

# WORRY, WORRY PROCESSES AND DIMENSIONS OF DELUSIONS: AN EXPLORATORY INVESTIGATION OF A ROLE FOR ANXIETY PROCESSES IN THE MAINTENANCE OF DELUSIONAL DISTRESS

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**Abstract.** The efficacy of CBT for psychosis will be enhanced by a greater understanding of the mechanisms underlying symptoms. Therefore, an investigation is reported that examined a role for a neglected factor, anxiety, in the maintenance of delusional beliefs. It was hypothesized that processes responsible for chronic worry, as detailed by Wells' (1994a) meta-cognitive model, contribute to delusional distress. Questionnaire measures of anxiety, chronic worry and of meta-worry and related processes were administered to individuals with persecutory delusions ( $N = 15$ ) and individuals with generalized anxiety disorder (GAD) ( $N = 14$ ). Evidence was found for the presence of dysfunctional meta-cognitive processes in the clinically anxious group, which adds to the growing support for the model of GAD. Moreover, it was found that many of the individuals with persecutory delusions had high levels of general worry, and the factors implicated in the meta-cognitive model of anxiety were also present in this group. The results indicated that delusional distress is not simply related to content but is associated with whether the individual experiences meta-worry concerning the control of delusion-relevant worries, that is, whether he or she worries about not being able to control thoughts about the belief. This is the first theoretical development of the important dimension of delusional distress.

*Keywords:* CBT, delusions, persecutory, distress, anxiety, worry.

## Introduction

Arguably the most important new development in cognitive behaviour therapy (CBT) over the last 10 years has been its application to the difficulties of individuals with

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psychosis. The promise of this intervention has been demonstrated in single case studies (see review by Bouchard, Vallieres, Roy, & Maziade, 1996), and, more recently, in randomized controlled trials (e.g., Drury, Birchwood, Cochrane, & MacMillan, 1996; Kuipers et al., 1998). Furthermore, the interest in the approach has been accompanied by the publication of a number of therapy manuals (Kingdon & Turkington, 1994; Fowler, Garety, & Kuipers, 1995; Chadwick, Birchwood, & Trower, 1996). In short, techniques that have proved beneficial for individuals with neurosis, have also proved to be beneficial for individuals with psychosis.

However, a significant proportion (30–50%) of individuals with drug-resistant symptoms of psychosis do not obtain measurable benefits from CBT, and only rarely do symptoms completely disappear (Kuipers et al., 1997, 1998). In a parallel with cognitive therapy for anxiety and depression (e.g. Clark & Fairburn, 1997; Teasdale & Barnard, 1993), improvements in therapy for psychosis may well be dependent on a greater understanding of the cognitive processes underlying symptoms. Therefore, the aim of this paper is to develop further a multi-factorial model of the aetiology of delusional beliefs (see Garety & Hemsley, 1994) by examining a role for anxiety in the maintenance of delusional beliefs.

A role for anxiety in psychosis has been proposed by many theorists in the past. For example, noting the observations of Arieti, Mednick (1958) viewed high levels of anxiety as the primary vulnerability factor for schizophrenia. In learning theory terms he described how a subsequent increase in anxiety by a precipitating event can lead to thought disorder and delusions. McReynolds (1960) too saw anxiety as the main cause of schizophrenia. In a cognitive formulation, he proposed that anxiety is caused by a backlog of information to be processed and assimilated into schemas. (One cause postulated for this backlog is the presence of incongruous, emotional material.) McReynolds hypothesized that when the backlog reaches extremely high levels, symptoms of schizophrenia may develop in attempts to stabilize and reduce the amount of unprocessed information. For example, delusions were viewed as new schemas formed to assimilate unprocessed material and hence to reduce high levels of anxiety. Nevertheless, despite the theoretical speculation, the role of anxiety has been neglected in contemporary models and experimental investigations (Garety & Freeman, in press).

McReynolds (1960) recognized a key difficulty in investigating the role of anxiety in psychosis; he noted that “. . . any advance in an interpretation of schizophrenia based on anxiety is dependent on an improved conceptualization of anxiety”. The recent cognitive models of anxiety (e.g., Beck, Emery, & Greenberg, 1985; Eysenck, 1992; Wells & Matthews, 1994) may provide a sufficiently adequate understanding of anxiety for such an investigation. Furthermore, the application of a cognitive model of anxiety to psychosis is important from a clinical perspective; if anxiety is shown to have a role in delusions then established cognitive behavioural anxiety-reduction techniques may reduce delusions. In the current investigation, the model chosen to guide the research was Wells' (1994) meta-cognitive model of generalized anxiety disorder (GAD).

