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Treatable clinical intervention targets for patients with schizophrenia

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ABSTRACT

Background: Treatment approaches for patients with psychosis need major improvement. Our approach to improvement is twofold: target putative causal mechanisms for psychotic experiences that are treatable and also that patients wish treated. This leads to greater treatment engagement and clinical benefit. To inform mental health service provision we assessed the presence of treatable causal mechanisms and patient treatment preferences.

Methods: Patients with non-affective psychosis attending NHS mental health services completed assessments of paranoia, hallucinations, anxious avoidance, worry, self-esteem, insomnia, analytic reasoning, psychological well-being, and treatment preferences.

Results: 1809 patients participated. Severe paranoia was present in 53.4% and frequent voices in 48.2%. Of the causal mechanisms, severe worry was present in 67.7%, avoidance at agoraphobic levels in 64.5%, analytic reasoning difficulties in 55.9%, insomnia in 50.1%, poor psychological well-being in 44.3%, strongly negative self-beliefs in 36.6%, and weak positive self-beliefs in 19.2%. Treatment target preferences were: feeling happier (63.2%), worrying less (63.1%), increasing self-confidence (62.1%), increasing activities (59.6%), improving decision-making (56.5%), feeling safer (53.0%), sleeping better (52.3%), and coping with voices (45.3%). Patients with current paranoia and/or hallucinations had higher levels of the causal factors and of wanting these difficulties treated.

Conclusions: Patients with non-affective psychosis have high levels of treatable problems such as agoraphobic avoidance, worry, low self-esteem, and insomnia and they would like these difficulties treated. Successful treatment of these difficulties is also likely to decrease psychotic experiences such as paranoia.

1. Introduction

It is evident that too many patients with schizophrenia do not respond well enough to conventional treatment approaches. Even when given an adequate dose of antipsychotic medication, around two-thirds of patients do not see their psychiatric symptoms reduce even by half (Samara et al., 2018). Non-adherence to medication is also common (Kane et al., 2013). Psychological treatments are generally more popular with patients than medication but less than half of patients given standard CBT for psychosis fully take up the techniques (Dunn et al., 2012). When first generation cognitive-behavioural therapy (CBT) for psychosis is added to care for patients who have not responded to clozapine, only around 10% show a halving of psychiatric symptoms (Morrison et al., 2018). Our approach to improvement of treatments for psychosis is translational. We use advances in the understanding of the causes to develop new targeted interventions for specific aspects of clinical presentations in psychosis. This approach cannot be used simplistically however. Recognition is required that multiple, interacting causal mechanisms are implicated in psychosis and that these can vary in the individual case. However strong the theoretical basis, patient preference influences the up-take of any efficacious intervention offered. Successful translational treatment development requires a strong theoretical base that produces efficacious intervention techniques that are personalised, meaningful, and engaging for the individual patient.

We have been developing a new translational treatment for patients with persecutory delusions who have non-affective psychosis. Persecutory delusions are conceptualised as threat beliefs, developed in the context of genetic and environmental risk, that are maintained by several psychological processes including anxious avoidance, excessive worry, low self-confidence, poor sleep, anomalous experiences, and reasoning biases (Freeman, 2016). The causal mechanisms of maintenance are clear in this theoretical account: anxious avoidance prevents the receipt of disconfirmatory evidence that the person is safe; worry brings implausible ideas to mind, keeps them there, and exacerbates the distress; low self-esteem (negative self-beliefs and low positive self-beliefs) lead the person to feel inferior and vulnerable to harm from others; subjectively anomalous internal states (e.g. hallucinations)

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provoke fearful and unusual explanations; disrupted sleep increases anxiety, worry, low self-esteem and the anomalous internal states; and reasoning biases prevent the processing of alternative explanations. The clinical implication is that safety must be relearned, by entering feared situations after reduction of the influence of the maintenance factors. In a programme of randomised controlled tests of adapted psychological treatment we have shown that reducing anxious avoidance (Freeman et al., 2016a), worry (Freeman et al., 2015), low self-esteem (Freeman et al., 2014b), insomnia (Freeman et al., 2018), and reasoning bias (Garety et al., 2015) all lead to reductions in paranoia. The individual interventions have been combined into a full treatment – the Feeling Safe Programme - that targets recovery in persecutory delusions (Freeman et al., 2016b). After assessment, a patient is offered a choice of relevant modules that target the maintenance factors and enable the learning of safety through direct experience. Hence, there is targeting of theoretically-indicated mechanisms, personalisation of treatment, and patient choice. The treatment differs from first generation CBT for psychosis by: including substantial elements that have not been included in the original manuals (e.g. addressing the often complex and pervasive sleep dysfunction, using worry reduction methods, incorporating positive psychology techniques to develop positive beliefs about the self); treatment proceeding via achieving measured change in each targeted mechanism, one at a time, using a sustained approach; the highly manualised modular elements; the specific focus on persecutory delusions; the avoidance of overly complex formulations, instead using clear personalised explanations that contain an encouraging rationale for how change can occur; using the clear focus to implement active therapeutic techniques as soon as possible in the initial sessions; and frequent between session contact with patients to help initiate and support change.

