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**Mental health clinicians' beliefs about the causes of psychosis: Differences between professions and relationship to treatment preferences**

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## Introduction

The ontology of mental health problems is an area of long standing debate. This has been fuelled by strong claims of a genetic basis to mental health problems, particularly in relation to the more serious difficulties such as schizophrenia and psychosis (John, Thirunavukkarasu, Halahalli, Purushottam, & Jain, 2015). The result of this biological framework has influenced practice at a service-level, with medication the primary treatment offered to this client group. Although neurobiological and genomic research has substantially progressed over the past decade, findings have also provided strong evidence for the role of environmental factors. Deprivation, trauma, social isolation, urbanicity and adverse childhood experiences have all been associated with the onset of psychosis (Cohen, 1993; Read, Van Os, Morrison, & Ross, 2005; Van Os, 2004). Given the evidence-base, psychosis is now considered by many experts in the field to be the result of a complex interaction of biological and environmental factors, for which the relevance of these differs for each individual. As a result, an integrative approach to treating psychosis is now endorsed by some clinical guidelines, with a recommendation

that everyone be given a comprehensive, multidisciplinary assessment and be offered both antipsychotic medication and psychosocial interventions (NICE, 2014).

Recently there has been an increased interest in how service-users understand the cause of their mental health experiences. However, little is known about the beliefs of clinicians, particularly in relation to psychosis. Some studies report an overall preference for biological causes (Baillie, McCabe, & Priebe, 2009; Magliano, Fiorillo, De Rosa, Malangone, & Maj, 2004; Van Dorn, Swanson, Elbogen, & Swartz, 2005). For example, one study that explored the beliefs of 465 professionals, found that 68% endorsed hereditary factors, compared to 36% who endorsed 'psychological traumas' (Magliano, et al., 2004). Similarly, another study of 154 psychiatrists reported that whilst 88% endorsed hereditary and biomedical causes, recent life events and childhood factors were considered relevant by only 25% and 20% of the sample respectively (Baillie, et al., 2009). Furthermore, research has indicated that clinicians appear to perceive different mental health problems as the result of different aetiological factors. One study found that specific difficulties, conceptualised using diagnostic categories, can be placed on a continuum from those considered to be disorders of the body and those that are disorders of the mind (Ahn, Proctor, & Flanagan, 2009), with schizophrenia identified as the 'most biological' overall. The same study also reported that clinicians did not appear to conceptualise mental health problems using an integrative approach, as specific

difficulties were generally thought to be either predominantly psychosocial or biological in nature.

As treatments aim to alter the system of interacting events that are maintaining an individual's problem (psychological, social or biochemical), it is likely that clinicians will base treatment decisions on models that target these causal systems. This would allow clinicians to predict the effectiveness of interventions and is also clinically recommended as part of a coherent formulation of a client's difficulties. Research within the domain of physical health provides evidence that people use causal beliefs to assess the effectiveness of interventions. For example, individual causal models of coronary heart disease were found to be strongly related to how medical students rated the effectiveness of different preventative treatments (Green & McManus, 1995). Similarly, within a mental health setting, research suggests that individuals consider medication to be more effective for experiences considered to be biological in nature, whereas psychotherapy is thought to be more suitable for psychologically-based difficulties (Ahn, et al., 2009; Kwaadsteniet, Hagmayer, Krol, & Witteman, 2010). Similarly, one study that asked clinicians about a hypothetical situation, found that they will use their own causal models when judging the effectiveness of interventions and clinicians will often disagree about the relevance of different causal factors (Kwaadsteniet, et al., 2010).

Although this small body of research suggests a relationship between causal beliefs and attitudes towards treatment among professionals, more research is required. Previous studies have explored causal models within a hypothetical framework. This typically involves presenting participants with an imagined individual who is experiencing psychological difficulties, as opposed to clinicians' real-life experiences. Researchers have also tended to focus on medically trained staff, and therefore may not provide a comprehensive representation of beliefs across a range of professions. As different professional groups receive training that places emphasis on the different aetiological components of mental health problems (e.g. psychiatrists receive training that focuses primarily on biological determinants, whereas psychologists receive training that is more orientated to the role of environmental causes), it is likely they will place priority on their specific areas of expertise.

