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Metacognition and recovery style in psychosis

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SALOMONS
CANTERBURY CHRIST CHURCH UNIVERSITY

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Summary of Major Research Project

This major research project comprises three sections:

Section A reviews the literature which has investigated variables found to relate to recovery style in individuals with psychosis. Studies exploring the attachment, self-esteem, depression and executive functioning are evaluated and conclusions drawn.

Section B reports the findings of an empirical study investigating the relationship between metacognition, recovery style, anxiety and depression in a community sample of individuals with psychosis. The correlations between these variables are explored and implications of the main findings are considered.

Section C provides a critical evaluation of the project, answering four questions regarding what the author has learnt from the study, what might have been done differently, how the study might affect the author's clinical work in future and possible future research directions.

Section D contains the appendices for the project, for optional reference by the reader.

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What factors contribute to recovery style in psychosis?

Section A: Literature review

What factors contribute to recovery style in individuals with psychosis? A critical review of the literature.

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What factors contribute to recovery style in psychosis?

Abstract

Literature has shown that the recovery style individuals adopt following an episode of psychosis can impact upon their outcome, suggesting that recovery style is an important area for psychologists to address. The process by which individuals come to adopt an integrating versus a sealing-over style requires clarification. This review sought to establish the factors that have been found to relate to recovery style and which might therefore influence the style the person adopts. Electronic and manual literature searches were conducted to identify relevant research in this area and four relevant studies were identified which studied the relation of four distinct variables to recovery style. These studies, along with methodological issues they each present, are summarized. Results are inconclusive, though there is some evidence that poor early attachment, low mood and low self-esteem may be related to a sealing-over style, as may executive dysfunction. The ambiguous nature of these findings indicates that more research must be conducted in this area and that the literature may benefit from the exploration of other variables in relation to recovery style.

What factors contribute to recovery style in psychosis?

Introduction

Little is known about how individuals with psychosis come to develop different ways of adapting to their illness. This review will begin with a definition of psychosis and a brief outline of current treatments. To provide a context for the main body of the review, the concept of recovery style will be introduced, along with a brief discussion of general research in this area. The main body of the review will comprise a critical overview of literature examining factors relating to recovery style in individuals with psychosis. A more general critique of this field of research will follow and implications for future research will be proposed.

Psychosis

The psychoses, as described in the International Classification of Diseases- 10 (ICD-10; World Health Organisation, 2007) consist of schizophrenia, schizo-typal and delusional disorders. Psychosis involves experiences that are divided into “negative” and “positive” symptoms. Negative symptoms, which often first present during the prodromal phase of psychosis (Yung & McGorry, 1996), include difficulties with memory and concentration, blunted emotional affect, social withdrawal and loss of pleasure in previously enjoyed activities (Blanchard & Cohen, 2005). Positive symptoms usually begin to present during the acute phase of the illness and include distortions of thinking and perception such as thought insertion, delusions and hallucinations (Kitamura, Okazaki, Fujinawa, Yoshino, & Kasahara, 1995). In 2005 prevalence rates for schizophrenia had an estimated median value of 15.2 per 100,000 persons per year (McGrath, 2005), with the usual age of onset being late teens or early adulthood. Whilst prevalence is relatively low, the nature of these disorders is such that they produce marked changes in cognitive, occupational and social functioning (Harris et al., 2005).

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Such far-reaching effects mean that research developing our understanding of the psychoses and how to treat the damaging symptoms and improve the well-being of individuals affected is essential.

Treatment

Patients given a diagnosis of psychosis have traditionally been treated using antipsychotic medication which whilst sometimes successful in extinguishing symptoms, often produces side-effects which may cause further deterioration in the individual's functioning (Cunningham-Owens, 1996).

NICE guidance asserts that psychological treatment should be routinely offered to individuals with psychosis, with Cognitive Behavioural Therapy (CBT) and family interventions having the largest evidence base (NICE, 2009).

Cognitive theories of psychosis propose that psychosis develops as a result of unhelpful appraisals of unusual experiences and is maintained by unhealthy methods of responding to such appraisals (Garety, Kuipers, Fowler, Freeman, & Bebbington, 2001). CBT seeks to identify and challenge unhelpful cognitions and encourage the individual to alter their behavioural response to distressing emotions.