We also sought to take the research onto new ground. Delusions were investigated multi-dimensionally and, in particular, the mechanisms underlying the dimension of *delusional distress* were examined for the first time. Prevailing definitions of delusional beliefs, which encapsulate the view of delusions as discrete discontinuous entities, are problematic (Garety, 1985), partly due to the philosophical difficulties of determining

the referent of a name by a single set of necessary or sufficient characteristics. Therefore, assessing the presence of a delusion may best be accomplished by considering a list of characteristics or dimensions (e.g. conviction, personal reference, distress), none of which is necessary or sufficient, that with increasing endorsement produces greater agreement on the presence of a delusion (Oltmanns, 1988). Support for this multi-dimensional perspective on delusional beliefs has been obtained in a number of empirical studies (e.g. Kendler, Glazer, & Morgenstern, 1983; Harrow, Rattenbury, & Stoll, 1988; Brett-Jones, Garety, & Hemsley, 1987; Garety & Hemsley, 1994). In a recent study extending this work, it was found that it was not the *content* of beliefs that distinguished individuals with delusions on a psychiatric ward from (non-clinical) individuals in the general population, but the degree of conviction, preoccupation and distress in the beliefs (Peters, Joseph, & Garety, in press). In this paper, the focus is upon the dimension of delusional distress. Determining the mechanisms underlying delusional distress may be particularly pertinent: a delusion may only become disruptive and gain the attention of psychiatric services when the person becomes distressed and, furthermore, it is the reduction of the distress caused by a delusion, not the conviction with which it is held, that is the principal aim of cognitive interventions (Kingdon & Turkington, 1994; Fowler et al., 1995).

### **The meta-cognitive model of generalized anxiety disorder (GAD)**

Wells' (1994a, 1995) meta-cognitive model focuses on explaining why worry becomes chronic or uncontrollable in people with GAD. It is suggested that what distinguishes the worry of people with GAD from worry in people without an anxiety disorder is the presence of "meta-worry", which is worry about worry (e.g. "worrying will make me crazy", "I can't control my worries", "worrying thoughts can make bad things happen"). This proposal was based upon meta-worry being found to be a dimension of worry separate from social and health content factors, and that correlated with trait anxiety (Wells, 1994b). Meta-worry and related beliefs are therefore viewed as the key to explaining chronic worry.

It is proposed that people with GAD are "in a state of cognitive dissonance in which positive and negative beliefs about worry co-exist" (Wells & Butler, 1997). In short, it is proposed that positive beliefs about worry (e.g. "worrying helps me cope with future problems", "if I think of all the bad things that could happen I'll be prepared to prevent them") lead to initiation of worry, which activates negative beliefs associated with meta-worry (e.g. "worrying will make me crazy", "my worries are uncontrollable") that cause either counter-productive attempts at suppression of worry or a vulnerability to rumination. Suppression of worry, and rumination, lead to increased worrying, and an ever greater sense of uncontrollability. Consistent with this, Cartwright-Hatton and Wells (1997), in a recent study, found an association in a student sample between worry proneness and negative and positive beliefs about worry. Furthermore, individuals with GAD held more of these beliefs. Wells suggests several reasons why negative beliefs may develop, such as that repeated practice of worrying, due to the pre-existing positive beliefs, leads to less voluntary control over the initiation of worry and therefore increasing disruption for the individual, and that negative information about worry may be received from other people. It is postulated that once

negative ideas about worry begin to develop they will be strengthened by the consequences. How activation of negative beliefs and meta-worry leads to the maintenance and escalation of levels of worry is detailed more specifically: attempts to deliberately suppress worry may, conversely, increase the frequency of worry (“the rebound effect”) (Wegner, Schneider, Carter, & White, 1987); the use of avoidance and thought control strategies, to try and reduce worry and its feared consequences, prevents disconfirmation of the negative thoughts and therefore maintains worry; beliefs about the uncontrollability of worry may (alternatively) encourage rumination and ways of worrying that the individual thinks exploits its benefits whilst avoiding the feared consequences; and the emergence of “hypervigilance” will lead to the detection of more triggers of worry. In support of the suggested links between worrying, negative ideas about worry and attempts to control it, Wells and Davies (1994) found correlations of the use of punishment (e.g. “I punish myself for thinking the thought”) and worry (e.g. “I focus on different negative thoughts”) thought control strategies with meta-worry, trait anxiety and the Penn State Worry Questionnaire in another student sample.

