

On two kinds of delusion of reference

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Abstract

Although delusions of reference are one of the most common psychotic symptoms, they have been the focus of little research. The aims of the present research were, first, to determine whether it is possible to identify different kinds of referential delusion reliably and, if so, to investigate associations among them and between these delusions and other positive psychotic symptoms. Participants with a diagnosis of schizophrenia ($N = 57$) were recruited from a volunteer register ($n = 26$) and from inpatient psychiatric wards ($n = 31$). They were interviewed with the Scale for the Assessment of Positive Symptoms (SAPS) except that the questions about ideas and delusions of reference were replaced with questions targeted at seven particular delusions and three content areas. Ratings were made independently by two assessors. Agreement between the assessors was high for all of the delusions of reference and other psychotic symptoms. A factor analysis of these ratings revealed two factors which represent delusions of communication and delusions of observation. Only the latter was associated with hallucinations and persecutory ideation. Delusions of communication showed few significant correlations with other symptoms and therefore appear to require different explanations.

Keywords: Delusions; schizophrenia; positive symptoms

1. Introduction

Use of the single-symptom approach has led to significant advances in the theoretical understanding of psychotic symptoms such as persecutory delusions (Bentall et al., 2001), auditory hallucinations (David and Cutting, 1994) and passivity experiences (e.g. Blakemore, 2003). However, this approach appears not to have been applied to delusions of reference. This is surprising because these delusions are one of the most common psychotic symptoms. For example, 55% of the 811 patients in the International Pilot Study of Schizophrenia had this symptom (World Health Organization, 1973) and, among the 306 patients in the ‘concordant group’ from this study (those who met all criteria for a diagnosis of schizophrenia), 67% had delusions of reference.

One possible explanation for the lack of attention to these types of delusions is that they are often regarded as integral to persecutory delusions. The statement by Leon et al. (1989), that “Delusions of persecution...include delusions of self-reference” (p. 458), is typical. However, a clear distinction can be made on conceptual grounds in that only persecutory delusions concern the threat of harm, as Freeman and Garety (2000) have noted. Other authors maintain that delusions of reference may also relate to grandiose or reassuring themes (e.g. Gelder et al., 1989), Phillips et al., (1993) found them to be common in body dysmorphic disorder, and it seems to the authors, from their clinical experience, that these delusions sometimes occur in isolation, that is without any other delusions. However, the degree of association between particular delusions of reference and other psychotic symptoms has not, to the authors’ knowledge, been investigated nor does there appear to have been any research to determine whether all the experiences and beliefs that are referred to as delusions of reference really occur together.

The term 'delusions of reference' is said to refer to beliefs that a wide variety of neutral events have a special significance and refer to the individual personally (e.g. Gelder et al., 1989; McKenna, 1997). However, among this variety there appears to be a fundamental distinction to be made between experiences of communication and beliefs about observation. According to psychiatric textbooks (e.g. McKenna, 1997), some patients frequently have the mistaken sense that others are communicating with them by subtle and oblique verbal means, such as hints or innuendos, or through non-verbal channels such as gestures, stances or clothing. They may also believe that they are being referred to in the public media or that objects or situations have been purposely arranged in order to convey a message. Some even have the sense that animals are communicating implausibly complex messages. These kinds of delusions appear to be misinterpretations of perceivable events. However, other kinds of beliefs that are also referred to as delusions of reference are concerned with being kept under observation. Thus, some patients entertain the false belief that others are surreptitiously observing them, perhaps by using surveillance equipment or by following them, or are gossiping and spreading rumours about them. Since patients usually believe that those who are observing them are at pains to keep their activities secret, they may not believe there is an intention to communicate. Thus it seems quite possible that referential experiences of communication and beliefs about observations might be quite distinct symptoms.

The aims of the present research were, first, to determine whether it is possible to identify different kinds of referential delusion reliably and, if so, to then investigate associations among different referential delusions and between these delusions and other kinds of positive psychotic symptoms.