Family interventions are based on the theory that psychosis develops in response to unhealthy patterns of relating within social units. Such treatment aims to foster healthier relationships between members (Burbach & Stanbridge, 1998).

Whilst these therapies are a welcome addition to the available range of treatment for individuals with psychosis, they are not wholly successful. A recent review found that successful outcomes of family intervention could not confidently be reported due to poorly reported data (Pharoah, Mari, Rathbone, & Wong, 2010). In regards to CBT, Lynch, Laws and McKenna (2010), in a meta-analysis of nine studies, found that this treatment demonstrated no greater efficiency over non-specific control treatments. Thus, improvements

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clearly must be made to psychological interventions for people with psychosis to maximise the possibility of effecting healthy and long-lasting recovery.

Recovery

The psychoses were traditionally viewed as chronic disorders which few patients were likely to overcome, such that return to pre-morbid functioning was considered extremely rare. However, in the 1980s evidence from long-term outcome studies was presented refuting the idea of chronicity. Patients were shown to demonstrate improved social and cognitive functioning and some were able to return to employment (Harding, Brooks, Ashikaga, Strauss, & Breier, 1987; Harding, Zubin, & Strauss, 1987). This has stimulated research into recovery and which treatments best promote recovery. The process involved in recovery from mental illness is not fully understood and different definitions place importance on different processes.

Definitions

There exist several definitions of recovery, each placing different emphasis on symptom remission. One clinical definition of recovery is that of Liberman (2008), who proposes that recovery should involve two years of symptom remission, engagement in productive activity, independent management of everyday needs, a satisfactory relationship with family and peers and participation in recreational activities.

Other definitions of recovery place less emphasis on symptom remission; their view being that a person can be in recovery in spite of on-going psychotic symptoms. In these definitions, recovery involves the discovery of personal identity and re-establishing a sense of purpose in life (Anthony, 1993).

Thirty to forty percent of patients with psychosis relapse within one year of discharge from acute care, even when receiving medication to maintain symptom remission (Lee et al., 2010). Relapse prevention is therefore an important part of the recovery approach and an

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integral part of relapse prevention is improving the individual's awareness of clinical or psychosocial indicators that they may be at risk of relapse (Herz et al., 2000). For this reason, clinical definitions of recovery remain important and whilst process-based definitions have great value, they may be best complemented by traditional, clinical definitions of recovery in order for mental health services to work effectively to promote long-term recovery. For the purposes of this review, a clinical definition of recovery will be applied. To set the context prior to the review, the different individual approaches to recovery will now be considered and more general literature in this area will be presented.

Recovery style and rationale for this review

One long-standing understanding of clinical recovery is that individuals who experience mental illness develop one of two different styles on a continuum of adjusting to their illness and recovering from it: 'integration' and 'sealing-over' (McGlashan, Levy, & Carpenter, 1975; McGlashan, Docherty, & Siris, 1976). According to this theory, patients with an integrative style of recovery demonstrate a curiosity about their illness and turn it into a positive learning event to inform their future relationships and behaviour. They are said to be aware of continuity in their personality and thinking processes before, during and after a specific psychotic episode.

Patients who seal-over during recovery regard their illness as an isolated interruption, unrelated to personal difficulties and therefore unworthy of exploration. Patients who seal-over are said to maintain an awareness of the negative aspects of the illness and so suppress memories of it, thereby rejecting it as a useful learning experience. In line with the idea that these styles are on a continuum rather than being entirely discrete, McGlashan proposed that individuals can adopt a "mixed recovery style" with traits of both integration and sealing over. Before we move to the main body of this review, it would be helpful to consider the more general research regarding recovery style.

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Not surprisingly, sealers have been found to engage less well than integrators with treatment. Tait, Birchwood and Trower (2003) in a study of 50 individuals with schizophrenia found that integrators demonstrated a 46% higher rate of engagement than sealers. Sealers were rated by their case managers as having more difficulty arranging and keeping appointments or developing a collaborative relationship with staff and seeking help in crises and were also described as less likely to adhere to prescribed treatment than were integrators.