The theory has implications for the treatment of GAD. It is argued by Wells that less emphasis in therapy should be given to the content of everyday worry and instead the focus should shift to the individual’s beliefs about worry. In particular, it is argued that dysfunctional beliefs about worry should be tested out in behavioural experiments, whilst active attempts to suppress worry should be discouraged in favour of a “detached letting go” style.

### **The potential role of meta-cognitive processes in delusions**

It is argued here that Wells’ model of chronic worry may provide a different perspective from which to understand the distress that delusions can cause. In a study of the characteristics of delusional experience, Garety and Hemsley (1994) found four independent dimensions of delusional experience from the 11 variables investigated. These dimensions were labelled conviction, obtrusiveness, concern and distress. Pertinent to the argument here, the items loading on the distress dimension were *worry*, unhappiness and resistance. Therefore, it would be appropriate to investigate whether high levels of distress associated with a delusion may be partly maintained or caused by processes associated with meta-worry (and therefore anxiety). In other words, the distress associated with a delusion may partly be the result of a sense of uncontrollability of thoughts about the belief rather than simply the content of the delusion per se.

Three stages are needed in a preliminary investigation of the influence of processes associated with chronic worry in persecutory delusions. Firstly, if individuals with delusions are prone to chronic worry then it is likely that they will also experience worries unconnected to their delusion, and therefore the presence of general worry in these individuals should be assessed. In the second stage, it needs to be established whether individuals with delusions actually experience their thoughts about their belief as uncontrollable. (It is of interest that there is evidence that many individuals believe the occurrence of their auditory hallucinations to be totally outside of their control (e.g. Chadwick & Birchwood, 1994; Close & Garety, 1998) and that therapy often aims to modify these beliefs in order to reduce distressing ideas about the power of voices (e.g. Chadwick et al., 1996)). Furthermore, the processes that are proposed to underlie

meta-worry should be investigated. This would include an evaluation of both the presence of negative and positive beliefs about worry and the use of types of thought control strategies. The third and final stage is to determine whether meta-worry is associated with delusional distress or any of the other main dimensions of delusional experience.

A final point is that the investigation focused on *persecutory* delusions. Persecutory delusions were selected for the principal reason that it is hypothesized that anxiety may more frequently have a role in the formation and maintenance of this type of belief, since both share a prominent theme of “anticipation of danger”. However, there were also other reasons for the study of delusions of persecution. Persecutory beliefs are one of the most commonly occurring delusions (Cutting, 1997) and symptoms of psychosis (WHO, 1973), which gives them clinical and theoretical importance. Furthermore, possession of a persecutory belief often has clear ramifications for the individual concerned. For example, Wessely et al. (1993) report that persecutory beliefs are the most likely type of delusion to be acted upon, and Castle, Phelan, Wessely, and Murray (1994) found that the presence of a persecutory delusion is a predictor of admission to hospital. Finally, a greater theoretical understanding of persecutory delusions is especially pressing, because individuals with persecutory delusions experience distress as a direct consequence of the symptom and therefore are often amenable to psychological intervention (unlike, for instance, individuals with grandiose delusions (Fowler et al., 1995)).

## Method

### *Hypotheses and overall design of study*

A cross-sectional comparison was made up of an anxious group and a group with persecutory delusions on self-report questionnaire measures of general worry, meta-worry, beliefs about worry and thought control questionnaires. A non-clinical control group was not included in this preliminary investigation since previous research has established that they report low levels of general worries and meta-worry (e.g. Tallis, Davey, & Bond, 1994; Meyer, Miller, Metzger, & Borkovec, 1990; Wells, 1994b). Furthermore, for the individuals with persecutory delusions, it was examined whether meta-worry was correlated with any of the dimensions of delusional experience.

Based upon the general hypothesis that processes associated with anxiety contribute to the occurrence of many persecutory delusions, the first prediction made was that many individuals in the persecutory group would report levels of worry and meta-worry comparable to that of the anxious group. Moreover, it was postulated that the two groups would have a similar pattern of beliefs about worry and use of thought control strategies. Thirdly, it was predicted that meta-worry would be most closely associated with the *distress* that a delusion causes. That is, higher levels of meta-worry would be associated with higher levels of delusional distress.

