



Persecutory delusions: a cognitive perspective on understanding and treatment

Daniel Freeman

A spectrum of severity of paranoia (unfounded thoughts that others are deliberately intending to cause harm) exists within the general population. This is unsurprising: deciding whether to trust or mistrust is a vital aspect of human cognition, but accurate judgment of others' intentions is challenging. The severest form of paranoia is persecutory delusions, when the ideas are held with strong conviction. This paper presents a distillation of a cognitive approach that is being translated into treatment for this major psychiatric problem. Persecutory delusions are viewed as threat beliefs, developed in the context of genetic and environmental risk, and maintained by several psychological processes including excessive worry, low self-confidence, intolerance of anxious affect and other internal anomalous experiences, reasoning biases, and the use of safety-seeking strategies. The clinical implication is that safety has to be relearned, by entering feared situations after reduction of the influence of the maintenance factors. An exciting area of development will be a clinical intervention science of how best to enhance learning of safety to counteract paranoia.

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Correspondence to:
Prof D Freeman, Department of
Psychiatry, University of Oxford,
Warneford Hospital, Oxford
OX3 7JX, UK
daniel.freeman@psych.ox.ac.uk

Introduction

“Trust dies, mistrust blooms.”

Sophocles¹

“He does not venture alone, for fear he should meet the devil, a thief, be sick; fears old women as witches, and every black dog or act he sees he suspecteth to be a devil, every person near him is maleficated, every creature, all intend to harm him.”

Robert Burton²

“But it is impossible to go through life without trust: that is to be imprisoned in the worst cell of all, oneself.”

Graham Greene³

Trust is the foundation stone of communities; excessive mistrust a corrosive. Yet although every day each of us must decide whether or not to trust other people, this can be a difficult judgment. The level of threat we face varies by individual, time, and place; nonetheless, real threats from others exist and these must be anticipated and judicious precautions put in place.

The balance between trust and mistrust is often vicariously set by learning from those around us. But our innate levels of anxiety, the events that happen to us, and the inherent difficulties in decoding the intentions of others, mean that there is substantial individual variability in the accuracy of judgments concerning trust. When judgments are too far weighted to mistrust, then we are advancing along the paranoia spectrum.

The erroneous thought that others are deliberately intending to harm us is termed persecutory ideation (panel). When such persecutory ideation is held with a high degree of certainty, we are experiencing persecutory delusions. The contention of this Personal Review is that all such paranoid thinking arises, partly, from normal cognitive processes concerning judgments of trust. Psychiatric research is still predominately focused on trying to explain the diagnostic category of schizophrenia,

but the past 15 years have seen a major advance in understanding the causes of paranoid thinking specifically. Increasingly, this knowledge is being translated into potentially much more efficacious treatment for those experiencing persecutory delusions in the context of psychiatric diagnoses such as schizophrenia. Notably, this work has originated from a clinical cognitive perspective. This Personal View provides a distillation of a specific cognitive approach to persecutory delusions.

Conceptualising the phenomena: the paranoia spectrum

A clinical reality with face validity seems to have become obscured: experiences such as grandiosity, paranoia, hearing voices, thought disorder, and anhedonia are quite different. Yet the standard psychiatric view is that each is simply a possible symptom of a psychotic disorder such as schizophrenia. The diagnosis explains the symptoms, runs the logic. However, in a factor analysis of the psychiatric assessments of over 600 inpatients with a functional psychotic disorder, Peralta and Cuesta⁵ concluded that “the factor structure of psychotic symptoms is more complex than is generally acknowledged”. Peralta and Cuesta identified 11 different first-order factors corresponding to different psychotic symptoms (eg, paranoia, hallucinations, poverty of speech). Such complexity has been repeatedly found.^{6,7} Rather than describe these phenomena as symptoms, it might well be better to consider them as individual psychotic experiences. Each has been found to have differing heritability.⁸ Each will require different explanation, notwithstanding that there are shared causal mechanisms across many different types of mental health problems. A focus on individual psychotic experiences also corresponds to clinical need, since it is these experiences that patients find troubling (eg, feeling attacked, hearing upsetting voices). Paranoia is repeatedly identified as one of these individual psychotic experiences.