Perhaps as a consequence of poor treatment engagement, sealers have also been shown to have poorer outcomes. McGlashan (1987) found that integration was associated 77% of the time with a better long-term functional outcome in terms of reduced symptoms, being in employment, socialising and having close relationships with others. Good outcomes were also possible, though not as likely in individuals with a sealing-over style: 31% participants rated as sealers had good outcomes in these areas. Thompson, McGorry and Harrigan (2003), in a study of 196 individuals who had experienced their first episode psychosis, found similar results, with sealers having poorer scores on commonly used measures of symptoms.

McGlashan (1987) argued that recovery style reflects stable personality traits, such as intelligence and motivation and may therefore not be open to change. This has since been refuted: Thompson, McGorry and Harrigan (2003) found that recovery style can change and importantly that the majority of participants they studied, all of whom had received cognitive therapy, moved away from sealing-over towards integration. This suggests that there may be a role for psychological therapists in helping individuals to move towards a more helpful style of recovery and thus improving sealers' prognoses. Alas, sealers have demonstrated difficulty engaging with CBT and continuing with this treatment (Startup Wilding, & Startup, 2006). Before any movement is made to develop new treatments aimed at promoting healthy

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recovery, clarification on the nature of recovery style is necessary. In particular more understanding of the variables which may be involved in the development and maintenance of recovery style is required, so that such variables may be taken into consideration when working with sealers.

This review will incorporate literature concerning the factors which have been found to relate to recovery style in individuals with psychosis and which might mediate the development of different recovery styles. Knowledge of this may pave the way for the development and use of therapeutic approaches for working with sealers, enabling these individuals to move towards positive and long-lasting recovery. The review will examine the literature pertaining to the link that attachment, self-esteem, mood and executive functioning have with recovery style, each subsection beginning with a general introduction to the role of these processes in psychosis. A description of the literature search strategy can be found in Appendix 1.

Critical Review: Literature and Analysis

Attachment

One of the areas that has been explored in relation to recovery style is attachment. Bowlby's (1988) theory of attachment proposed that as a result of early experience people develop an "attachment behavioural system" which influences social behaviour into adulthood. Research has found individuals with schizophrenia to have greater levels of attachment insecurity than those with affective diagnoses (Dozier, Stevenson, Lee, & Velligan, 1991). One hypothesis relating to the attachment of individuals with different recovery styles is that of Drayton, Birchwood and Trower (1998). They propose that individuals who seal-over are more likely to have experienced impaired early relationships. If this is true, it would suggest that sealing-over might be part of a particular attachment behavioural system stemming from an insecure attachment style.

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In the first study to explore these links, Drayton, Birchwood and Trower (1998) examined the connection between early attachment experience and recovery style in 36 individuals who had a diagnosis of schizophrenia. 28 participants were male, the mean age of the sample was 31 and all lived in the community. A reasonably broad ethnic mix was included in the study; with half being White British, half Afro-Caribbean and just under 10% being of Asian descent. The authors developed the Recovery Style Questionnaire (RSQ); a 39 item self-report measure which requires participants to agree or disagree with statements regarding their attitude to their illness. The authors performed comprehensive reliability and validity tests on the scale and reported good test-retest and internal reliability. Face and criterion-related validity of the RSQ was also high. The RSQ was administered alongside the Integration/ Sealing-Over Scale (ISOS; McGlashan, Docherty, & Siris, 1976) which assigns respondents either a sealing-over or an integrative recovery style. The Parental Bonding Instrument (PBI; Parker, Tupling, & Brown, 1979) asks participants to recall their parent's attitudes and behaviours during childhood and was used to assess early bonding experiences.

Results revealed that participants who had experienced their parents to be less caring were more likely to demonstrate a sealing-over style. Causality cannot be determined however, since analyses were correlational. Furthermore, the PBI is reliant on valid recall of early parental behaviour; something which cannot be guaranteed. The authors could have tested reliability of responses by re-administering the PBI at a later date and reporting test-retest reliability.

Overall, the findings of this study are consistent with the hypothesis that sealing-over is related to poor attachment experiences.

In an attempt to develop these findings further, including consideration of adult attachment style, Tait, Birchwood and Trower (2004) studied 42 participants (31 male, mean age 34 years) with schizophrenia. All participants in the sample were receiving treatment

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either as inpatients or on a home treatment basis. The RSQ and PBI were administered alongside the Measure of Parenting Style (Parker et al., 1997) and the Revised Adult Attachment Scale (RAAS; Collins, 1996).