2. Method

2.1. Participants

Participants with a diagnosis of schizophrenia were recruited from two sources. Some were approached by administrators of the Schizophrenia Research Register of the Neuroscience Institute of Schizophrenia and Allied Disorders (NISAD: Loughland, et al., 2001). This is a register of volunteers who are willing to consider participating in research projects and whose diagnosis of schizophrenia has been confirmed with the Diagnostic Interview for Psychosis (Jablensky et al., 1999). Invitations were accepted by 12 men and 14 women, with a mean age of 38.9 years (S.D. = 12.9). The other source of participants were inpatients from three acute wards of a psychiatric hospital. They all had a chart diagnosis of schizophrenia and were invited to participate when their psychiatrists declared them to be capable of informed consent and able to tolerate a one-hour interview. Invitations were accepted by 15 men and 16 women, with a mean age of 32.4 years (S.D. = 8.8). The combined sample of 57 had the following mean characteristics: school leaving age 16.9 years (S.D. 3.4); age at onset of schizophrenia 25.0 years (S.D. 7.9); number of admissions to psychiatric hospital 5.3 (S.D. 7.3). Only three, all volunteers, were employed. Only four were cohabiting or married; the rest were never married, divorced, separated or widowed. The two samples did not differ significantly on any of these characteristics except that the inpatients had been admitted to hospital more times (mean = 7.85, S.D. = 9.5) than the volunteers (mean = 3.2, S.D. = 3.6), $t [31.0] = 2.4$, $P = 0.024$.

2.2. Measures

Participants were interviewed by trained assessors using the questions and probes of the Scale for the Assessment of Positive Symptoms (SAPS: Andreasen, 1984) except that the questions that are targeted at ideas or delusions of reference were replaced

with the more detailed questions and probes that are reproduced in the appendix. These were targeted on descriptions of delusions of reference found in psychiatric textbooks (e.g. McKenna, 1997, p. 3). All questions referred to the past month.

Interviews were recorded on audio-tape and these recordings were used by the interviewer, and independently by a second assessor for 36 of the interviews, to make ratings on the delusions and hallucinations items of the SAPS. In addition the assessors rated the presence *v.* absence of seven kinds of delusion of reference: whether participants believed that information had been communicated (1) *verbally* (e.g. hints, double meanings), (2) *non-verbally* (e.g. gestures, stances, clothing), (3) by the public *media* (e.g. TV, radio, magazines), (4) by *animals*, (5) by *inanimate* objects or processes (e.g. lights flickering, machine noises, arrangements of objects), and whether participants believed that others were surreptitiously (6) *gossiping* or spreading rumours about them, or (7) keeping them under *surveillance* or following them. Delusions were rated as present only if they had occurred at least several times in the last month and the participant was convinced of their reality. The assessors also rated the thematic content of the delusions, whether or not the participants' delusions reflected (a) guilt, (b) grandiosity, elation or erotomania, or (c) persecution.

3. Results

3.1. Assessors' agreement

Agreement between the assessors on the presence of the delusions of reference was evaluated by Cohen's κ . These values are shown in Table 1 where it can be seen that agreement was high in all cases and highly significant provided at least seven participants had the delusion. One of the assessors was much more experienced than the other. Therefore, in the few cases where they did not agree, the ratings of the more experienced assessor were used in all subsequent analyses. Agreement between the

assessors on ratings on the global hallucination item and the individual delusions items from the SAPS was assessed by intraclass correlations. All, except ratings for delusions of jealousy (which did not occur in this sample), were highly significant, with coefficients in the range 0.87-0.97. The mean of the two assessors' ratings were used in subsequent analyses.

Insert Table 1 about here

At least one of the delusions of reference was reported by 20 (77%) of the inpatients and 13 (42%) of the volunteers. Among those who had at least one of these delusions, the median number reported was 2 (mean = 2.4, S.D. = 1.4). The maximum number reported was 6 but the modal number was 1. The numbers of participants who reported each of the individual delusions are shown in Table 1. It can be seen that *gossip* was the most common delusion and persecution was the most common theme of the belief. It was rare for people to believe that animals were communicating with them and for guilt to be the theme but these delusions could be identified reliably when they did occur.

3.2. Factor analysis

In order to assess whether all delusions of reference occur together or, as expected, whether delusions of communication are independent of delusions of observation, the variables in Table 1 were subjected to maximum likelihood factor analysis. *Animals* and *guilt* were excluded from this analysis because of their low frequencies. The two factors with eigenvalues greater than one, which together accounted for 60% of the variance, were extracted and the solution was rotated via varimax with Kaiser normalisation. The goodness-of-fit test was non-significant (χ^2

[13] = 21.8, $P = 0.06$). Loadings greater than 0.4 from the rotated matrix are shown in Table 1. Factor scores were generated by the regression method.