Panel: Explanation of terms

Persecutory ideation

Unfounded (erroneous) cognitions of being targeted for harm, with ideation that comprises two main elements: the individual thinks that harm is occurring, or is going to occur, to him or her; the individual believes that the persecutor has the intention to cause harm.

Ideas of reference

Unfounded cognitions of being observed, followed, discussed, or the topic of messages or communications (eg, in the media). The thoughts are distinguished from persecutory ideation by the absence of the attribution of intent to cause harm.

Paranoia

This is used to refer to the complete range of paranoia in the general population (ie, the paranoia spectrum), including mistrust, suspiciousness, ideas of reference and persecution, and delusions. It is not simply used to refer to the psychiatric diagnosis paranoia (now called delusional disorder).

Persecutory delusions

The severe end of the paranoia spectrum, when the ideas are held with a strong conviction (at least 50% conviction) so that a belief is present. The beliefs vary along a number of dimensions, including the degree to which they are held, the amount of preoccupation, and the distress and impairment caused.

Cause

A manipulability view of causation (an interventionist-causal approach) is taken. If a factor is a cause of an event then altering the putative cause should lead to a change in the outcome of interest. As Cook and Campbell⁴ describe: "The paradigmatic assertion in causal relationships is that manipulation of a cause will result in the manipulation of an effect".

Inus condition

"An insufficient but non-redundant part of an unnecessary but sufficient condition". The classic example used to illustrate this term is of a match as a causal factor to light a fire. The match is insufficient since other factors are needed to start a fire (eg, oxygen, something to burn) but the match is non-redundant if these elements are in place. Together these elements combined are sufficient to start a fire. However it is an unnecessary condition since there are other ways to light a fire than using a match.

Effect size

An effect size provides an assessment of the strength of a relationship. Cohen's *d* is one of the most commonly used methods in treatment trials, providing an assessment of the standardised difference between two means. The change in the outcome for the intervention relative to the control group is divided by the pooled standard deviation of the whole sample. The effect size is often interpreted as small (0.2), medium (0.5) or large (0.8+).

Paranoia is a term used widely but with varying meanings.⁹ It has been used, for example, to refer to all types of delusional thinking; to a distinct diagnosis; and to general suspiciousness.¹⁰ This variety in meaning has undoubtedly caused confusion. In this Personal View, the term paranoia is used to mean ideas of reference and persecution. However, the defining feature is persecutory ideation: unfounded ideas that harm is going to occur and that the persecutor has this deliberate intention (panel). (Ideas of reference are a little less specific. Although they are most frequently the basis for persecutory elaborations,

they can also serve as a foundation for grandiose ideas.) A spectrum of paranoia exists within the general population: many people have a few paranoid thoughts; a few people have many.¹¹ This pattern is similar to that of emotional disorders such as anxiety and depression. Analysis of national epidemiological data indicates that there is a single paranoia dimension.¹² Persecutory delusions are the extreme end of the dimension.

Persecutory delusions are a major psychiatric problem. More than 70% of patients presenting with a first episode of psychosis have a persecutory delusion;¹³ about half of patients with these delusions show levels of psychological wellbeing in the lowest 2% of the general population;¹⁴ and psychiatric hospital admission is a common consequence.¹⁵ When individuals believe they are in imminent danger, being around other people becomes extremely difficult. Hence these delusions can lead to social withdrawal, exacerbation of emotional distress, and a much lower quality of life. Successful treatment, therefore, can produce many important benefits for patients. However, treatment that leads to total recovery is all too rare. Antipsychotic medication has effect sizes (standardised mean differences) varying between 0.33 and 0.88 (median 0.44),¹⁶ and major side-effects, poor compliance, and residual problems are common. The effects on delusions of first generation cognitive-behavioural treatments when added to medication are typically a little lower (*d*=0.36).¹⁷ Moreover, service implementation of these therapies remains problematic.¹⁸ Consequently, what we see is a group with often very high levels of problems but showing treatment effects that are actually lower than those for conditions such as anxiety disorders.¹⁹ A radical improvement in treatment outcomes for patients with persecutory delusions is therefore urgently needed.