It is notable that most of the causal mechanisms that we highlight are trans-diagnostic: they will exacerbate any type of mental health problem. Anxious avoidance, worry, low self-esteem, and poor sleep contribute to the occurrence of almost all mental health disorders. A clear demonstration of this transdiagnostic perspective is provided by the OASIS trial in which over three and a half thousand students with insomnia were randomised to receive either CBT for insomnia or treatment as usual (Freeman et al., 2017). The intervention to improve sleep led not only to reductions in insomnia but improvements in paranoia, hallucinations, anxiety, depression, and nightmares. In manipulationist experimental work we have shown that poor sleep contributes to the occurrence of paranoia and hallucinations via increases in anxiety, depression, negative self-beliefs, and worry (Reeve et al., 2018). Recent dynamic Bayesian network analyses of epidemiological data also show the complex and interactional nature of psychiatric symptoms and causal mechanisms across traditional diagnostic categories (Kuipers et al., 2019; Bird et al., 2018). Our selection of causal mechanisms, such as insomnia, worry, and low self-esteem, has also been made on the basis that they are likely to be problematic distressing experiences in themselves for patients. Hence, the focus is upon factors that patients are likely to want treated no matter the effect on psychotic experiences.

There have, of course, been previous surveys of treatment preferences for patients with schizophrenia. These surveys vary in the degree of choice in treatment goals offered and the level of detail in which potential treatment goals are described. Fischer et al. (2002) surveyed 60 stakeholder sets that included a patient, one of their family members, and one of their mental health care providers. All agreed that the top outcome priority of seven offered was 'reducing disturbing and unusual experiences, such as hallucinations and delusions'. A survey of 1281 patients in the Clinical Antipsychotic Trial for Intervention Effectiveness (CATIE) study found that the top three treatment goals of six offered were: reduce confusion and difficulty in concentrating; increase energy and interest; and reduce disturbing or unusual experiences, such as hallucinations and delusions (Rosenheck et al., 2005). In the CATIE study, the preference for reducing confusion was not associated with actual neurocognitive functioning difficulties, the preference to increase energy was not associated with the negative symptoms of schizophrenia but did have a small negative association with depression, while preference for symptom reduction was associated with the presence of positive symptoms of schizophrenia. In a three stage Delphi study, Byrne and Morrison (2014) found that patients most wanted help with: feeling paranoid; stress; anxiety or feeling nervous; feeling confused or unable to control thoughts; and concentration or memory problems. They also found that patients wanted help that: is based on their individual problems; informs about different types of help; and allows them to play a part in making decisions about what kind of help is best for them.

The aim of the current study was to determine the applicability of our programme of work to patients with non-affective psychosis attending NHS treatment services. We wanted to collect data to inform future implementation of the treatment approach. We wished to know how often the key treatable causal factors occur in patients with non-affective psychosis and whether patients actually wanted them to be treatment targets. This meant conducting a large clinical assessment study of patients with psychosis attending adult mental health care services. In contrast to previous surveys of patient preferences, our study was driven by a translational treatment approach. We assessed in detail the presence of mechanisms potentially distressing in themselves for patients but also contributory causes from our theoretical model to psychotic experiences. From our clinical studies the contributory causal factors are known to be treatable and we combined the clinical assessment with asking patients whether they would actually want them treated. In summary, we wished to assess: in what proportion of patients with non-affective diagnosis in mental health services that a key mechanism from our theoretical perspective is present; whether the hypothesised causal mechanisms are associated with severe paranoia and hallucinations; the degree of patient preference for each of the modular interventions; and patient preferences for future treatment targets.