The aim of this study was to determine whether mental health professionals' causal beliefs may be impeding an integrated and balanced approach to treatment. Specifically, we measured their beliefs about the aetiology of psychosis, the treatment offered to their clients, and their opinions about the helpfulness of these treatments. We then explored relationships between aetiological beliefs and perceptions about the helpfulness of treatment. It was hypothesised that individuals with a biogenetic model would be more

likely to endorse medical treatment, and less likely to endorse psychological help, than clinicians with a psychosocial model.

## Methods

### *2.1 Participants/procedure*

Clinicians working in mental health services across three mental health trusts in Manchester, United Kingdom, were invited to complete a questionnaire about treatment options and causes of psychosis. Individuals occupying a range of job titles were approached personally by Clinical Studies Officers (individuals employed by the research network to facilitate recruitment on trials), using an opportunistic approach to sampling. Participants were required to work in a role providing care and support to individuals experiencing psychosis. *Table 1* provides information regarding the demographics of the sample. In total, 219 clinicians from a broad range of professions/roles (nine) and several types of mental health services completed the questionnaire. The largest professional group was community psychiatric nurses (31.5%). The majority of the sample were female (59.4%). The mean age was 39.

*Table 1: Demographic variables of the clinician sample*

| <i>N= 219</i>  |        |            |
|----------------|--------|------------|
| Age, mean (SD) |        | 39 (9.2)   |
| Gender (SD)    | Male   | 89 (40.6)  |
|                | Female | 130 (59.4) |

|                                      |                                |            |
|--------------------------------------|--------------------------------|------------|
| Job title                            | CPN                            | 69 (31.5)  |
|                                      | Social worker                  | 23 (10.5)  |
|                                      | Psychiatrist                   | 21 (9.6)   |
|                                      | Staff nurse                    | 19 (8.7)   |
|                                      | Care coordinator               | 15 (6.8)   |
|                                      | Psychologist                   | 12 (5.5)   |
|                                      | Team manager                   | 12 (5.5)   |
|                                      | Occupational therapists        | 10 (4.6)   |
|                                      | Support workers                | 6 (2.7)    |
|                                      | Other                          | 4 (1.8)    |
| Length of employment in current role | < 1 year                       | 45 (20.5)  |
|                                      | 1-2                            | 50 (22.8)  |
|                                      | 3-5                            | 41 (18.7)  |
|                                      | 6-10                           | 32 (14.6)  |
|                                      | >10                            | 46 (21.0)  |
| Service type                         | Community mental health (CMHT) | 81 (37)    |
|                                      | Early intervention (EIT)       | 65 (29.7)  |
|                                      | Inpatient                      | 32 (14.6)  |
|                                      | Children and adolescents       | 4 (1.8)    |
|                                      | Other (e.g. crisis teams)      | 23 (10.5)  |
| Responsibility                       | Complete                       | 17 (7.8)   |
|                                      | A lot                          | 175 (79.9) |
|                                      | A little                       | 27 (12.3)  |

## 2.2 Measure

Demographic data was collected for each participant. The questionnaire was designed to ask clinicians about different aspects of treatment for people experiencing psychosis, as well as their opinions about the causes of psychosis. Examples of the questions asked are:

1. How much responsibility do you feel you have around treatment options for your clients?; none, a little, a lot, complete.
2. Are you currently able to offer antipsychotic medication/ Cognitive Behavioural Therapy (CBT) to all of your clients with psychosis?

If not why? Questions relating to the helpfulness of treatment (CBT, medication, both) were scored on an analogue scale from 1-100, from ‘very unhelpful’ to ‘very helpful’.

The causal belief section of the questionnaire consisted of eight putative causes, each measured on a five point Likert scale (strongly disagree, disagree, neither agree nor disagree, agree, strongly agree). The questionnaire was based on similar measures of causal beliefs (Lobban, Barrowclough, & Jones, 2005), but was reduced to eight items that captured those most commonly endorsed for the experiences associated with psychosis (Ahn, et al., 2009), as well as those indicated by empirical evidence. This included beliefs relating to psychosocial (childhood trauma, adulthood trauma, recent stress, personal sensitivity), biogenetic (genes, chemical imbalance), substance use and religious/spiritual explanations.