A cognitive model of paranoia

Debates about delusions being caused by either one or two factors are outdated. The complexity of causation in delusions is apparent in discussions with patients but also when the results of empirical studies are considered. Many contributory factors are implicated in persecutory delusions. It is most certainly not a matter of one or two causes. Indeed, mental health disorders in general are typically the result of an interaction between multiple causes, and the same disorder can follow from varying combinations of causes. Thus each cause is an "inus condition"²⁰—"an insufficient but non-redundant part of an unnecessary but sufficient condition". A single cause therefore only increases the probability of a delusion occurring. And the defining feature of a causal factor (in the context of either the development or maintenance of a delusional belief) is that, when altered, it leads to a change in the delusion. How then does one choose which causes to focus on? We highlight those that are: (1) plausible mechanistically (and therefore likely to have strong connections), (2) present in a large

proportion of patients with persecutory delusions, (3) potentially tractable, and (4) the causal role has been tested by manipulation (in experimental or intervention studies).

The key psychological inroad into understanding persecutory delusions is to recognise them as threat beliefs (figure).²¹ At the centre of the delusion is the belief that harm will occur from others. The individual believes that he or she is currently unsafe. Unlike threat beliefs in problems such as social anxiety where the fear is, for example, of rejection by others because of looking foolish, or panic disorder where the fear is, for example, of having a heart attack, in persecutory delusions the belief is that others deliberately intend to cause the harm. When the threat system has been activated, anxiety-related processes of threat anticipation are operative, while negative images of threat (eg, being stabbed on the street) may also reinforce the belief.²² Consistent with this theory are studies that have shown using experience sampling methodology that negative affect precedes paranoia^{23,24} and, at the neurobiological level of explanation, amygdala hyperactivity occurring with paranoia.²⁵

Persecutory threat beliefs develop in the context of genetic and environmental risk. Zavos and colleagues⁸ assessed paranoia dimensionally in 5000 adolescent twin pairs. They found that the relative contribution of genetic and environmental risk, even at the extreme end of paranoia scoring, was equivalent. The specific identification of genes with paranoia has barely begun.²⁶ However, the contribution of environmental events such as physical abuse is clear and self-evident,²⁷ with the caveat that there might also be a degree of shared genetic propensity between particular life events and paranoia (gene-environment correlation).²⁸ Paranoia has also been linked to many other environmental factors including poverty, poor physical health, less perceived social support, stress, less social cohesion, cannabis use, and problem drinking.^{29,30}

But why do the threat beliefs persist when they are unfounded? Six processes are key (figure). First, worry brings implausible fearful ideas to mind, keeps them there, and exacerbates the distress. Patients with persecutory delusions show a worry thinking style similar to that of patients with generalised anxiety disorder.³¹ Evidence shows a dose-response relationship between levels of worry and paranoia.³² Moreover, the presence of high worry predicts the persistence of persecutory delusions.³³

Second, negative self-beliefs, often developed in the context of adverse interpersonal experiences, mean that the individual feels inferior to others, different and apart, and hence vulnerable. Paranoia feeds on vulnerability. Three systematic reviews³⁴⁻³⁶ have highlighted that negative self-beliefs are prevalent in paranoia. Causing a reduction in self-confidence in vulnerable individuals leads to an increase in paranoid thoughts.³⁷⁻³⁹

