statistic ¹
Age	42.88 (13.12)	52.89 (14.33)	44.00 (16.46)	$F(2,52) = 2.85, NS^2$
Sex ratio (M:F)	10:14	5:7	12:7	$\chi^2(2) = 2.36, NS$
Duration of illness (years)	N/A	17.1 (11.9)	12.9 (14.2)	$F(1,29) = 0.73, NS$
Age of onset (years)	N/A	35.8 (15.3)	31.1 (14.4)	$F(1,29) = 0.79, NS$
MADS total score	N/A	39.2 (6.7)	41.4 (8.3)	$F(1,25) = 0.46, NS$

PG: persecutory or grandiose delusions; NPG: non-persecutory and non-grandiose; MADS: Maudsley Assessment of Delusions Schedule; NS: not significant. ¹Group comparisons were performed using one-way analysis of variance for parametric data and χ^2 procedures for categorical data; ²NS: non-significant at the $P \leq 0.05$ level.

event the subjects were asked to imagine the event happening to them and to write down the most likely cause of that event. They then rated each causal statement on three separate seven point attributional dimensions: internal/external (internality) global/specific (globalness) and stable/unstable (stability). For the six good events and the six bad events separately, attributional dimension ratings were summed to yield three separate dimension subscale scores (ranging from 7 to 42) for each event type. Higher subscale scores denoted a greater degree of internality, globalness or stability in an individual's attributions.

RESULTS

Group characteristics

The demographic characteristics of the three subject groups are given in table I together with an associated summary statistic derived from between-group comparisons. Between-group differences in terms of age and sex ratio were not statistically significant. Furthermore, the PG and NPG deluded groups did not differ significantly in terms of their mean age of illness onset, their duration of illness at the time of study or in their total score on the MADS, indicating that they were not different in the overall level of delusion-related symptomatology reported. Scores on the MADS ranged between 30 and 52 in the non-persecutory group and 28 to 54 in the persecutory group. Normative scores on this instrument have not been established for deluded patients in the community but these results suggest that there were no differences in the severity of psychopathology between the two deluded groups.

Group mean levels of depressive symptoms, magical ideation and dysfunctional attitudes are detailed in table II. One-way analyses of variance

were used to compare group performance on each of these measures. All three separate main effects were significant. Post-hoc tests (Tukey HSD) revealed that both deluded groups reported significantly higher levels of depressive symptoms compared to normal controls ($P < 0.05$) and that the NPG deluded group reported significantly higher levels of depressive symptoms compared to the PG deluded group ($P < 0.05$). The control group showed significantly lower levels of dysfunctional attitudes in comparison to each of the deluded groups who were themselves no different from each other. Similarly, the control group showed significantly lower levels of magical ideation in comparison to each of the deluded groups who again did not differ from each other in this respect.

Attributional style

Table III shows the group means and standard deviations for each attributional dimension and for good and bad events as a function of group membership. A three-way analysis of variance was computed with one between-subjects factor (group; three levels) and two within-subject factors. The within-subjects factors were event-type (two levels, good versus bad) and attributional dimension (three levels, internal/external, global/specific, stable/unstable). The group main effect just failed to achieve significance ($F = 3.10$ degrees of freedom [df] = 2, 52, $P = 0.0531$). Post hoc tests (Newman-Keuls) revealed that controls scored significantly lower overall compared to the NPG deluded group ($P < 0.05$). No other group differences were significant. There was a significant main effect of event-type ($F = 57.88$, df = 1, 52, $P < 0.0001$) with subjects scoring higher for good events compared to bad events overall. There was a significant main effect of

Table II. Group means, standard deviations (in parentheses) and between-group comparison statistics for depression symptoms, magical ideation and dysfunctional attitudes.

Variable	Control (n = 24)	PG (n = 19)	NPG (n = 12)	Statistic ¹
Depressive symptoms (BDI)	1.58 (1.7)	4.84 (4.6)	13.42 (5.8)	$F(2,52) = 35.8, P < 0.0001$
Magical ideation (MIS) ²	3.21 (2.9)	8.00 (4.7)	9.45 (5.7)	$F(2,50) = 10.7, P < 0.0001$
Dysfunctional attitudes (DAS) ²	101.54 (23.5)	140.61 (31.3)	156.72 (32.6)	$F(2,50) = 17.9, P < 0.0001$

¹ Group comparisons were performed using one-way analysis of variance; ² one subject from the persecutory or grandiose (PG) group and one subject from the non-persecutory and non-grandiose (NPG) group had missing data on these measures.