A principal component analysis (PCA) with oblique rotation (direct oblimin) was conducted on the eight items of the causal belief questionnaire. The Kaiser-Meyer – Olkin statistic indicated that the sample size was adequate for conducting a PCA (KMO = .683). Bartlett’s test of sphericity was also found to be significant ( $\chi^2(28) = 473.965, p < .000$ ). The scree plot suggested that three components should be retained based on Cattell’s guidelines for including the component at the point where the scree plot flattens out (Cattell, 1966). Items were considered to load onto a component if the loading was



greater than 0.4. Four items loaded onto the first component related to psychosocial causes (trauma in childhood (.84), trauma in adulthood (.88), recent stress (.77) and personal sensitivity (.69);  $\alpha = 0.809$ ). Personal sensitivity was subsequently removed from this scale as the reliability of this scale improved when this item was not included ( $\alpha = 0.825$ ). The second component consisted of three factors relating to biological causes (drug and alcohol use (.56), heredity (.82), and chemical imbalance (.84);  $\alpha = 0.619$ ). The reliability of this scale improved when drug and alcohol was not included, therefore it was removed ( $\alpha = .709$ ). The final factor consisted of just one item; spiritual and religious factors. Due to the low reliability of a one item factor this was not included in any further analyses. Therefore, a total score was calculated for each individual on the psychosocial and biological scale and these were used as part of the statistical analyses.

### *2.3 Statistical analysis plan*

All analyses were conducted using SPSS 22.0 (2014). We used descriptive statistics to describe continuous variables and frequency distributions for categorical variables. We planned to report descriptive data for the individual items on the causal belief scale for information purposes, however the main analyse will focus on the two scales identified by the PCA. Firstly, we investigated whether the variables were normally distributed (Kolmogorov-Smirnov test). This found some non-normally distributed data, and therefore we applied the bootstrap technique to the analyses that allowed for this. This is

a statistical technique which involves random re-sampling of the data using the method of replacement, and is considered appropriate for non-normally distributed data (Efron & Tibshirani, 1993). Bivariate relationships between causal beliefs and perceptions about the helpfulness of treatment were calculated using Pearson Correlation Coefficient, and multivariate analysis was used to explore the relationship between multiple variables.

## Results

### *3.1 Causal beliefs, treatment options and attitudes towards treatment*

*Table 2* provides the levels of endorsement for each of the causal items, as well as the means and standard deviations for the psychosocial and biological factors, across the whole of the sample. We also calculated totals according to profession (this only included clinicians that could be allocated to discreet professional groups); community psychiatric nurses (CPN), occupational therapists (OT), psychiatrists, psychologists and social workers (SW). Overall, clinicians endorsed the psychosocial scale (PS) more frequently than the biogenetic scale (BG). In relation to individual items, trauma was widely endorsed as a causal factor, in particular ‘trauma in childhood’, with 91% of the sample agreeing that this contributed to the development of psychosis. The remaining items were also considered relevant by the majority of clinicians with only ‘spiritual and religious factors’ not identified as important. Psychologists endorsed the PS scale considerably more than the BG scale, whereas the other professionals endorsed the two scales to a

similar extent. Psychiatrists were the only group to report a higher endorsement of the BG scale than the PS scale.

*Table 2; Endorsement of causal beliefs overall and according to professional group*

|             |                      | Overall<br>l<br>(n =<br>219) | CPN<br>(n =<br>88) | OT<br>(n =<br>10) | Psychiatris<br>t<br>(n = 21) | Psychologis<br>t<br>(n = 12) | Social<br>Worke<br>r<br>(n =<br>23) |
|-------------|----------------------|------------------------------|--------------------|-------------------|------------------------------|------------------------------|-------------------------------------|
| % agreement | Drugs/alcohol        | 91.3                         | 87.5               | 90.0              | 95.2                         | 83.4                         | 91.3                                |
|             | Trauma childhood     | 88.6                         | 89.7               | 90.0              | 80.9                         | 100                          | 100                                 |
|             | Trauma adulthood     | 85.0                         | 75.0               | 80.0              | 80.9                         | 100                          | 87.0                                |
|             | Recent stress        | 81.3                         | 79.5               | 70.0              | 100                          | 100                          | 91.3                                |
|             | Personal sensitivity | 72.6                         | 69.4               | 40.0              | 61.9                         | 83.4                         | 73.9                                |
|             | Genetics             | 68.9                         | 78.5               | 70.0              | 100                          | 25                           | 60.8                                |
|             | Chemical Imbalance   | 67.1                         | 76.2               | 60.0              | 90.5                         | 16.7                         | 43.4                                |
|             | Spiritual/religious  | 11.4                         | 13.6               | -                 | 4.8                          | -                            | 13                                  |
|             | Mean and (SD)*       | Biogenetic Scale             | 3.75<br>(1.64)     | 3.91<br>(1.57)    | 3.64<br>(1.33)               | 4.38 (0.94)                  | 2.29 (1.88)                         |
|             | Psychosocial Scale   | 4.11<br>(1.63)               | 4.02<br>(2.11)     | 4.15<br>(2.13)    | 4.07 (1.70)                  | 4.72 (1.19)                  | 4.15<br>(1.27)                      |