2. Methods

2.1. Design

We carried out a large cross-sectional assessment study in National Health Service (NHS) secondary mental health services in England for patients with non-affective psychosis. Dichotomous cut-offs on the assessment measures were agreed before the data were analysed.

2.2. Participants

Participants were identified and recruited by NIHR Clinical Research Network (CRN) research delivery staff in participating NHS trusts across England. The participants were patients attending mental health services with a clinical diagnosis of non-affective psychosis. The inclusion criteria were: the participant is willing and able to give informed consent for participation in the study; aged 16 years or above; diagnosed with non-affective psychosis; and attending adult NHS mental health services. The exclusion criteria were: unable to read and write; or attending forensic mental health services. Written informed consent was obtained by the CRN research delivery staff. All necessary approvals were received from the NHS Health Research Authority (HRA).

2.3. Assessments

2.3.1. Green et al Paranoid Thoughts Scale – Part B (GPTS) (Green et al., 2008)

The GPTS Part B is a sixteen item self-report measure of persecutory ideation (e.g. 'I was convinced there was a conspiracy against me') over the past fortnight. Each item is rated on a 5-point (1 to 5) scale. Higher scores indicate greater levels of persecutory ideation. Internal reliability in the current study was very high ($N = 1809$, Cronbach's alpha = 0.97). A score above 29 was used to indicate severe paranoia, which is

the entry criterion for a clinical trial for patients with persecutory delusions (Garety et al., 2017).

2.3.2. Cardiff Anomalous Perceptions Scale-hallucinations (CAPS) (Bell et al., 2006)

This scale comprises eleven hallucination items taken from the CAPS. Each item is rated on a 0 (not at all) to 5 (daily) scale. Higher scores indicate greater levels of hallucinatory experiences. Internal reliability in the current study was very high ($N = 1809$, Cronbach's alpha = 0.92). Endorsement of at least one of the three voices items as occurring at least once a week ('Hear voices commenting on what you're thinking or doing' 'Hear voices saying words or sentences when there is no one around that might account for it' 'Hear two or more unexplained voices talking to each other') was used to indicate hearing voices regularly.

2.3.3. Mobility Inventory for Agoraphobia - alone subscale (MIA) (Chambless et al., 1985)

The degree of current avoidance because of anxiety is rated on a 1 (never avoid) to 5 (always avoid) scale for each of 26 situations (e.g. supermarkets, riding in buses, lifts). Higher scores indicate greater anxious avoidance. Internal reliability in the current study was very high ($N = 1809$, Cronbach's alpha = 0.94). An average item score above 1.60 is the recommended cut-off for a diagnosis of agoraphobia (Chambless et al., 2011).

2.3.4. Penn State Worry Questionnaire (PSWQ) (Meyer et al., 1990)

The PSWQ is the most established measure of trait worry style. Each of the sixteen items (e.g. 'I am always worrying about something') is rated on a 5-point (1 to 5) scale. Higher scores indicate a greater tendency to worry. Internal reliability in the current study was very high (N = 1809, Cronbach's alpha = 0.91). A score above 44 indicates a clinically significant level of worry (Startup and Erickson, 2006) and was used as the entry criterion for the Worry Intervention Trial (Freeman et al., 2015).

2.3.5. Brief Core Schema Scales – self scales (BCSS) (Fowler et al., 2006)

The self-report BCSS has 6 items assessing negative beliefs about the self (e.g. 'I am unloved') and six items assessing positive beliefs about the self (e.g. 'I am respected'). Each item is rated on a five-point scale (0–4). Negative and positive self-scores are distinct and summed separately. Higher scores reflect greater endorsement of items. Internal reliability in the current study was high ($N = 1809$, Negative Self Cronbach's alpha = 0.83, Positive Self Cronbach's alpha = 0.85). Negative self was indicated by a score above 7 and low positive self was indicated by a score below 6, which are one standard deviation outside the mean of the non-clinical group in the scale development study ($N = 754$) (Fowler et al., 2006).

2.3.6. Insomnia Severity Index (ISI) (Bastien et al., 2001)

The ISI is a seven-item self-report questionnaire based upon the insomnia criteria of the Diagnostic and Statistical Manual of Mental Disorders (APA, 1994). The scale assesses sleep-onset (e.g. 'Difficulty falling asleep') and sleep maintenance difficulties, associated distress, and interference with daily functioning. Each item is rated on a 0–4 scale. The time period is the past fortnight. Higher scores indicate the presence of symptoms of insomnia. Internal reliability in the current study was high ($N = 1809$, Cronbach's alpha = 0.88). A score above 10 is the cut-off for insomnia (Morin et al., 2011).