Consistent with findings from the earlier study, sealers reported significantly more perceived abuse from parents and significantly lower recollection of caring parental behaviour. With regard to adult attachment style, sealers achieved lower scores on the closeness and dependency sub-scales, indicating difficulties forming relationships with and relying upon others. Sealers also reported higher rates of anxiety about rejection.

However, this study again suffers from its reliance upon retrospective accounts of parenting. It may also have been worthwhile to determine whether there were any differences in the findings in relation to participants who were inpatients versus those who were living at home, since little is known about how recovery style develops from first episode onwards. Nonetheless, this study has added to evidence that high levels of expressed emotion and poor attachment in childhood may affect adaptation to mental illness and has made a valuable link between recovery style and adult attachment style. This is an important finding which may explain sealers' tendency to engage less well with clinicians they encounter in mental health services. Bowlby (1977) theorised that early attachment shapes behaviour in adulthood and so it is understandable that individuals who experienced their parents as hostile will demonstrate wariness of authority figures they encounter as adults.

In the third study that has reviewed the links between recovery style and attachment, Mulligan and Lavender (2010) explored associations between recovery style, early bonding and current attachment styles in individuals with psychosis. They also sought to examine any gender differences. 73 individuals (55 men) who had experienced psychosis for at least one year were recruited from community settings. The RSQ and PBI were administered alongside the Attachment Style Questionnaire (ASQ; Feeney, Noller, & Hanrahan, 1994) and

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the Health of the Nation Outcome Scales (HONOS; Wing et al., 1996), which measures hallucinations, delusions and cognitive problems.

Findings were quite different to the previous studies examining attachment, with no differences in reported early parental behaviour between sealers and integrators. The only association found between attachment and recovery style was that male sealers tended to indicate on the ASQ that relationships were secondary to a need for achievement. This provides a possible reason for previous findings demonstrating poor outcomes in relation to social functioning in sealers.

No significant difference was found between male and female participants on the RSQ, although interestingly males tended to demonstrate more integrative scores. The results of this study complicate previous findings and demonstrate a much weaker correlation between adult attachment and recovery style than has previously been found. However, methodological weaknesses limiting the study's generalizability include that female participants studied were an average of ten years older than the males; a significant difference which may have affected the data. Also, given that the study aimed to explore gender differences, too small a proportion of women were studied. A low number of participants with a sealing-over style were recruited which holds implications for the validity of the findings. It is understandable that sealers may be less likely to participate in research and it is possible that such individuals may require incentive to encourage participation.

Generally, these studies have added to our understanding of the links between attachment and recovery style in psychosis. Beyond evidence that compared with healthy controls, people with psychosis may be more likely to demonstrate poor attachment experiences, these studies have proven that further distinction can be made between individuals with psychosis who seal-over their experience of illness and those who integrate. The relationship does however, seem complex, given that Mulligan and Lavender (2010)

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found no difference. It is possible that the different sample sizes across the studies and resulting difference in power led to these inconsistent findings. It will be important to examine whether poor attachment causes individuals to seal their experience of illness over, as these studies indicate. This can only be clarified through use of longitudinal research methods.

Self-esteem

A second factor that has attracted attention in relation to recovery style is self-esteem, since there is evidence of low self-esteem in individuals with psychosis (Barrowclough et al., 2003). Research indicates that psychotic beliefs are more resistant to change if their content is consistent with negative beliefs about the self (Bowins & Shugar, 1998), which suggests that it may be more difficult for people with low self-esteem to recover from psychosis. Fennell's (1997) cognitive model of self-esteem proposes that early in life, interactions between the individual's temperament and difficult early experience causes some people to develop global negative self-judgement about themselves. Consequently, they may set standards for themselves, which if met, prove their worth, but if not met lead to further deterioration in their self-esteem and eventually to emotional disorders such as depression or anxiety. Drayton, Birchwood and Trower (1998) hypothesize that sealing-over is an adaptive function engaged in by individuals who have low self-esteem as a result of difficult early attachment experiences.