\*Measured on a scale of 1-5 with a higher score indicating more agreement.

*Table 3* provides information on the provision of different treatment options and the perceptions about the helpfulness of these treatments. A high proportion of clinicians reported that their clients were prescribed antipsychotic medication (85%), more than twice the proportion offered CBT (40%). The majority of clinicians reported that they were able to offer antipsychotic medication to all of their clients (81.7%), whilst only

43.8% reported being able to offer CBT. A quite high proportion of those not able to offer CBT attributed this to a limitation in resources (38.3%), whilst 15% advised that this was due to unsuitability. Antipsychotics were considered more helpful than CBT, whilst a combination of the two was believed to be the most effective treatment option (77%).

*Table 3; Treatment offered and opinions of treatment*

|                          |                           |               |
|--------------------------|---------------------------|---------------|
| Treatment offered %*     | Prescribed antipsychotics | 85.41 (15.49) |
|                          | Offered CBT               | 40.12 (32.47) |
|                          | Offered Both              | 41.93 (34.03) |
| Opinions of treatment %* | Antipsychotics helpful    | 74.10 (16.73) |
|                          | CBT helpful               | 60.12 (21.79) |
|                          | Combination helpful       | 77.61 (18.89) |

\*measured on a scale 0-100 representing an estimation of the percentage of clients who have been offered the treatment.

\*\*measured on a scale 0-100 from very unhelpful to very helpful.

### *3.2 Association between causal beliefs and attitudes towards treatment*

*Table 4* shows Pearson  $r$  correlations between the causal factors and the perceived helpfulness of treatment. A belief that antipsychotics were helpful was positively associated with endorsement of the biological scale ( $r = .413$ ,  $p < 0.01$ ) and negatively associated with endorsement of the psychosocial scale ( $r = -.153$ ,  $p < 0.05$ ). Furthermore, a belief in the helpfulness of CBT was positively associated with endorsement of the psychosocial scale ( $r = .244$ ,  $p = 0.01$ ). Neither of the causal scales were associated with the helpfulness of a combination of treatments. We also conducted some exploratory analyses on the individual items to identify any possible relationships that might have

been missed. Helpfulness of medication was negatively associated with endorsement of ‘trauma in childhood’ ( $r = -.169, p < 0.05$ ) and ‘trauma in adulthood’ ( $r = -.182, p < 0.05$ ), and helpfulness of a combination of treatments was positively associated with ‘trauma in childhood’ ( $r = .188, p < 0.05$ ) and ‘trauma in adulthood’ ( $r = .163, p < 0.05$ ).

Table 4: Bivariate relationships between dependant and independent variables.

|                   | Drug and alcohol | Trauma in childhood | Trauma in adulthood | Recurrent Stress | Personal sensitivity | Genetics | Chemical Imbalance | Spiritual/religious | Psychosocial | Biological |
|-------------------|------------------|---------------------|---------------------|------------------|----------------------|----------|--------------------|---------------------|--------------|------------|
| Medicinal helpful | .153*            | -.169*              | -.182*              | -.084            | -.120                | .371*    | .518**             | -.023               | -.153*       | .413**     |
| CBT helpful       | .075             | .256**              | .235**              | .099             | .135                 | .024     | -.093              | -.019               | .244**       | -.026      |
| Combined helpful  | .080             | .163*               | .188**              | .086             | .000                 | .080     | .041               | -.045               | .093         | .090       |