Table III. Mean attributional subscale scores (standard deviations in parentheses) from the Attributional Style Questionnaire for each subject group.

Group	Internality	Attributional dimension				Stability
		Good events Globality	Stability	Internality	Bad events Globality	
Normal control	28.83 (5.9)	30.29 (5.2)	27.20 (6.2)	24.41 (2.6)	24.46 (4.7)	20.21 (5.4)
NPG group	31.92 (5.2)	27.33 (5.5)	31.92 (6.3)	26.08 (7.4)	25.92 (6.9)	28.08 (6.0)
PG group	30.68 (6.2)	30.53 (6.0)	31.11 (6.1)	16.21 (3.9)	26.89 (4.2)	28.79 (5.6)

Abbreviations as in table I.

attributional subscale ($F = 3.35, df = 2, 104, P < 0.05$); post hoc testing revealed this to be due to significantly higher ratings on the globalness attributional dimension in comparison to the internality dimension overall.

The group by event-type interaction was not significant ($F = 1.17, df = 2, 52, P > 0.05$) but the group by attributional dimension interaction was ($F = 13.47, df = 4, 104, P < 0.0001$). The interaction between event-type and attributional dimension was also significant ($F = 9.00, df = 2, 104, P < 0.001$). Finally, the three-way interaction between group, event-type and attributional dimension was highly significant ($F = 11.28, df = 4, 104, P < 0.0001$). The three-way interaction effect was probed for simple effects by a series of one-way ANOVAS.

There were no significant between-group differences on any attributional dimension for good events (internality, $F = 1.23, df = 2, 52, P > 0.05$; globality, $F = 1.43, df = 2, 52, P > 0.05$; stability, $F = 3.17, df = 2, 52, P = 0.05$). Although, the main effect for stability across good events did approach significance, post-hoc testing revealed no significant between-group differences. However, there were between-group differences in causal attributions for bad events. There was a significant main effect for internality ($F = 24.85, df = 2, 52, P < 0.0001$); post-hoc (Tukey's HSD) tests revealed

that the PG group was significantly more external in causal attributions for bad events in comparison to the normal controls ($P < 0.05$) and in comparison to the NPG group ($P < 0.05$). The NPG group did not differ significantly from the control group on this subscale. The main effect for globality was not significant ($F = 1.23, df = 2, 52, P > 0.05$). Finally, there was a significant main effect for stability of attributions for bad events ($F = 15.16, df = 2, 52, P < 0.0001$); post-hoc tests showed that both the PG group ($P < 0.05$) and the NPG group ($P < 0.05$) were significantly more stable in their attributions for bad events compared to normal controls although they were not different from each other in this respect.

In view of between-group differences in depressive symptom levels the above ANOVA was repeated co-varying for BDI score as a first step. The contribution of the BDI score just reached significance ($F = 4.02, df = 1, 51, P = 0.050$) rendering the group main effect non-significant ($F = 1.10, df = 2, 51, P = 0.33$) but the statistics for all other main effects and interaction terms were unchanged. One-way analyses of covariance were performed in order to explore the three-way interaction effect with the BDI score as the covariate at the first step of each analysis. It did not have a significant impact on any of the main effects for good events but it did affect one of the main effects for

bad events (stability; $F = 13.93$, $df = 1, 51$, $P < 0.001$) and it approached significance for the other two attributional dimensions (internality, $F = 3.35$, $df = 1, 51$, $P = 0.073$; globality, $F = 3.71$, $df = 1, 51$, $P = 0.06$). The group main effect for internality remained significant, the pattern of differences between the adjusted means across groups was as before and the previous non-significant group main effect for globality remained non-significant. Finally, the group main effect for stability was still significant after the effects of the BDI score were controlled and the adjusted means for normal controls, NPG and PG groups were 21.17, 25.96 and 28.91, respectively. The differences between adjusted means for the control group versus each of the two deluded groups were significant, as before, and the difference between the PG and NPG deluded groups although greater in magnitude than before, were not sufficient to achieve statistical significance.