2.3.7. Rational-experiential inventory – rational reasoning (REI) (Pacini and Epstein, 1999)

The 20 item rational reasoning scale was used. Items (e.g. 'I have a logical mind') are rated on a five point Likert scale where 1 is 'completely false' and 5 are 'completely true'. The total score is calculated by adding together the mean score for each of the two subscales within the REI, with higher scores indicating greater rational reasoning. Internal reliability in the current study was high ($N = 1809$, Cronbach's alpha = 0.86). An average score below 6.5 was taken to indicate low use of rational reasoning, which is one standard deviation below the mean of the non-clinical population ($N = 1000$) (Freeman et al., 2014a).

2.3.8. Warwick-Edinburgh Mental Well-being Scale (WEMWBS) (Tennant et al., 2007)

The WEMWBS is a fourteen item scale assessing well-being over the past fortnight. Each item (e.g. 'I've been feeling optimistic about the future') is rated on a 1 (none of the time) to 5 (all of the time) scale, and therefore the total score can range from 14 to 70, with higher scores indicating a greater level of well-being. Internal reliability in the current study was very high (N = 1809, Cronbach's alpha = 0.93). A score below 42.9 was taken to indicate poor psychological well-being, since it is one standard deviation below the population mean score from the Health Survey for England 2011 ($N = 7020$).

2.3.9. Patient Preferences Questionnaire

This self-report questionnaire first asked whether the patient would or would not like help in eight areas for: Worrying less; Feeling more self-confident; Sleeping better; Feeling safer; Doing more activities; Improving my decision-making (thinking more carefully); Coping better with voices; Feeling happier. They were then asked to list their top three treatment priorities from the eight areas above. Patients were then asked to list other areas for which they would like psychological help.

2.4. Analysis

This was a descriptive study, with the main reporting involving the proportion of the patient sample meeting clinical cut-offs for each of the scales and their preferences for treatment. Participants had to have completed at least 80% of the items for each clinical assessment questionnaire to be included in the study. Pearson correlations between paranoia, hallucinations, and the other scales were tested. Chi square was used to test associations between clinically significant levels of a causal mechanism and whether the person would like the mechanism treated. All statistical testing was two-tailed and carried out with SPSS Version 22.0 (IBM, 2013).

3. Results

Between 3rd October 2017 and 12th July 2018, 1944 patients were recruited from 39 NHS mental health trusts in England. 135 patients did not complete at least 80% of each clinical assessment measure and were therefore excluded. Completion rates of the eight clinical assessments for the remaining 1809 patients included in the study were extremely high: only 960 (0.4%) out of 220,698 potential data items were missing (which were therefore prorated). Typical of cohorts seen in clinical services, the group had a higher proportion of men than women, the average age was around 40 years old, and the majority of patients had a clinical diagnosis of schizophrenia (see Table 1). About a third of the study group was inpatients when they completed the assessments.

Consistent with the theoretical rationale of the work, paranoia was significantly associated with higher levels of anxious avoidance, $n = 1809$, $r = 0.37$, $p < .001$, worry, $n = 1809$, $r = 0.40$, $p < .001$, negative self-beliefs, $n = 1809$, $r = 0.47$, $p < .001$, insomnia, $n = 1809$, $r = 0.41$, $p < .001$, and hallucinations, $n = 1809$, $r = 0.54$, $p < .001$, and with lower levels of positive self-beliefs, $n = 1809$, $r = -0.17$, $p < .001$, rational reasoning, $n = 1809$, $r = -0.14$, $p < .001$, and psychological wellbeing, $n = 1809$, $r = -0.29$, $p < .001$. Hallucinations were significantly associated with higher levels of anxious avoidance, $n = 1809$, $r = 0.41$, $p < .001$, worry, $n = 1809$, $r = 0.39$, $p < .001$, negative self-beliefs, $n = 1809$, $r = 0.42$, $p < .001$, insomnia, $n = 1809$, $r = 0.39$, $p < .001$, and paranoia, $n = 1809$, $r = 0.54$, $p < .001$, and with lower levels

Table 1
Basic demographic and clinical data.