\* $P < 0.05$

\*\*  $P < 0.01$

### 3.5 Predicting attitudes towards treatment

The two causal scales (BG and PS) were entered into a multiple forced entry regression analysis to predict attitudes towards medication. A significant regression equation was found ( $F(2, 203) = 34.901, p < 0.001$ ) with an  $R^2$  of 0.26, with the BG ( $\beta = 4.50, p < 0.001$ ) and PS ( $\beta = -1.23, p < 0.05$ ) both significant predictors of perceived helpfulness of medication. A second regression equation was conducted to predict opinions of CBT with PS the only predictor variable. A significant regression equation was found ( $F(1, 200) = 10.785, p < 0.001$ ), with an  $R^2$  of 0.05.

## Discussion

Clinicians in this sample reported offering both psychological and pharmacological treatments to their clients. They were, however, twice as likely to report an offer of antipsychotic medication compared to CBT. This is despite clinicians citing a combination of both as the most effective treatment approach, alongside clinical guidelines recommending the provision of both treatment options (NICE, 2014). Quite a high proportion of respondents reported not being able to offer CBT due to limitations in resources. This is reflective of previous findings that have criticised the limited availability of psychological interventions in mental health services across the UK (Berry & Haddock, 2008; The Schizophrenia Commission, 2012).

The sample located the cause of psychosis in a number of factors representing both biological and psychosocial elements. It thus appears that professionals adopt a multi-causal approach when conceptualising these experiences, which is reflective of the evidence-base. These findings contradict those reported by Ahn, et al. (2009) who found a tendency to conceptualise difficulties using a dualistic approach, in which clinicians tended to categorise mental health problems as either biological or psychosocial and not as the result of a combination of factors. This could be explained by the application of different measures to assess causal explanations, as well as the use of different diagnostic

terms (schizophrenia vs. psychosis). However, these findings do suggest that clinicians are able to conceptualise mental health difficulties in an integrative way.

Overall, psychosocial factors (e.g. trauma, stress) were endorsed more frequently than genetic or neurobiological causes (e.g. hereditary and chemical imbalance). This is a particularly significant finding as it deviates from previous studies, which have tended to report a partiality for genetic factors within this population (Baillie, et al., 2009; Kingdon, Sharma, & Hart, 2004; Van Dorn, et al., 2005). This may reflect advances in therapeutic techniques over recent years, which has seen the evidence-base for cognitive models of psychosis grow rapidly (Bentall, Corcoran, Howard, Blackwood, & Kinderman, 2001; Garety, Kuipers, Fowler, Freeman, & Bebbington, 2001; Morrison, 2001). This has led to an increased focus on the provision of psychological approaches for this client group, which may have influenced attitudes at a service-level. However, it is important to note that previous research has tended to focus specifically on medically-trained staff, as opposed to a broad sample of clinicians. Indeed, psychiatrists in this study preferred a genetic explanation overall, whereas the other professional groups were all more likely to endorse psychosocial causes. This suggests that clinicians' causal beliefs are likely to be shaped by the training process specific to their profession. Research has shown that medics develop an increasingly biogenetic understanding of mental health problems as they progress through medical training (Magliano et al., 2013), and that consultant

psychiatrists are ‘more biological’ than newly qualified doctors (Kingdon, et al., 2004). It could be that psychiatric training places emphasis on the biological structure of psychotic experiences and that these beliefs are reinforced in practice throughout professional development. Although there is no research to support this finding in other professional groups, as psychologists receive training that is focused around psychological approaches to mental health problems, it seems likely that this will influence their respective causal attributions. However, it is also recognised that perceptions about the helpfulness of treatment are likely to be biased by the ability of the clinician to offer that treatment (e.g. psychologists are able to offer CBT but are not able to prescribe medication).