### *Participants*

Two groups with a combined total of 29 individuals took part. Fifteen participants had current persecutory beliefs. That is, they were more than “fairly sure” that harm was

going to occur to them and that their persecutor(s) had this intention. Of this group, 13 met DSM-IV criteria (APA, 1994) for paranoid schizophrenia and 2 met the criteria for delusional disorder. All but 2 of the persecutory group were in-patients at the time of testing. The remaining 14 participants met the DSM-IV criteria for GAD, assessed by interview and completion of the GAD-Q (Roemer, Borkovec, Posa, & Borkovec, 1995), and were out-patients.

### *Measures*

All the measures, including those establishing diagnosis, were completed in one appointment for each person. Questionnaires were completed in the presence of the experimenter so that any queries could be answered.

*Assessment of persecutory delusions.* Three dimensions of delusions (conviction, pre-occupation and distress) were assessed by use of personal questionnaires (Brett-Jones et al., 1987). In all cases the participants adopted the wording of the scales suggested by the experimenter and therefore the scales were identical for all participants. The Brief Psychiatric Rating Scale (BPRS, Overall & Gorham, 1962) was also completed for the persecutory group to assess overall symptom severity.

*Assessment of anxiety and worries.* Levels of general worry were assessed by the Worry Domains Questionnaire (WDQ) (Tallis, Eysenck, & Mathews, 1992) and the tendency to worry by the Penn State Worry Questionnaire (PSWQ) (Meyer et al., 1990). Reviews of the use of each questionnaire can be found in Tallis et al. (1994) and Molina and Borkovec (1994) respectively; importantly, both measures distinguish individuals with GAD from individuals without an anxiety disorder. In addition, participants completed the Spielberger State and Trait Anxiety Questionnaires (Spielberger, Gorsuch, Lushene, Vagg, & Jacobs, 1983), the Beck Anxiety Inventory (Beck, Epstein, Brown, & Steer, 1988) and a measure of depression (BDI; Beck, Ward, Mendelson, Mock, & Erbaugh, 1961).

*Assessment of worry processes.* Participants completed two questionnaires. The first questionnaire was constructed for this study and measured the frequency of worry, the frequency of meta-worry (assessed by a single question from Wells, 1994b), individual beliefs about worry and the controllability of worry. For the anxious participants the questions concerned their general worries, whilst for participants with persecutory delusions the questions were framed to concern worry about their delusions. For example, the meta-worry item for the anxious group was "Do you worry that you cannot control your thoughts as well as you would like?", and this was re-framed for the persecutory group as "Do you worry that you cannot control your thoughts about the belief as well as you would like?" Although the instrument items had face validity, the reliability and validity of the questionnaire was not formally determined; the aim of the questionnaire was to assess concisely a range of potentially important variables for a preliminary investigation.

The second questionnaire that participants completed was the Thought Control Questionnaire (TCQ) (Wells & Davies, 1994), which assesses the strategies used to try and suppress or control unwanted thoughts. The 30-item instrument assesses five types

**Table 1.** Demographic and clinical data

Variable	Persecutory group		Anxious group	
	<i>N</i>	Mean ( <i>SD</i> )	<i>N</i>	Mean ( <i>SD</i> )
Age	15	37.9 (10.2)	14	41.1 (11.0)
Length of illness	15	11.4 (9.2)	14	12.3 (9.2)
Current IQ*	14	97.4 (13.5)	13	98.8 (10.2)
WDQ	13	48.1 (24.7)	12	50.1 (16.6)
PSWQ	10	53.9 (24.9)	11	61.2 (6.3)
Trait anxiety	15	54.8 (12.2)	14	60.5 (6.6)
State anxiety	10	45.4 (13.5)	14	44.2 (7.7)
BAI	11	20.0 (16.1)	13	22.9 (14.2)
BDI	10	19.5 (12.0)	13	20.3 (9.6)
Sex	Male ( <i>N</i> = 12) Female ( <i>N</i> = 3)		Male ( <i>N</i> = 8) Female ( <i>N</i> = 6)	

\* The Quick Test (Ammons & Ammons, 1962).