In an attempt to explore the links between self-esteem and recovery style, Drayton, Birchwood and Trower (1998) administered a scale measuring participants' evaluative beliefs about themselves and the judgements they believed that others were making about them. Findings revealed that sealers made significantly more negative self-evaluations than integrators. This is consistent with the hypothesis that negative self-appraisal may place people at risk of developing a sealing-over recovery style, though it is difficult to be clear

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about the order of effect and whether low self-esteem contributes to or is an effect of sealing-over mental illness. Negative self-beliefs have long been thought to be involved in the development of psychological disorder but these findings are consistent with the hypothesis that they may also affect the way the individual adapts to their disorder. Both sealers and integrators reported fairly high levels of perceived negative evaluation by others; an interesting finding which suggests that integration may not be protective in this sense.

In the second study exploring self-esteem, Tait, Birchwood and Trower (2004) explored the hypothesis that sealing-over is employed by individuals who do not have the personal resilience to cope with a psychotic episode. Evaluative beliefs were assessed alongside individuals' sense of self. Results revealed different findings to those of Drayton, Birchwood and Trower (1998), with there being no difference in self-evaluative beliefs reported between sealers and integrators. Also in contrast to the previous study, sealers reported significantly more negative perceptions of other's beliefs about them. One possible explanation for this finding is that the sample of sealers consisted of a larger number of participants who were experiencing paranoia. A measure of symptoms would have allowed the authors to control for the possible intervening effect of paranoia. It is also possible that shame may be involved in a sealing-over recovery style. Shame is a common experience of people with mental illness (Rüsch et al., 2009) and has been linked with internalized stigma (Rüsch, Lieb, Bohus & Corrigan, 2006). Some individuals with mental illness are hugely affected by stigma while others remain relatively unaffected (Corrigan & Watson, 2002). The intervening variable may be recovery style- with integration being a protective factor against stigma.

These studies, in spite of similar sample sizes, provide quite inconsistent evidence of the connection between self-esteem and recovery style. Drayton, Birchwood and Trower (1998) found that sealers made more negative self-evaluations and that both sealers and

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integrators felt others perceived them negatively, whereas Tait, Birchwood and Trower (2004) found no difference in self-evaluation between sealers and integrators but found that sealers perceived that others had more negative views of them.

Mood

A third factor which has been considered in relation to recovery style is mood. The prevalence of depression in patients with schizophrenia is reported to range between 7% and 75%, with an average prevalence rate of 25%; certainly higher than that in the general population (Hirsch, et al., 1989). People with a diagnosis of schizophrenia who have depressive symptoms have been found to have a poorer prognosis with higher relapse rates than patients without such symptoms (Sands & Harrow, 1999). Ferster (1973) postulated a model proposing that depression is a result of the individual attempting to avoid aversive internal and external stimuli. It is therefore possible that sealing-over is a response employed by individuals who are depressed as a result of trying to escape the difficulties associated with psychosis.

In a cross-sectional questionnaire study designed to explore the links between recovery style and depression, Drayton, Birchwood and Trower (1998) administered the Calgary Depression Scale for Schizophrenia (CDS-S; Addington, Addington, & Maticka-Tyndall, 1993) alongside the RSQ. 88% sealers were found to be moderately to severely depressed. In contrast, 53% integrators were mildly depressed, with none meeting criteria for moderate or severe depression. These findings suggest either that underlying depression may cause people to seal-over their psychotic illness or that a sealing-over style leaves the individual vulnerable to depression or that both recovery style and depression are both affected in the same direction by a third factor. The results should be interpreted cautiously however, since researchers were not blind to individuals' recovery styles and may have allowed their expectations to impact upon ratings given on the depression measure.

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Nevertheless, taken in the light of Ferster's (1973) model of depression, these findings are consistent with the notion that a sealing-over recovery style results from low mood.

In another study examining the links between recovery style and depression, Tait, Birchwood and Trower (2004) found no significant difference in levels of depression between sealers and integrators. This again contradicts previous findings and suggests that the relationship between recovery style and mood may not be straightforward.