As hypothesised, it was found that clinicians’ aetiological beliefs about the cause of psychosis were associated with their perceptions about the helpfulness of treatment. Clinicians who endorsed psychosocial factors were more likely to believe CBT would be helpful, whereas individuals with a more biomedical model believed medication to be more helpful. However, not only is this ‘match-up’ quite artificial (e.g. therapy can influence an individual’s brain chemicals), but a combination of treatments is considered to be the most effective approach. It could be that a strong focus on the perceived cause of psychosis might blind clinicians to the benefits of offering alternative treatments, including those recommended by clinical guidelines and the preference of the client. It is



important to note that beliefs were only a moderate predictor of attitudes towards medication (26%) and contributed only a small amount to an individual's attitude towards CBT (5%). These results do not mean that we could accurately predict how clinicians make treatment choices based on their aetiological models, as there are likely to be many additional factors that convene within this process (e.g. training, access to treatment). However, they do suggest that by providing clinician's with aetiological information that considers both biological and psychosocial factors, you could potentially alter their opinions of treatment in alignment with the evidence base. It should also be noted that, in reality, there is a paucity of evidence comparing psychological therapies such as CBT directly with antipsychotic medication. For example, a recent Cochrane review concluded there was no usable data to assess relative effects on clinical outcomes (Bola, Kao, Soydan, & Adams, 2011), and the recent NICE guidelines included a research recommendation for a head to head comparison (NICE, 2016).

These findings are important to consider in relation to the beliefs of service-users. Research has consistently found a strong preference for psychosocial causes within this group (Carter, Read, Pyle, & Morrison, 2016), and previous research has indicated that therapeutic relationships are rated as more helpful when there is cohesion between the clinician and the client (Callan & Littlewood, 1998; McCabe & Priebe, 2004b). Therefore, some researchers have expressed some concern about this potential dissonance

(McCabe & Priebe, 2004a). However, these findings suggest that clinician opinions may be more closely aligned to those of service-users than they have been in the past, which could have potential benefits for the client's treatment experience.

Overall, these findings indicated that clinicians consider a number of factors relevant in the development of psychosis, but prefer a psychosocial explanation overall. Different professional groups differed to the extent to which they endorsed psychosocial and biogenetic items, suggesting that there may be some heterogeneity amongst these groups. This is something that could possibly be addressed via the training programmes specific to these professions in an attempt to ensure clinicians receive aetiological information that is balanced and evidence-based. Furthermore, aetiological beliefs were found to be associated with perceptions of treatment, suggesting that these could deter clinicians from using alternative treatment approaches. Finally, the low provision of CBT provides further evidence that psychological approaches are not offered as part of routine practice for this client group. Attempts to increase this should be a priority for health-care providers in order to be compliant with national guidelines.

#### *4.1 Limitations*

This study has certain limitations. Firstly, we are not able to infer causality from correlational analyses or be sure about the direction of any causality, and the number of

correlations calculated raises the possibility that some of the significant findings at the .05 level may be Type 2 errors (false positives).. A second limitation is the use of a new measure to assess causal beliefs, although the reliability of this measure was increased by factor analysing the questionnaire to scales, which were then the focus of the analysis. Finally, we asked clinicians to estimate treatment offered to their clients and this may not be a completely accurate reflection of practice.

#### *4.2 Future research*

Future research might usefully focus on examining the causal beliefs of service-users and carers to allow for a comparison between these groups. This would provide information about potential differences in the way service-users and clinicians conceptualise the experiences associated with psychosis, and their opinions of treatment. Furthermore, tracking the trajectory of beliefs within a clinician sample to corroborate the apparent change in beliefs found in this study is also required. Investigating whether this dissonance influences outcome for service-users (e.g. engagement, quality of life and stigma) is another area for future research, particularly as this could help improve clinical outcomes. Finally, a more consistent approach to assessing causal explanations is required to allow for more accurate comparisons across samples.

#### *4.3 Clinical implications*

Our study suggests that clinicians' causal beliefs can influence their attitudes towards treatment, which could influence the treatment they offer to clients. It is not clear if this relationship transcends into treatment provision, and there are likely to be many additional factors that influence what treatment clients are offered (e.g. resources, treatment preference). However, clinicians should be aware of their own potential biases towards a particular causal model, especially if held to the relative exclusion of other causal beliefs, as this could implicitly influence their treatment preferences, as well as their relationship with the client. Treatment decisions should reflect clinical guidelines and empirical evidence, which would ensure a consistent and effective approach to service provision.

\*On behalf of all the authors, the corresponding author states that there is no conflict of interest.

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