WDQ = Worry Domains Questionnaire; PSWQ = Penn State Worry Questionnaire.

of thought control strategies: 1. distraction (e.g. “I do something that I enjoy”); 2. social control (e.g. “I ask my friends if they have similar thoughts”); 3. worry (e.g. “I focus on different negative thoughts”); 4. punishment (e.g. “I punish myself for having the thought”); and 5. reappraisal (e.g. “I try and re-interpret the thought”). Wells and Davies (1994) report that in a non-clinical sample the internal consistency of the sub-scales were acceptable to good (Cronbach coefficient alphas were all greater than 0.6), whilst the correlations between individual sub-scales were low. The test–retest reliability of the questionnaire was good ( $r = 0.83, p < .0005$ ). In the present study, the persecutory group were asked to complete this questionnaire as to how they attempted to control thoughts about their delusional beliefs.

## Results

### *Demographic and clinical characteristics of the participants*

It can be seen in Table 1 that the anxious and persecutory groups did not differ in age, length of illness or current IQ (*t*-tests, all  $p > .1$ ).

There were also no significant group differences on any of the measures of worry, anxiety or depression (Table 1) (*t*-tests, all  $p > .1$ ). However, it is noticeable that there was greater variability in the scores of the persecutory group. (The participants’ worry scores are comparable to previous studies with individuals with GAD. Tallis et al. (1994) report a mean score on the WDQ of 40.03 (*SD*: 9.8) for a group of 29 people with GAD. Molina and Borkovec (1994) report a mean score on the PSWQ of 67.66 (*SD*: 9.60) for a group of 174 individuals with GAD).

### *The presence of meta-worry and related processes*

*Meta-worry and controllability.* It can be seen in Table 2 that both anxious individuals and individuals with persecutory delusions are experiencing meta-worry and uncontrollability of thoughts. Seventy per cent of the persecutory group and 86% of the

**Table 2.** Assessment of meta-worry and related processes

Question (persecutory group version)	Group	Almost never	Sometimes	Often	Almost always
1. Do you worry that you cannot control your thoughts about the belief as well as you would like?	Persecutory	2	2	3	7
	Anxious	0	2	8	4
2. How often do you worry about details concerning your belief?	Persecutory	0	2	5	7
	Anxious	0	0	8	6
3. How often do you succeed in controlling your worry concerning your belief?	Persecutory	6	4	2	1
	Anxious	4	8	2	0
4. How often do you deliberately start to worry about these things?	Persecutory	3	5	1	4
	Anxious	6	4	2	2
5. Once you have started worrying, how often do you try to stop?	Persecutory	4	0	4	5
	Anxious	1	2	6	5

anxious group experience meta-worry often or almost always (Question 1). The same percentages in each group have poor success in controlling their worries (Question 3, almost never/sometimes). There is also an indication in the frequency counts shown in Table 2 that, at least for some individuals, a greater amount of time is spent having normal worry (Question 2) compared with meta-worry (Question 1), which indicates that meta-worry can be distinguished.

*Beliefs about worry.* The presence of positive and negative beliefs was assessed by two open-ended questions (“Are there any positive benefits or advantages/negative costs or disadvantages for you in this worrying?”). Two further questions were asked; one that related to positive beliefs about worry (“How often do you deliberately start to worry?”) and one that concerned negative beliefs (“Once you have started worrying, how often do you try to stop?”).

Approximately a quarter of each group identified positive beliefs about worry (anxious group 4/14, persecutory group 3/13). However, it may be that the open-ended question format, which used minimal prompting, was not suitable for some participants, since a higher proportion of each group reported that they deliberately started to worry (Table 2, Question 4). These results suggest that a majority of each group had a motivation to worry on occasion, although they may have found it difficult to articulate immediately. The majority in both groups (although greater in the anxious group) readily identified negative beliefs about worry (anxious group 12/14, persecutory group 8/13), and this was reflected in the frequency of attempts made to stop worrying once it had occurred (Table 2, Question 5). Therefore, many individuals in both groups had negative beliefs about worry and made efforts to control it.

*Thought control strategies.* The scores of the two groups for the Thought Control Questionnaire are displayed in Table 3. They do not differ for the total score on the TCQ or any of the sub-scales (all univariate tests  $F_{1,22} < 2, p > 0.1$ ). Inspection of Table 3 indicates that the anxious and persecutory groups score comparably to a large group of undergraduate and post-graduate students who were administered the TCQ by Wells and Davies (1994).