The first rotated factor had high loadings from *verbal, non-verbal, public media*, and *inanimate* and thus represents delusions of communication. The second rotated factor had high loadings from *gossip* and *surveillance* and therefore appears to represent delusions of observation. This factor also had a very high loading from the thematic content *persecution*.

3.3. Associations with other positive symptoms

Correlations between individual referential experiences, factor scores and other positive psychotic symptoms that are assessed by the SAPS are shown in Table 2. Individual delusions are included provided at least 5% of the sample had the delusion. Severity of hallucinations was assessed by the global rating. It can be seen from the table that only the two delusions of observation, *gossip* and *surveillance*, and Observation factor scores, were related significantly to hallucinations and persecutory delusions. Delusions of communication showed few significant correlations with other symptoms except in the case of *inanimate*. Only *inanimate* was significantly related to delusions of being controlled, thought insertion and grandiosity.

 Insert Table 2 about here

The correlations in Table 2 suggest that delusions of reference cannot, in general, be regarded as integral to persecutory delusions. This question was explored further by dichotomising the sample into those with *v.* without any delusions of reference and those with (SAPS rating > 1) *v.* without delusions of persecution. The association between these variables was significant ($\chi^2 [1] = 10.4, P < 0.001$) but the strength of the association was only moderate ($\phi = 0.46$); 8 of 33 (24%) participants with

delusions of reference did not have persecutory delusions whereas 7 of 24 (29%) without delusions of reference did have persecutory delusions. A similar analysis with grandiose delusions also showed a significant though modest association with delusions of reference ($\chi^2 [1] = 5.5, P < 0.02, \phi = 0.35$). Finally, the sample was dichotomised into those with (SAPS rating > 1) v. without any delusions apart from delusions of reference. It was found that three participants with delusions of reference had no other delusions.

4. Discussion

It proved to be possible to identify seven different kinds of delusion of reference with high degrees of agreement between assessors who were blind to each others' judgements. These delusions were very common among the inpatients but nearly half of the outpatient volunteers had them also. A factor analysis revealed two independent dimensions among these delusions which might be referred to as delusions of communication and delusions of observation. Only the latter was associated with persecutory ideation.

The pattern of correlations with other positive psychotic symptoms reinforced the distinction between the different kinds of referential delusion in that beliefs about gossip and surveillance were significantly associated with several other positive symptoms, including persecutory delusions and hallucinations, whereas experiences of communication in general were not. This shows that delusions of reference in general cannot be regarded as integral to persecutory delusions. Indeed, since it was possible to identify three individuals who had no other delusions at all, delusions of reference seem to require explanations that are not shared by any other delusions.

It seems likely that beliefs about gossip and surveillance are inferred from other experiences. For example, auditory hallucinations might suggest that others know so

much about oneself that they must be observing surreptitiously and then telling each other what they have learnt. Delusional conviction that others are plotting harm is associated with hypervigilance for threat (e.g. Green et al., 2003), a jumping to conclusions bias (Garety et al., 2001), and the adoption of safety behaviours which prevent disconfirmation of the belief (Freeman et al., 2001) so that, for example, a person walking behind might be interpreted as a person following whose harmful intentions are only thwarted by avoidant action. In other words, delusions of observation seem to be secondary to other psychotic symptoms and contribute to their persistence. However, it is also possible that such delusions might precede and form the basis for persecutory and other beliefs, perhaps as a result of an exacerbation of the ideas of reference which are often present long before the onset of delusions and which are a risk factor for later schizophreniform diagnosis when they are present even as early age 11 (Poulton et al., 2000).

Referential delusions of communication, on the other hand, appear to have the character of anomalous conscious experiences that might trigger delusions, as proposed by Garety et al. (2001) in their cognitive model of the positive symptoms of psychosis. With these delusions, what seems to be communicated concerns the self and originates from the self, though the origin is not recognised but attributed externally. In these ways they are similar to auditory hallucinations, though they presumably arise from aberrant non-verbal channels of communication rather than verbal channels. In other words, these delusions appear to derive from difficulties with reality monitoring. Having the delusion that objects or situations have been purposely arranged in order to convey a message, however, was associated with all of the passivity experiences assessed by the SAPS as well as grandiosity. Thus

explanations for this delusion might entail quite different, or at least additional, cognitive processes to the others.