	Number (n)/mean and standard deviation (SD)
Mean age in years (standard deviation)	41.3 (12.9)
Gender (n)	
Male	1255
Female	547
Ethnicity (n)	
White	1302
Black African	113
Black Caribbean	87
Back other	65
Asian	149
Mixed	69
Other	22
Treatment team (n)	
Community mental health team	1070
Inpatient ward	584
Early intervention service	155
Clinical notes diagnosis (n)	
Schizophrenia	1161
Schizo-affective disorder	287
Delusional disorder	34
Brief psychotic disorder	35
Organic psychotic disorder	2
Drug induced psychosis	11
First episode psychosis	127
Schizotypal disorder	4
Psychotic disorder not otherwise specified	148
Mean paranoia score (SD)	38.0 (21.1)
Mean hallucinations score (SD)	16.8 (15.4)
Mean anxious avoidance score (SD)	2.1 (0.9)
Mean worry score (SD)	51.4 (14.6)
Mean negative-self score (SD)	6.5 (6.0)
Mean positive-self score (SD)	11.7 (6.4)
Mean insomnia score (SD)	11.0 (7.4)
Mean analytic reasoning score (SD)	6.3 (1.5)
Mean psychological well-being score (SD)	44.6 (12.8)

of positive self-beliefs, n = 1809, $r = -0.20$, p < .001, rational reasoning, n = 1809, $r = -0.23$, p < .001, and psychological wellbeing, n = 1809, $r = -0.30$, p < .001.

The prevalence of paranoia, hallucinations, and the putative causal mechanisms are summarised in Table 2. In the total group, there were high levels of paranoia, hallucinations, anxious avoidance, worry, negative self-beliefs, low positive self-beliefs, insomnia, low rational reasoning, and low psychological wellbeing. Consistent with the correlational analysis, the presence of all these factors were clearly higher in those with paranoia or hallucinations than those without such psychotic experiences. For instance, in those with paranoia, approximately three-quarters of patients showed agoraphobic levels of avoidance and clinical levels of worry. (In Supplementary Table 1, the prevalence of putative causal mechanisms is provided for patients with paranoia alone (n = 186), patients with hallucinations alone (n = 370), and patients with both paranoia and hallucinations (n = 781). It can be seen that prevalence of difficulties is greatest for those who have both paranoia and hallucinations.) There were no statistically significant differences in levels of paranoia between inpatients (n = 584, mean GPTS score = 39.3, SD = 21.4) and outpatients (n = 1225, mean GPTS score = 37.4, SD = 21.0), t(df = 1807) = −1.74, p = .082. Levels of hallucinatory experiences were actually slightly lower in inpatients (n = 584, mean CAPS score = 15.3, SD = 15.3) than outpatients (n = 1225, mean CAPS score = 17.5, SD = 15.3), t(df = 1807) = 2.84, p = .004.

Treatment target preferences are summarised in Table 3. 1633 (90.3%) patients wanted help in at least one of the eight areas, with 176 (9.3%) reporting that they would not like help in any of these areas. The mean number of the eight problem areas that patients wanted treated was 4.5 (SD = 2.6). In the whole patient group, the treatment targets offered were endorsed by between 45.4% and 63.2% of the patient group. These rates increased for the patients having current psychotic experiences. For example, the endorsement rates for the treatment targets for patients with severe paranoia were between 59.8% and 74.9%. Only 42 patients (4.5%) with severe paranoia did not endorse any of the treatment targets offered. The mean number of the eight problems that patients with severe paranoia wanted treated was 5.4 (SD = 2.4). In the whole patient group, the most frequently occurring areas put in the top three treatment priorities were: worrying less (n = 837, 50.8%), feeling happier (n = 707, 42.9%), sleeping better (n = 678, 41.2%), feeling more self-confident (n = 567, 34.4%), doing more activities (n = 520, 31.6%), coping better with voices (n = 479,

Table 2
The prevalence of problems.