DISCUSSION

The patients in this study differed distinctively from what might be expected from a schizophrenic population in the older age of onset of their disorder, their lack of negative symptoms or evidence of a 'dementia praecox' process and the clear lack of prominent psychopathology other than non-bizarre delusional systems. Nevertheless, despite being a 'pure' sample of deluded individuals, both the NPG and PG groups showed higher levels of magical thinking in comparison to the control group, although the mean levels were less than those previously reported in a group of deluded individuals of mixed diagnostic composition (schizophrenics and delusional disorder patients; Kaney and Bentall, 1989). Both deluded groups reported significantly more dysfunctional attitudes than controls and their mean scores were in the same region as those previously reported in depressed individuals (Silverman et al, 1984; Simons et al, 1986). Although different from controls, the NPG and PG groups did not differ from each other in levels of magical ideation or dysfunctional attitudes. This pattern did not hold for levels of depressive symptoms. Both deluded groups showed significantly higher levels of depressive symptomatology than normal controls but the NPG group again reported significantly higher levels than their PG counterparts.

On the basis of findings that DAS scores return to normal on remission of an episode of depression but remain elevated in chronically depressed subjects, it has been suggested that increased levels of

dysfunctional attitude may function to aggravate and maintain a depressive disorder rather than to specifically give rise to it (Williams et al, 1990). Similar elevations of DAS scores in clearly non-depressed deluded subjects (Fear et al, 1996) and in non-depressed subjects with chronic OCD (Fear, 1995; Fear et al, 1996), along with the current findings in non-persecutory delusional disorders suggests that high DAS scores may serve to aggravate and maintain any psychiatric condition. These findings may be relevant to any new model of delusion formation/maintenance since they appear to be held irrespective of delusional content.

In terms of attributional style there were no significant differences between groups for good events but the groups did differ in some respects in their attributions for bad events. Concerning good events, neither deluded group showed a 'grandiose' attributional style, ie, attributed the causes of hypothetical good events excessively internally in comparison to controls. Kaney and Bentall (1989) reported a non-significant tendency in this direction in their persecutory deluded group but this finding, or tendency, has yet to be established. Concerning bad events, the PG group showed the attributional style previously identified by Kaney and Bentall (1989) and others (Candido and Romney, 1990; Fear et al, 1996), characterized by excessive externality in causal attributions for bad events in comparison to control levels. However, the NPG group did not show this bias and were no different from controls. Finally, both deluded groups reported excessive stability in their attributions for bad events in comparison to normal controls but did not differ from each other or from controls in the globalness of such attributions.

In evaluating these results it is important to note that although they showed different depressive symptom levels, the two deluded groups did not differ in terms of their age at the onset of illness, duration of illness or on psychopathology as evidenced by their MADS total score, magical ideation or dysfunctional attitudes scores. Furthermore, the group mean for the PG group fell well below the level indicative of probable depressive case-ness on the BDI whereas the mean for the NPG group was on that borderline. In view of the differing levels of depressive symptoms in the deluded groups, the analysis of attributional style was repeated co-varying for concurrent depressive symptom levels as assessed by the BDI but the results remained unchanged.

This point is of some importance as Bentall and

Kaney (1989; Bentall, 1994) have argued that paranoia represents a defence against low self-esteem, that persecutorily deluded individuals display a defensive self-serving bias in their causal attributions, with the implication that this is what gives rise to their delusions. In this study, however, individuals with non-persecutory, non grandiose delusions did not demonstrate the same attributional profile, although they were similar to the persecutory/grandiose deluded group, for instance in the levels of dysfunctional attitudes they reported. In light of these results, it would seem difficult to offer a unitary attributional mechanism for the genesis of delusions.

What role then do attributional biases play in the genesis and/or maintenance of delusions? We have previously proposed that one mechanism leading to the formation of delusions may stem from a constitutional predisposition – those who become deluded do so because they fall at the extreme end of a spectrum of attribution bias where the norm is to attribute to persons rather than situations (Fear et al, 1996). Given that different attribution profiles have been demonstrated in two equally deluded populations whose only difference is in the content of their delusions, such a mechanism now seems unlikely. An alternative hypothesis that is consistent with the data as it stands is that attributional style may shape delusional content rather than delusional form. Individuals whose attributional style is fundamentally ‘grandiose’ or sensitive (ie, taking credit for good events and denying responsibility for bad events) if deluded would develop a grandiose or persecutory delusion (there is an inherent grandiosity to the idea that one is important enough to be persecuted). If attributional style conditions a sensitive mind-set rather than delusions, one might predict a similar attributional style in paranoid personality disorders for instance. If this were found, then along with the present findings there would be a strong case for suggesting that this attributional style is an essential component of paranoid states and good grounds for exploring the extent to which such a style may defend against depression. Those individuals in this study who did not have such a style had significantly more depressive symptoms, although it can be noted they did not display the classic depressive attributional style.