**Table 3.** Thought Control Questionnaire (TCQ) scores

Sub-scale	Persecutory group	Anxious group	Male non-clinical control group (Wells & Davies, 1994)
	( <i>N</i> = 10) mean ( <i>SD</i> )	( <i>N</i> = 14) mean ( <i>SD</i> )	( <i>N</i> = 96) mean ( <i>SD</i> )
Total score	60.0 (10.3)	61.9 (5.5)	63.8 (7.3)
Distraction	13.2 (4.3)	13.5 (2.3)	14.6 (3.1)
Social	14.0 (2.2)	12.7 (3.3)	13.6 (3.4)
Worry	10.4 (3.3)	11.6 (3.2)	10.5 (2.9)
Punishment	10.1 (3.6)	11.6 (2.1)	10.2 (3.2)
Re-appraisal	12.3 (4.6)	12.4 (2.1)	14.9 (3.3)

Pearson correlations were calculated between the participants' meta-worry and TCQ component scores. There was a trend for meta-worry, in both groups, to correlate with the frequency of use of punishment strategies (anxious group  $r = 0.47$ ,  $p = .087$ ; persecutory group  $r = 0.57$ ,  $p = .083$ ), but there was no further indication of associations of meta-worry with the other thought control strategies (all  $p > .1$ ). Correlations were also examined between meta-worry and TCQ scores for the whole sample combined, since there was only a small variability in meta-worry scores within the groups (which restricts the likelihood of finding significant correlations) and the groups had a similar pattern of results. For the combined group, meta-worry correlated significantly with the use of punishment strategies ( $r = .055$ ,  $p = .005$ ) and with the total TCQ score ( $r = 0.44$ ,  $p = .031$ ), but there were no further significant correlations.

#### *Correlations of worry processes with delusion dimensions*

A key question is whether anxiety, and specifically meta-worry, are linked to delusion dimensions. Correlations are displayed in Table 4. It can be seen that meta-worry is highly correlated with delusional distress, but not with delusional conviction or pre-occupation. Trait anxiety is strongly correlated with meta-worry, as found by Wells (1994b), and also with delusional distress. For the anxious group, correlations were calculated between meta-worry, trait anxiety, the WDQ, the PSWQ, the BAI and the BDI. Four correlations were significant: meta-worry and trait anxiety ( $r = 0.56$ ,  $p < .05$ ), meta-worry and the PSWQ ( $r = 0.61$ ,  $p < .05$ ), trait anxiety and the PSWQ ( $r = 0.64$ ,  $p < .05$ ) and the BDI and BAI ( $r = 0.73$ ,  $p < .01$ ).

### **Discussion**

In this exploratory experiment, a single-symptom approach to psychopathology was combined with a recent cognitive model of emotional disorder. For individuals with persecutory delusions and individuals with GAD, assessments were made of the frequency of both their general everyday worries and meta-worry, their beliefs about worry and the strategies used to control the concerns. It was hypothesized that many individuals with persecutory delusions would experience levels of general worry comparable with clinically anxious individuals. Furthermore, it was predicted that processes

**Table 4.** Pearson correlations for the persecutory group between the delusion dimensions and meta-worry and the other clinical measures

	Conviction	Preoccupation	Distress	Meta-W	Trait	WDQ	PSWQ	BAI	BDI
Conviction									
Preoccupation	.04								
Distress	.43	.05							
Meta-W	-.04	.22	.71**						
Trait	.08	.16	.73**	.80**					
WDQ	.03	-.07	.60*	.48	.49				
PSWQ	-.33	-.23	.16	.13	.28	.77**			
BAI	-.21	-.05	.32	.46	.48	.55	.62		
BDI	-.52	-.05	.44	.50	.55	.27	.30	.36	
BPRS	-.38	.08	.08	.40	.13	.31	-.06	.03	.38

\*  $p < .05$ ; \*\*  $p < .01$ .

Conviction = delusional conviction, Preoccupation = delusional preoccupation, Distress = delusional distress, Meta-W = meta-worry, Trait = trait anxiety, WDQ = Worry Domains Questionnaire, PSWQ = Penn State Worry Questionnaire, BAI = Beck Anxiety Inventory, BDI = Beck Depression Inventory, BPRS = Brief Psychiatric Rating Scale.

associated with chronic worry would be present in the individuals with persecutory delusions. Finally, it was proposed that the presence of meta-worry concerning the control of thoughts about the persecutory delusion would be associated with the dimension of delusional distress.