Cognitive functioning

The final area that has attracted attention from researchers with regard to recovery style is cognitive functioning. As detailed in the introduction, psychosis impacts upon the cognitive function of individuals but little is known about how it relates to recovery style. Lysaker, Bryson, Marks, Greig and Bell (2004) theorised that passive coping styles may represent a learned response to chronic failures that are themselves the consequence of cognitive deficits. If a connection were found between cognitive dysfunction and sealing-over, this may offer a pathway to engaging sealers, since they prefer not to talk through symptoms and unusual experiences. Cognitive remediation therapy (CRT) is often offered to individuals who complain of cognitive difficulties and involves practice exercises and teaching strategies to improve cognitive functioning (McGurk, Twamley, Sitzer, McHugo & Mueser, 2007). CRT, with a particular emphasis on executive skills has been applied to individuals with schizophrenia, with positive effects on their cognitive and social functioning (Penades et al., 2010). One study has investigated the links between recovery style and executive skills and this will now be discussed.

Bell and Zito (2005) tested the hypothesis that recovery style is linked to deficits in executive functioning. Data for 96 participants (92 male) with psychosis who had been recruited into a work rehabilitation study were used. Participants had a mean age of 44 years and had first received a diagnosis an average of 17 years ago.

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Recovery style was ascertained using the Bell Object Relations and Reality Testing Inventory (BORRTI; Bell, 1995) a self-report measure of ego function which produces cluster profiles which have been found to differentiate sealers from integrators (Bell, Greig, Kaplan & Bryson, 2001). Psychotic symptoms were measured using the Positive and Negative Symptom Subscale (PANSS; Kay, Fiszbein & Opler, 1987). The Eysenck Personality Questionnaire (EPQ; Eysenck & Eysenck, 1975) was also administered. This is a self-report questionnaire which produces ratings of extraversion, neuroticism and psychoticism. The Wisconsin Card Sorting Test (WCST; Heaton et al., 1993) was used to assess executive functioning. This neuropsychological assessment requires individuals to sort various cards into a correct order.

Results revealed no difference between sealers and integrators in terms of symptoms of psychosis. Interestingly, given previous findings showing higher levels of depression in sealers, in this study integrators demonstrated higher levels of neuroticism. Neuroticism is defined as poor emotional control and high level of mental activation (Eysenck, 1967). It is possible that approach coping strategies, such as integration are adopted by individuals who are more anxious about their experience of illness.

Consistent with the authors' hypothesis, sealers demonstrated a higher level of cognitive disorganisation and poorer executive functioning than integrators. This suggests that, in line with Lysaker, Bryson, Marks, Greig and Bell's (2004) reasoning, sealing-over may reflect a learned response stemming from underlying cognitive deficits. Rather than simply being unwilling to give consideration to their illness, sealers may be unable to analyse and consider their illness and its effects. Clearly, more investigation is required to determine the links between other aspects of cognitive function and recovery style.

The methodological strength of this study is unfortunately impaired by recruitment of too few female participants. Also, the use of the BORRTI measure to assess recovery style is

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questionable, since the connections between object relatedness and recovery style are as yet unknown and the measure is primarily an assessment of object relatedness and reality testing. It is not clear why the authors chose not to use the RSQ, given it is far more commonly applied in research of this nature.

Summary

To summarise, with regards to the factors that relate to recovery style the literature has so far found contradictory evidence. In relation to attachment, Drayton, Birchwood and Trower (1998) and Tait, Birchwood and Trower (2004) reported poor early attachment experiences in sealers compared to integrators, suggesting that sealers may have an avoidant attachment style. These findings were not replicated in the most recent study to explore these links (Mulligan and Lavender, 2010). The links between recovery style and adult attachment behaviours are less clear. A small sample of participants in Tait, Birchwood and Trower's study (2004) demonstrated that sealers may have difficulty forming relationships with and relying upon others. Of course, these difficulties might have been in place prior to their episode of illness and sealing-over might therefore be seen as an effect of having no-one close with whom to share and talk through psychotic experiences. These individuals also reported higher rates of anxiety about rejection, which corresponds with the tendency for sealers to not disclose their illness to others and to withdraw from services and from social networks.

With regard to self-esteem, the evidence is also contradictory, with Drayton, Birchwood and Trower (1998) reporting low self-esteem in sealers only and both sealers and integrators reporting that they felt others would view them negatively. Tait, Birchwood and Trower (2004) reported differences only in sealers being more likely to believe that others perceived them negatively. The two studies that have explored the links between depression and recovery style have also found different results, with one reporting higher rates of

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depression amongst sealers (Drayton, Birchwood & Trower, 1998) and the other finding no difference between sealers and integrators (Tait, Birchwood & Trower, 2004).