Clearly more work is required to elucidate what is probably not a simple relationship. It can be noted that the DSM categories of persecutory, jealous, somatic, grandiose, erotomanic and ‘other’ contents represent only broad categories into which individual delusional contents are

placed on a ‘best-fit’ basis. The true picture may only be unravelled through a large study of individuals with their own idiosyncratic delusional systems through single case studies (Sharp et al, 1996). It may be that a propensity to magical ideas coupled with a high level of dysfunctional attitudes and an attributional style that favours stability increases the propensity for the development of fixed ideas to explain abnormal experiences or stressful events in a delusional manner. Comorbid depressive symptoms could also be expected to be high in such situations and these may be attenuated in the presence of an attributional style that blames others.

In conclusion, our findings militate against a primary aetiological role for attributional style in the genesis of delusions, although such a style may have a secondary pathoplastic effect on delusional content and in the maintenance of delusional disorders. The stability of attributional propensities differs in deluded subjects and controls and seems to cut across the issue of delusional contents. This may point at least to a maintaining factor in delusions. Future studies might profitably investigate larger samples of patients with differing delusional contents and the same subjects at a number of different time points to further elucidate the role of attributional style in delusional disorder and in delusion formation in other disorders. It would also seem worthwhile to investigate attributional style in other disorders in which persecutory themes occur.

REFERENCES

- American Psychiatric Association (APA). *Diagnostic and Statistical Manual for Mental Disorders*. 3rd Ed Revised, Washington DC: American Psychiatric Association, 1987
- Beck AT, Beamesderfer A. Assessment of depression: The depression inventory. In: Pichot P, Ed. *Psychological Measurements in Psychopharmacology. Modern Problems in Pharmacopsychiatry*. Basel: Karger, 1974
- Bentall RP. Cognitive biases and abnormal beliefs: towards a model of persecutory delusions. In: David AS, Cutting J, eds. *The Neuropsychology of Schizophrenia*. London: Lawrence Erlbaum, 1984;337–69
- Bentall RP, Kaney S. Content specific information processing and persecutory delusions: An investigation using the emotional Stroop task. *Br J Med Psychol* 1989;62:355–64
- Bentall RP, Kinderman P, Kaney S. The self, attributional processes and abnormal beliefs: towards a model of persecutory delusions. *Behav Res Ther* 1994;32:331–41
- Candido CL, Romney DM. Attributional style in paranoid vs depressed patients. *Br J Med Psychol* 1990;63:355–63
- Eckblad M, Chapman LJ. Magical ideation as an indicator of schizotypy. *J Cons Clin Psychol* 1983;51:215–25
- Fear CF. Cognitive processes in obsession compulsive and delusional disorders. MD Thesis University of Liverpool, England, 1995

- Fear CF, Sharp H, Healy D. Cognitive processes in delusional disorders. *Br J Psychiatry* 1996;168:61-7
- Försterling F. *Attribution Theory in Clinical Psychology*. New York: Wiley, 1988
- Kaney S, Bentall RP. Persecutory delusions and attributional style. *Br J Med Psychol* 1989;62:191-8
- Peterson C, Semmel A, von Baeyer C, Abramson LY, Metalsky GI, Seligman MEP. The attributional style questionnaire. *Cog Res Ther* 1982;6:287-98
- Sharp HM, Fear CF, Williams JMG et al. Delusional phenomenology: Dimensions of change. *Behav Res Ther* 1996; 34:123-42
- Silverman JS, Silverman JA, Eardley DA. Do maladaptive attitudes cause depression? *Arch Gen Psychiatry* 1984;1:28-30
- Simons AD, Murphy GE, Levine JE, Wetzel RD. Cognitive therapy and pharmacotherapy for depression. Sustained improvement over one year. *Arch Gen Psychiatry* 1986; 43:43-8
- Sweeney PD, Anderson K, Bailey S. Attributional style in depression: a meta-analytic review. *J Pers Soc Psychol* 1986;50:974-91
- Taylor SE. Adjustment to threatening events. *Amer Psychol* 1983;38:1161-73
- Weissman AN. The dysfunctional attitude scale: A validation study. *Diss Abstr Int* 1979;40:1389-90
- Wessely S, Buchanan A, Reed A et al. Acting on delusions. I. Prevalence. *Br J Psychiatry* 1993;163:69-76
- Williams JMG, Healy D, Teasdale JD, White W, Paykel ES. Dysfunctional attitudes and vulnerability to persistent depression. *Psychol Med* 1990;20:375-81
- Zigler E, Glick M. Is paranoid schizophrenia really camouflaged depression. *Am Psychol* 1988;43:284-90