	Total sample (N = 1809)	Patients with severe paranoia (n = 967)	Patients with auditory hallucinations (n = 872)	Patients without paranoia and auditory hallucinations (n = 599)
Severe paranoia				
No	842 (46.5%)		243 (27.9%)	
Yes	967 (53.5%)		629 (72.1%)	
Auditory hallucinations				
No	937 (51.8%)	338 (35.0%)		
Yes	872 (48.2%)	629 (65.0%)		
Anxious avoidance				
No	642 (35.5%)	218 (22.5%)	206 (23.6%)	325 (54.3%)
Yes	1167 (64.5%)	749 (77.5%)	666 (76.4%)	274 (45.7%)
Worry				
No	584 (32.3%)	200 (20.7%)	180 (20.6%)	295 (49.2%)
Yes	1225 (67.7%)	767 (79.3%)	692 (79.4%)	304 (50.8%)
Negative self				
No	1147 (63.4%)	460 (47.6%)	433 (49.7%)	501 (83.6%)
Yes	662 (36.6%)	507 (52.4%)	439 (50.3%)	98 (16.4%)
Low positive self				
No	1461 (80.8%)	735 (76.0%)	656 (75.2%)	520 (86.8%)
Yes	348 (19.2%)	232 (24.0%)	216 (24.8%)	79 (13.2%)
Insomnia				
No	903 (49.9%)	337 (34.9%)	331 (38.0%)	418 (69.8%)
Yes	906 (50.1%)	630 (65.1%)	541 (62.0%)	181 (30.2%)
Low analytic reasoning				
No	797 (44.1%)	384 (39.7%)	315 (36.1%)	317 (52.9%)
Yes	1012 (55.9%)	583 (60.3%)	557 (63.9%)	282 (47.1%)
Low psychological well-being				
No	1007 (55.7%)	446 (46.1%)	389 (44.6%)	411 (68.6%)
Yes	802 (44.3%)	521 (53.9%)	483 (55.4%)	188 (31.4%)

Table 3
Treatment target preferences.

	Total sample	Patients with severe paranoia	Patients with auditory hallucinations	Patients without paranoia and auditory hallucinations
Feeling safer				
No	847 (47.0%)	292 (30.3%)	308 (35.4%)	411 (69.0%)
Yes	954 (53.0%)	671 (69.7%)	562 (64.6%)	185 (31.0%)
Coping better with voices				
No	982 (54.6%)	386 (40.2%)	218 (25.1%)	514 (86.4%)
Yes	815 (45.4%)	574 (59.8%)	649 (74.9%)	81 (13.6%)
Doing more activities				
No	727 (40.4%)	345 (35.9%)	317 (36.5%)	281 (47.1%)
Yes	1074 (59.6%)	616 (64.1%)	551 (63.5%)	316 (52.9%)
Worrying less				
No	666 (36.9%)	250 (25.9%)	227 (26.1%)	317 (53.0%)
Yes	1139 (63.1%)	715 (74.1%)	642 (73.9%)	281 (47.0%)
More self-confident				
No	683 (37.9%)	280 (29.1%)	256 (29.5%)	302 (50.5%)
Yes	1119 (62.1%)	683 (70.9%)	611 (70.5%)	296 (49.5%)
Sleeping better				
No	859 (47.7%)	358 (37.4%)	314 (36.3%)	380 (63.4%)
Yes	941 (52.3%)	600 (62.6%)	550 (63.7%)	219 (36.6%)
Improving decision-making				
No	785 (43.5%)	330 (34.3%)	293 (33.8%)	345 (57.6%)
Yes	1019 (56.5%)	632 (65.7%)	574 (66.2%)	254 (42.4%)
Feeling happier				
No	663 (36.8%)	266 (27.6%)	293 (27.5%)	302 (50.7%)
Yes	1139 (63.2%)	697 (72.4%)	631 (72.5%)	294 (49.3%)

29.1%), feeling safer ($n = 464$, 28.2%), and improving decision-making ($n = 333$, 20.2%). (In Supplementary Table 2, the treatment preferences are provided for patients with paranoia alone, patients with hallucinations alone, and patients with both paranoia and hallucinations.)

Table 4
Treatment target preferences by presenting problems.