### *Results for the anxious group*

Central to Wells' model of GAD is that excessive worriers spend time worrying about worrying. Therefore, support is given to the model by the finding that all the individuals with GAD in this study reported experiencing meta-worry; the overwhelming majority answered that they did it frequently. As would be expected therefore, the anxious group also reported that they found it difficult to control their everyday worries. Combined with the finding that the anxious participants readily identified negative consequences of worrying, it is clear that efforts to control worry were being made. This was confirmed by 80% of the group reporting that once they had started to worry, then they often or almost always tried to stop. However, even though the overwhelming impression given was that worrying negatively affected their lives, just over half the sample reported that they deliberately started to worry on occasion. This therefore supports the proposition of the meta-cognitive model that some chronic worriers are in a state of cognitive dissonance, which leads to initiation of worry and then attempts at suppression.

The results obtained from the Thought Control Questionnaire, assessing strategies used to suppress worry, suggest that the anxious individuals use a similar range of thought control strategies as individuals without a clinical disorder. This was inferred from comparison with the findings of the study of Wells and Davies (1994), data from a non-clinical group were not collected in the current study. Partial support was obtained for Wells and Davies' (1994) finding, with a non-clinical sample, that the use of punishment control strategies is associated with meta-worry: the individuals within the anxious group with higher meta-worry scores tended to use punishment thought control strategies to a greater extent. It might be expected, however, that the individuals with clinical levels of GAD would have a mean punishment control strategy score higher than individuals without a clinical disorder (i.e. they would use a larger number of punishment strategies at most attempts at suppressing worry), but this was not found. No support was found for Wells and Davies' (1994) second main finding that the use of "worry" control strategies is associated with meta-worry. However, it may be important to also consider the absolute frequency of use of these strategies, which the questionnaire does not assess. An additional factor that complicates interpretation of these data is that, in some cases, beliefs about worry may instead lead to the abandonment of all attempts to control worry, leaving the individual vulnerable to persistent rumination.

Finally, the strong association of meta-worry with anxiety was confirmed not only by the presence of high levels of meta-worry in the anxious group but by a correlation within the group of meta-worry with trait anxiety. This replication of Wells' (1994b) finding of a significant correlation between meta-worry and trait anxiety also provides an indication that the single question designed to tap meta-worry, chosen from Wells' study, was adequate for a preliminary investigation.

To summarize, even though the participant numbers were relatively small, the results for the individuals with GAD were broadly in support of the meta-cognitive model of chronic worry. Importantly, high levels of the novel construct, meta-worry, were reported by the participants, whilst there was evidence for the existence of both positive and negative beliefs about worry, which may lead to frequent (counter-productive) attempts at thought suppression.

### *Results for the persecutory group*

It was proposed that data on three questions are required to demonstrate the relevance of the meta-cognitive model of worry to persecutory delusions. These are, first, whether the individuals with persecutory delusions have a general tendency to worry, secondly, whether they experience meta-worry (and related processes) concerning the control of thoughts about the beliefs and, finally, whether meta-worry is associated with dimensions of delusional experience.

The first point of interest is that both the tendency to worry and the frequency of general worry of the persecutory group were comparable with that found in the anxious group. Therefore, overall, the individuals with persecutory delusions can be viewed as general worriers. There was evidence of variability in the worry scores of individuals with delusions, indicating that a small number of individuals with delusions do not have general worries, which is consistent with a multi-factorial approach, in which it is hypothesized that different processes are active in the development and maintenance of people's delusions. It is also apparent that the individuals with persecutory delusions and the individuals with generalized anxiety disorder had similar levels of anxiety, as assessed by the Beck Anxiety Inventory. Such a level of anxiety in individuals with persecutory delusions is not exceptional: Freeman et al. (1998) report comparable levels of anxiety in a study involving 27 participants with persecutory delusions.