One limitation of the present research is that the sample was not large and therefore it is not clear how representative the results are. People with psychosis tend to differ quite markedly according to the sources from which they are recruited (Loughland et al., 2004). However, in order to boost representativeness, the sample was drawn from opposite ends of what might be called a severity/functioning gradient, in that outpatient volunteers have been found to have the least impairments and inpatients the most (Loughland et al., 2004). Nevertheless, other significant groups, such as those treated predominantly in primary care and those managed by community mental health services, were not represented, nor were those with other psychotic disorders apart from schizophrenia.

Another limitation is that, although the cases-to-variables ratio in the factor analysis was more than seven, and both of the factors had strong marker variables, the sample for the factor analysis was small and therefore the results can only be regarded as preliminary. Moreover, since only a few of the participants entertained some of the delusions, the maximum correlation involving these delusions would be restricted, though it should be noted that the *inanimate* delusion, which was shared by only seven participants, still correlated moderately highly with other delusions. Finally, the conventional alpha level was used without any correction for the number of statistical tests. This seemed appropriate to a preliminary exploration but it does mean that reported correlation coefficients less than 0.43 need to be treated with caution.

In conclusion, individual delusions of reference can be identified reliably but they do not all occur together. They occur in two clusters which are differentially related to

other positive psychotic symptoms. Only delusions of observation are closely related to persecutory delusions. Referential delusions of communication seem to require quite different explanations. They may arise from faulty reality monitoring in non-verbal channels.

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Appendix

Referential Delusions Interview

Have you been feeling that people are telling you things or communicating with you in subtle or mysterious ways? (Do people seem to drop hints or make gestures that suggest they know things about you?)

Have you been seeing things in magazines or on TV that seem to refer to you or contain a special message for you?

Have you been noticing any other things that seem to refer to you or contain a special message for you? (Do animals or objects, or things that happen, seem to be communicating with you?)

Have you been getting the feeling that people are gossiping about you or spreading rumours about you? (Are these people you know or are they strangers?)

Have you been getting the feeling that you are secretly being watched or kept under surveillance? (Do you think that people have been deliberately following you?)

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Table 1
Frequencies, reliabilities and factor loadings for categories.

Categories	Present		Cohen's κ	Factor ^a	
	<i>n</i>	%		I	II
A. Communications					
Verbal	14	42.4	0.70*	0.56	
Non-verbal	7	21.2	0.89*	0.94	
Public media	9	27.3	1.00*	.48	
Animals	2	6.1	1.00		
Inanimate	7	21.2	0.84*	0.56	
B. Observations					
Gossip	20	60.6	1.00*		0.79
Surveillance	19	57.6	1.00*		0.51
C Content					
Guilt	3	9.1	1.00		
Grandiosity	10	30.3	0.80*		
Persecution	27	81.8	0.89*		0.95

* $P < 0.01$ % = percentage of those with any delusions of reference (n=33)

^a Only factor loadings > 0.4 are shown.

Table 2
Correlations between individual referential delusions and other positive psychotic symptoms.

Psychotic symptom	Referential delusions						Factor scores	
	Verbal	Non-verbal	Media	Inanimate	Gossip	Surveillance	I. Communication	II. Observation
Hallucinations	0.21	0.08	0.22	0.21	0.47**	0.52**	0.12	0.45**
Persecutory delusions	0.22	0.04	0.14	0.19	0.43**	0.45**	0.10	0.50**
Grandiose delusions	0.05	-0.00	0.20	0.26*	0.20	0.06	0.06	0.16
Being controlled	-0.06	0.06	0.05	0.30*	-0.03	0.16	0.14	-0.02
Mind-reading	0.10	0.03	0.23	0.40**	0.47**	0.33*	0.11	0.34*
Thought broadcasting	0.11	0.14	0.28*	0.51**	0.40**	0.23	0.20	0.25
Thought insertion	0.09	-0.03	0.02	0.30*	0.13	0.18	0.05	0.11
Thought withdrawal	0.15	0.09	-0.02	0.31*	0.38**	0.09	0.13	0.26

* $P < 0.05$ ** $P < 0.01$ (two-tailed)