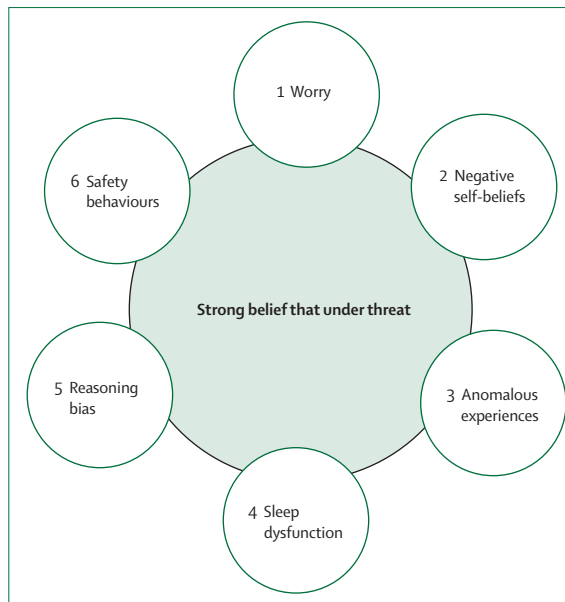


Figure 1: The maintenance of persecutory delusions

Third, paranoia thrives when an individual is in a subjectively anomalous internal state: odd internal sensations and perceptions provoke fearful explanations. Most frequently, the high physiological arousal typically associated with anxiety is mistaken to indicate external threat. Dissociation is common too, and is exacerbated by bouts of worrying.⁴⁰ In some instances aberrant salience may be misinterpreted,⁴¹ but a much wider range of perceptual anomalies have consistently been linked with the occurrence of paranoid thinking⁴² and schizophrenia more generally (eg, “basic symptoms”⁴³). An experimental study with over 100 individuals susceptible to paranoia showed that cannabis causes a wide range of anomalous experiences and poorer working memory performance, but only the former led to the occurrence of paranoia.⁴⁴

Fourth, disrupted sleep (eg, insomnia, hypersomnia, circadian rhythm disorder, nightmares) is likely to maintain paranoia via multiple routes. It will elevate negative emotion, mood dysregulation,⁴⁵⁻⁴⁷ and anomalous perceptions, and limit the cognitive resources available to revise initial interpretations of ambiguous situations. Patients also describe how the pervasive fatigue from poor sleep reduces their strength to cope with psychotic experiences.⁴⁸ Certainly most patients with persecutory delusions are sleeping poorly.⁴⁹ A review⁵⁰ of 66 studies identifies disrupted sleep as a putative causal factor of psychotic experiences. The traditional view that sleep disturbances are a secondary epiphenomena in schizophrenia is now beginning to be changed completely.

Fifth, reasoning biases prevent the processing of alternative explanations. Three quarters of patients with delusions do not report alternative explanations for the events they cite as evidence.⁵¹ A lack of so-called

belief flexibility (that is, a willingness to generate and consider alternative explanations) locks patients into the delusional explanation of events. Belief inflexibility might be exacerbated by reduced data-gathering (“jumping to conclusions”)^{52,53} and decrease in use of analytic reasoning.⁵⁴

Finally, almost all patients try to reduce the persecutory threat by carrying out so-called safety-seeking behaviours (defensive strategies). But these reactions both prevent the processing of disconfirmatory evidence and enhance intolerance of negative affect. The concept of safety behaviours was developed in accounts of anxiety disorders,⁵⁵ which showed how the problem with their use is the fact that patients attribute the absence of harm to their safety behaviours rather than the inaccuracy of the threat ideation. Thus, disconfirmatory evidence is either not received or not processed. Habituation to anxiety is prevented. The most common type of safety behaviour used by patients with persecutory delusions is avoidance of situations.⁵⁶ More subtle, but equally important, within-situation behaviours occur when in the places of perceived threat. For example, patients take steps to decrease their visibility, enhance their vigilance, and look out for escape routes. The higher the level of distress, the greater the use of safety behaviours.⁵⁷

These maintenance factors are all likely to be implicated in the original onset of the delusions. A dose-response relation, rather than qualitative changes, explains shifts along the paranoia continuum. Typically, bidirectional relationships between the causes and paranoia become embedded. For instance, worry brings paranoid thoughts to mind, which, in turn, leads to greater levels of worry. The content of persecutory delusions is definitional. However, many of the maintenance factors in this cognitive account operate across a wide range of psychopathologies. This transdiagnostic view is consistent with recent network approaches, which view disorders as arising from complex dynamic interactions of individual psychiatric symptoms and related processes that cut across traditional psychiatric classification systems.^{57–59} The commonalities should provide clinicians with greater confidence that psychosis is neither mysterious when compared with other conditions nor somehow qualitatively different.

This cognitive account, however, does differ from three alternative cognitive perspectives on paranoia. It is in direct contrast to an account that delusions are a defence to protect self-esteem against unconscious negative views of the self,⁶⁰ instead resting on the conceptualisation that paranoia reflects and directly builds on negative affect. We also do not consider that there are two distinct types of paranoia such as in the proposal of “poor me” and “bad me”.⁶¹ “Poor me” paranoia was proposed to reflect a defence against negative emotions reaching consciousness, and “bad me” paranoia was proposed to be a direct reflection of conscious ideas about the self that are so extremely negative that the person believes they will be punished.