An interesting piece of information to add to a future study would be the number of individuals with persecutory delusions who met the full criteria for GAD. The validity of the current investigation was not affected by this omission, however, and we would expect, on the basis of the schizophrenia literature (e.g., Docherty, van Kammen, Siris, & Marder, 1978; Johnstone, Owens, Frith, & Leavy, 1991; Moorey & Soni, 1994) that some individuals with persecutory delusions would also receive a diagnosis of GAD. The point of interest of the study was the potential *links* between anxiety processes and delusional experience. It is argued that the diagnostic "trumping" of neurosis by psychosis has resulted in anxiety processes that may be present and active being ignored in individuals with psychosis; Foulds and Bedford (1975) view such neglect as arising from the operation of the King Lear principle ("where the greater malady is fix'd, the lesser is scarce felt"). Therefore, the most important methodological aspect of the study was to obtain a representative sample of individuals with persecutory delusions, not selected on the basis of anxiety. In practice, however, there may have been a selection bias in recruitment of participants against the presence of anxiety. A proportion of individuals with persecutory beliefs do not wish to participate in studies, often because they are suspicious of research. An impression was formed that the individuals most reluctant to take part experience the most anxiety, suspiciousness and thoughts of persecution.

The second finding of the investigation was that the great majority of the group of participants with persecutory delusions experienced meta-worry concerning the control of delusion-relevant thoughts. They worried that they could not control their thoughts about their belief as well as they would have liked. This is a noteworthy finding. At first it might be thought that asking a person with a persecutory belief whether they have worries about controlling their thoughts about the persecutory ideas might be insensitive. It implies that part of their difficulties and distress is due to their thinking processes, whereas the individual might naturally regard the actions of the persecutors as the aspect of the situation that is out of control. However, many of the participants readily admitted worries and difficulties in controlling their thoughts about the persecutory belief. Furthermore, it was clear that the persecutory group had a similar pattern to the anxious group of positive and negative beliefs about worry and of strategies at controlling worry. In other words, the same processes that are hypothesized to have a role in creating chronic worry, and for which evidence was found in the anxious group, were also found to occur in people with persecutory delusions.

The third and final question is whether the presence of meta-worry was associated with any aspect of delusional experience. Establishing that some individuals with persecutory delusions have worries about controlling their thoughts about persecution may be a marginal finding in the whole context of delusional experience. This, however, does not seem to be the case. It was found that the presence of meta-worry, and trait anxiety, was strongly correlated with delusional distress. As delusional distress increased, so did levels of meta-worry. Consistent with Garety and Hemsley's (1994) study of the characteristics of delusional experience which identified separate dimensions, meta-worry was not related to delusional conviction or preoccupation. The significance of the correlation of meta-worry with delusional distress is that it suggests that the distress that a delusion causes a person may not simply be a product of an individual's reaction to an unpleasant strongly held or preoccupying persecutory belief. Instead, a persecutory delusion becomes most upsetting when the individual has worries about not being able to control his or her thoughts about the belief.

Moving the research forward, it will obviously be of value to investigate meta-worry in a larger number of individuals with persecutory delusions, to develop adequate measures of these processes in this population, and to consider its presence at different stages of illness and in different types of delusion. Noting the depression reported by the study participants, it will also be of interest to consider the direct contribution of depressive processes to delusional distress, thereby extending recent research on auditory hallucinations (e.g. Birchwood & Chadwick, 1997).

### *CBT for psychosis*

Can this research inform clinical practice? Most clearly, the results provide support for a basic procedure fundamental to successful CBT for psychosis. It is widely recognized that working with individuals with psychosis requires creating a supportive, non-threatening environment, and the importance of this approach is reinforced by the high levels of anxiety and worry found in the study participants. A new area of assessment and intervention requiring study is also indicated by the research findings. Previously, delusional distress has been reduced indirectly as a product of lessening the degree of

conviction in the belief. However, it may be appropriate to consider whether the individual experiences difficulties in controlling their thoughts and whether this relates to the distress that a delusion is causing. If meta-worry is apparent, then it may be a target of therapy. This may be particularly relevant in cases where the person is resistant to considering alternatives to their delusional belief, but may also be introduced in the coping strategies therapy stage that (typically) occurs before attempts at altering belief conviction (see Fowler et al., 1995). Clearly, discussion of the individual's positive and negative beliefs about worrying will be appropriate and, importantly, suitable methods of coping with worries can be promoted. For example, a "detached letting go" style of treating worrisome thoughts (Wells, 1994a) can be practised in the times when the person is not directly testing the evidence for the delusion as part of the therapy. This may lead to reduction in delusional distress. In short, we conclude that it may be valuable to determine in the assessment phase of CBT for psychosis whether the individual experiences uncontrollable thoughts about his or her delusion, and that methods to decrease such experiences may merit inclusion in the repertoire of therapeutic techniques. In this way, the successful application of CBT for psychosis may be enhanced by the development of theory and practice in cognitive approaches to neurosis.

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