Presence of problem	Would like treatment		Chi-square (df = 1)	*p*-Value	Odds ratios	Odds ratio 95% confidence interval
	No (n)	Yes (n)				
Severe paranoia	Feeling safer					
No	555	283	231.9	<.001	4.51	3.70, 5.50
Yes	292	671				
Auditory hallucinations	Coping better with voices					
No	764	166	588.3	<.001	13.70	10.92, 17.20
Yes	218	649				
Anxious avoidance	Doing more activities					
No	279	360	4.5	.035	1.24	1.02, 1.50
Yes	448	714				
Worry	Worrying less					
No	379	204	292.3	<.001	6.05	4.88, 7.51
Yes	287	935				
Negative self	Feeling more self-confident					
No	539	605	113.0	<.001	3.18	2.56, 3.96
Yes	144	514				
Low positive self	Feeling more self-confident					
No	598	860	31.4	<.001	2.11	1.62, 2.77
Yes	85	259				
Insomnia	Sleeping better					
No	656	243	458.9	<.001	9.28	7.49, 11.51
Yes	203	698				
Low analytic reasoning	Improving my decision-making (thinking more carefully)					
No	344	451	5.0	<.001	1.24	1.03, 1.50
Yes	383	623				
Low psychological well-being	Feeling happier					
No	484	521	126.2	<.001	3.21	2.61, 3.95
Yes	179	618				

Presented in Table 4 are the treatment target preferences by whether patients had clinically significant levels of the difficulty. In every instance, having a clinical level of a problem was associated with being more likely to want the problem as a treatment target. The odds ratios appear highest when there is the closest match between the description of the treatment target and the topic of the clinical assessment.

The additional treatment target areas suggested by patients are summarised in Table 5. Forty-six other types of difficulties were raised. The most commonly raised areas concerned social connectedness (e.g. 'find a friend', 'someone to talk to', 'isolation') ($n = 95$, 5.3%) and practical support (e.g. 'cooking' 'money management' 'housing') ($n = 93$, 5.1%). Vocational support (e.g. 'work advice' 'help getting back to work' 'going to college') ($n = 52$, 2.9%), physical health, exercise and weight management ($n = 61$, 3.3%), cognitive difficulties of memory, confusion, concentration, and learning ($n = 33$, 1.8%), and energy levels ($n = 8$, 0.4%) were all mentioned.

4. Discussion

We carried out a clinical assessment study with eighteen hundred patients with non-affective psychosis attending NHS mental health services. Paranoia, hallucinations, and mechanisms likely to contribute to these difficulties were assessed. The mechanisms assessed are treatable and we asked patients whether they would like them treated. Hence the survey combined a translational approach with patient preference. Most striking is the range and extent of current problems in this patient group, despite receiving treatment from mental health services. The clinical assessment measures indicated high levels of the causal mechanisms in patients with non-affective psychosis. For instance, almost two-thirds of patients had levels of anxious avoidance comparable to people with agoraphobia, just over two-thirds of the patients had levels of worry comparable to generalised anxiety disorder, and one half of the sample had clinical levels of insomnia. Consistent with our theoretical model, the presence of all these causal mechanisms were significantly higher in patients with current paranoia and/or hallucinations. Three quarters of patients with severe paranoia have levels of avoidance equivalent to people diagnosed with agoraphobia. Patients also wished the difficulties we surveyed to be treated. The pattern of findings indicate that treatments such as the Feeling Safe Programme (Freeman et al., 2016b) are likely to be relevant to a large number of patients

Table 5
Additional treatment areas suggested by patients (N = 1809).

Treatment area	Number (%)
Social connectedness	95 (5.3%)
Practical support (e.g. cooking, finances)	93 (5.1%)
Access to psychological therapy	53 (2.9%)
Vocational	52 (2.9%)
Stress management/relaxation/coping skills	45 (2.5%)
Dealing with negative past experiences or trauma	33 (1.8%)
Medication choice/understanding	32 (1.8%)
Family issues	28 (1.5%)
Addiction (including smoking)	26 (1.4%)
Increased/improved access to existing support	23 (1.3%)
Physical health	21 (1.2%)
Physical exercise	21 (1.2%)
Weight management/diet	19 (1.1%)
Inpatient admission/discharge experience	19 (1.1%)
Psychotic symptoms	19 (1.1%)
Shared experiences: support groups/peer support	17 (0.9%)
Motivation	15 (0.8%)
Anger management	14 (0.8%)
Cognitive: confusion	13 (0.7%)
Bereavement/loss	13 (0.7%)
Planning future	13 (0.7%)
Increased independence	12 (0.6%)
Social anxiety	11 (0.6%)
Communication	10 (0.6%)
Alternative therapies	10 (0.6%)
Coping with emotions	10 (0.6%)
Cognitive: concentration	9 (0.5%)
Obsessive thinking	9 (0.5%)
Energy levels	8 (0.4%)
Cognitive: memory	8 (0.4%)
Understanding symptoms	8 (0.4%)
Religious/spiritual	8 (0.4%)
Intrusive thoughts	7 (0.4%)
Self-harm	6 (0.3%)
Eating disorder symptoms	5 (0.3%)
Panic	5 (0.3%)
Body image	4 (0.2%)
Self-development	4 (0.2%)
Suicidal ideation	4 (0.2%)
Issues concerning sex	4 (0.2%)
Cognitive: learning	3 (0.2%)
Acceptance/coming to terms	3 (0.2%)
Feelings of guilt	3 (0.2%)
ADHD	3 (0.2%)
Phobia	2 (0.1%)
ASD	2 (0.1%)