This account of two types of paranoia with opposite causes is unconvincing. For instance, all the analyses of large epidemiological datasets indicate that there is just a single dimension of paranoia in the general population;^{5–8,12} the central test of the theory—a comparison of defence processes in patients with “poor me” compared with patients with “bad me” paranoia—has never been carried out; and a more parsimonious explanation is that this theory simply identifies one element of the content of paranoid thoughts (ideas about whether the persecution is deserved) that is tied to fluctuating levels of negative affect (similar to other aspects of the content such as ideas about the power of the perpetrator). Finally, theory of mind difficulties have been the most researched psychological process in schizophrenia,⁶² since almost by definition the intentions of others are being misread in the content of paranoid thoughts, but it is not incorporated into our current account. We did not include it because although there is strong evidence for theory of mind difficulties being present in patient groups, it is clear that these cognitive difficulties are most associated with negative symptoms and not paranoia.^{34,63} The cognitive account presented has greater commonalities with views put forward by earlier theorists such as Silvano Arieti,⁶⁴ Sarnoff A Mednick,⁶⁵ and Paul McReynolds,⁶⁶ who saw anxiety as central to the occurrence of delusions.

A translational treatment for persecutory delusions

From this cognitive perspective, the clinical goal becomes to enable the patient to form a strong belief concerning current safety, thereby allowing the persecutory threat belief to dissipate. The key clinical question is: how can patients relearn safety?

In essence, the maintenance factors need to be removed and the patient must enter the threatening situations to learn directly that nothing bad occurs. The patient must learn to tolerate the high anxiety, associated physiological arousal, and other anomalous experiences, understanding that although they are uncomfortable, they are not a sign of external threat. This learning of safety should allow a fundamental shift of attention away from activation of the negative valence system. Thus intervention starts to move from talk in the clinic room to direct, active, learning *in vivo*. Sessions are often spent, for example, going into shopping centres, or local streets, or initiating new activities, to build up beliefs of safety. (We have also often found value in talking with patients while simply walking outside, which can make the session both more comfortable and provide immediate environmental stimuli to discuss.) The focus is not on disproving past perceptions but in establishing knowledge of current safety.

How best to help patients relearn safety must become a research focus. It is not a trivial consequence that from this perspective, clinical trials should recruit patients on

the presence of having persecutory delusions, and that such delusions and related behaviours become the main outcome. (Similarly, too few trials have focused solely on hallucinations⁶⁷ or other individual psychotic experiences.) Translating the cognitive model outlined above, a series of studies of persistent persecutory delusions have shown the benefits of targeting the maintenance factors individually. These studies have used brief, manualised interventions presented one-on-one with a clinician to aid the theoretical interpretation, later dissemination, and the building of a combined treatment. The strongest clinical test to date has been for reducing worry. A randomised trial (The Worry Intervention Trial)⁶⁸ included 150 patients with persistent persecutory delusions who were analysed by masked investigators, and the trial had a 95% follow-up rate. Targeting worry, in just six sessions, significantly reduced both worry and the persecutory delusions (both effect sizes [Cohen's *d*]=0.5) compared with standard care alone. A pilot randomised trial (The Self-Confidence Study) with 30 patients with persistent persecutory delusions, principally used techniques to enhance positive self-beliefs to limit the effects of negative self-beliefs.⁶⁹ Treatment resulted in improved positive self-beliefs (effect size=1.0) and psychological wellbeing (effect size=1.2) and reductions in negative self-beliefs (effect size=0.24) and delusions (effect size=0.6). An assessor-blind pilot randomised trial (The Better Sleep Trial) with 50 patients with persistent delusions and hallucinations showed that sleep can be substantially improved (effect size=1.9) and that there might be consequential benefits in levels of paranoia (effect size=0.2) and quality of life (effect size=0.5) compared with standard care alone.⁷⁰ A trial with several thousand university students with insomnia is now underway that will have sufficient power to test definitively the relation between sleep improvement and paranoia.⁷¹ Two randomised studies^{72,73} have also shown the value of focused individual work reducing reasoning biases in patients with delusions. In a pilot clinical study⁷³ with 31 patients with persistent delusions, the "thinking well" reasoning intervention led to a reduction in delusional conviction (effect size=0.6) compared with standard care.⁷³ Finally, findings from a study published in 2016⁷⁴ show that testing the predictions of the persecutory threat beliefs by entering feared situations while dropping safety behaviours reduces the delusions to a much greater extent than does exposure alone (effect size=1.3).

Throughout these studies, treatment uptake has been remarkably high, which suggests that the approaches appear relevant and useful to patients. Patients desire help, for example, to reduce worry, feel more self-confident, sleep better, and to feel safer. The outcomes also indicate the potential of targeted brief approaches derived from the cognitive perspective but, of course, they are not without their limitations. Each is based on the assumption that the chosen intervention techniques

principally target the mechanism of interest. Beyond this assumption, no study has then attempted to establish the temporal relationships of changes in the mechanism to changes in the delusions. Apart from the study of safety behaviours⁷⁴ and the proof of principle reasoning trial,⁷² the studies have not used an alternative psychological therapy control condition, thereby limiting the confidence with which one can identify the active treatment techniques. It must also be recognised that there are clear challenges in this clinical area. Patients' frequent demoralisation and hopelessness mean that clinicians must often work within a context in which active engagement with treatment is difficult. The adverse life circumstances of many patients, a background of severe social disadvantage, and the use of alcohol and illicit drugs further complicate the treatment picture. That said, although we should be realistic about the context of treatment, we should not lose sight of the fact that most patients can make real clinical progress.

From the start, our research group's objective has been to achieve a much higher recovery rate for persecutory delusions, carefully building a new treatment out of evaluated individual components framed within a cognitive model. An initial feasibility evaluation has now taken place, combining the intervention elements in a new 20-session translational modular treatment called The Feeling Safe Programme.⁷⁵ Based on questionnaire assessments and a brief clinical interview, a menu of treatment options is provided for patients, who then choose their preferred treatment elements and the order of implementation (hence treatment is personalised and includes patient preference). Seven of the 11 patients with persistent delusions in the context of non-affective psychosis attending secondary mental health services who have taken part in the Feeling Safe Programme no longer met criteria for a delusion immediately after treatment.⁷⁵ A randomised trial of the Feeling Safe Programme (Current Controlled Trials, ISRCTN18705064), improved in light of the lessons of the feasibility evaluation, against an attention control is now underway. The range of modules offered in the programme target each of the maintenance factors in the figure: reducing worry, increasing self-confidence, improving sleep, reducing the effect of voices and other anomalous experiences, improving reasoning processes, and behavioural tests for reducing fear beliefs and relearning safety (while dropping safety-seeking behaviours). The treatment differs from first generation cognitive behavioural treatment for psychosis by: including substantial elements that have not been included in the original manuals (eg, 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; and by the

Search strategy and selection criteria

References for this paper were identified from previous delusion reviews by the author and a search of PubMed from January 2013 to December 2015 by use of the terms “delusion” or “paranoia” or “cognitive” and “schizophrenia/psychosis”. References were then selected on the basis of relevance to the content of the paper.

avoidance of overly complex formulations, instead using clear personalised explanations that contain an encouraging rationale for how change can occur.

One advantage of constructing a treatment in this way is that, as new developments in understanding and treating paranoia become evident, these developments can be readily incorporated.^{76–78} All such advances must be targeted at helping to establish new beliefs about current safety. The new approach has been tested in patients with persistent delusions but arguably might show even greater efficacy in those at much earlier stages of problems, including those identified as having at risk mental states for psychosis,⁷⁹ since problems will be less long-standing and support networks more likely to be in place. How to achieve synergy between psychological and pharmacological approaches needs testing at a micro level of detail in tightly controlled experimental studies—for instance, the timing, type, and dose of medication could all moderate how much can be learned by patients when going back into a situation that they fear. A more dynamic and responsive pharmacological approach might be envisaged that varies depending on the mechanism being targeted and the psychological techniques being used, but this approach has never been tested. It is likely that our understanding of paranoia will be particularly enhanced by a developmental perspective on its occurrence;⁸⁰ by the identification of factors shared with and differing from other mental health problems such as grandiosity,⁸¹ anxiety,^{42,82} and hallucinations;²⁷ by studying the paranoia spectrum across different diagnoses; by determining the societal factors influencing both trust and mistrust; and by assessing the overall predictive values of theoretical models. As we hope can be seen in the cognitive approach outlined above, future research must adopt an integrated perspective, combining analysis of the phenomenon under investigation with an understanding of causes, and using the knowledge gained as the basis for the development of treatment methods. In this way, the future years should see a step change in outcomes for patients with persecutory delusions.

Declaration of interests

DF 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.

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