seen in mental health services for psychosis. Other treatment approaches, if shown to change particular mechanisms and difficulties highlighted here, would also be supported by this report (e.g. van der Gaag et al., 2012; Lincoln et al., 2013; Moritz et al., 2014; Morrison et al., 2014; van den Berg et al., 2015; Gumley et al., 2017; Bucci et al., 2018). More broadly, the potential for a different form of service provision for patients with non-affective psychosis can be seen in the study findings. Patients could be offered personalised treatment, known to be highly effective, for problems such as anxious avoidance, low self-esteem, worry, and insomnia. Patients are likely to engage with treatments focussed on these targets and we believe that there should be consequent clinical benefits for psychotic experiences.

The findings indicate a need to adopt into services for people with severe mental health difficulties interventions shown by research to treat anxious avoidance, worry, low self-esteem, insomnia and other such trans-diagnostic mechanisms and evaluate the outcomes. Such work has been successfully achieved for common mental health disorders in the NHS (Clark, 2018). A workforce in secondary mental health care services trained in how to help people worry less, feel more self-confident, feel safer, and re-engage with everyday activities may well tackle the difficulties of patients with psychosis with much greater efficacy and patient satisfaction. Greater partnership in care may occur. Digital technologies, such as new automated immersive virtual reality cognitive treatments (Freeman et al., 2018; Freeman et al., 2019), are likely to have a key role in providing high quality standardised interventions focussed on these treatment targets to many more patients. Medications that can be effective on these mechanisms could be used synergistically where appropriate and in therapeutically helpful timing with psychological intervention.

The clinical assessment results provide an illustration of the complexities of presentation of patients with psychosis. The assessments selected were guided by our theoretical model and the results of our clinical intervention studies. The aim was not to assess all causal mechanisms or all problem areas of patients with psychosis, meaning that other difficulties of patients with psychosis will have been missed. We did ask patients to list other problem areas that they would like treated. Unlike previous patient surveys, problems of energy, concentration, confusion, and memory were only mentioned by a small proportion of patients. Undoubtedly rates would have been higher if these kinds of difficulties had been assessed and patients asked directly. Although the number of patients assessed was large, it is unknown whether the study patients are representative of those attending mental health services with non-affective psychosis. Patients most unwell, or patients so well that contact with services was infrequent, would have been less likely to have been assessed. The use of cut-offs for what we would view as problems best conceptualised as dimensional by nature is highly likely to underestimate the level of clinical need. Having moderate levels of these types of difficulty can still cause significant impairment for an individual, and will account for why many patients who did not score above a cut-off for a particular problem still wished it treated. We also consider it likely that treatment targets will vary upon the individual's stage of recovery, which was not considered in the study. These limitations could be addressed in further studies that follow the general method adopted here of assessing putative causal mechanisms, highlighted by theory, experiments, and treatment trials, in close combination with patient views. In this way we believe that services for patients with psychosis can be improved in the future.

Contributors

The study was conceived by Daniel Freeman. It was designed by Daniel Freeman, Felicity Waite, and Andrew Molodynski. Katie Taylor coordinated the study. Daniel Freeman drafted the paper. All authors commented on the paper.

Role of the funding source

The main funder reviewed the study as part of the grant application but did not have any role in the conduct or reporting of the work.

Declaration of Competing Interest

Daniel Freeman is a co-founder and Chief Clinical Officer of Oxford VR, a University of Oxford spinout company. He has written popular science, self-help, and academic books about paranoia with several publishers for which royalties are received. He has received funding from the National Institute of Health Research (NIHR), Medical Research Council (MRC), and Wellcome Trust to carry out treatment development studies on the topic. No other authors report any conflicts of interest.

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Appendix A. Supplementary data

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