Bell and Zito (2005), in the only study to have explored cognitive functioning thus far, report a significant difference in executive skills of sealers compared to integrators. The clinical implications of these findings will be presented below, followed by consideration of the research implications.

Clinical implications

Whilst the variance reported in this review is by no means conclusive, the differences that have been found to manifest between sealers and integrators suggests that clinicians working with individuals with psychosis might benefit simply from ascertaining the recovery style of patients so that they can ensure that they begin their relationship with the individual at an appropriate pace and maximise engagement by matching psycho-educational material to the individual's style. Cupitt (2010) notes that skills-based CBT, such as activity scheduling, distraction and relaxation techniques, whilst not addressing symptoms of psychosis, can build engagement because they validate the person's experiences and afford them control over symptoms.

Although research has relied on unconfirmed retrospective accounts of parenting, there is some evidence to suggest that sealers are more likely to have experienced difficult early attachment relationships. Attachment theory can be used by clinicians to inform their interactions with service-users, thereby encouraging engagement with services and maximising the individual's potential for positive recovery and lasting therapeutic change. Berry, Barrowclough and Weardon (2007), in a review of attachment research applied to psychosis, concluded that application of the concept of working models may enhance existing cognitive models of psychosis and is particularly relevant for individuals who are difficult to engage; many of whom may have a sealing-over style.

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Discoveries regarding differences in self-esteem between sealers and integrators are also less certain, given that Tait, Birchwood and Trower (2003) found no difference. However, on the basis of Drayton et al's findings with a larger sample, therapeutic work addressing low self-esteem may offer another avenue to engage sealers and may in turn promote future engagement with services. It is possible that previous findings involving participants moving towards integration are due to improved self-esteem.

Likewise, in spite of inconsistent findings, addressing depression may be a useful way to engage sealers. There may be an argument towards initially offering treatment aimed at improving the mood of individuals who are reluctant to engage with mental health services. Improvement in mood may contribute to change in recovery style. This creates the possibility that if sealers are given support to improve their mood, they may be more willing to discuss their experience of psychosis and to work with clinicians to develop relapse prevention plans to maintain recovery.

One study has shown evidence that sealers have poorer executive functioning. This finding suggests that sealing-over may result from an inability to process the episode of illness, due to cognitive deficits. Cognitive remediation therapy may therefore offer another avenue to engage this client group, since it may enable them to function better and more independently in everyday life, increasing their confidence and self-esteem.

Future research directions

More research to develop our understanding of variables which may be involved in the development of recovery style is welcome. Whilst correlational studies have their merits, methods which allow determination of causation are particularly warranted, albeit difficult to implement. Research using quasi-experimental or single case designs would certainly add to existing knowledge and may help establish the direction of causation in relation to recovery style and its associated variables. One area that requires further attention is the role of

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distress in recovery style; since depression has been associated with sealing-over, yet another study found neuroticism to correlate with an integrating style. Given that cognitive models of psychosis cite erroneous thinking processes as being accountable for symptom maintenance, an appraisal of how cognitive processes which are involved in distress relate to adaptation to illness and recovery style is warranted. By understanding the thinking processes which correlate with recovery style, clinicians may be able to improve existing psychotherapeutic approaches to promote positive styles of recovery, which may maintain individual improvements in the long-term. The deficits in executive functioning amongst sealers in Bell and Zito's (2005) study suggest that higher level, more abstract thinking processes, such as metacognition may be particularly worthy of exploration in relation to recovery style. Metacognition explains the human ability to form representations of their own mental state and this capacity has been found to be compromised in psychosis, yet has not thus far been explored in relation to recovery style. Morrison, French and Wells (2007) explored the difference in metacognitive beliefs in 73 people with established psychosis and 188 controls and found that participants with psychosis demonstrated significantly less healthy metacognitive beliefs. This connection between unhealthy metacognitive beliefs and psychosis makes it reasonable to assume that these beliefs may also affect adaptation to psychosis. Lysaker, Buck, Taylor and Roe (2008) correlated self-experience with metacognition in 46 men and five women with diagnoses of a schizophrenic illness who were in the post-acute phase of their illness and found that higher levels of metacognitive function were associated with richer narratives of themselves and the impact that their illness had had upon them. This suggests that metacognition may be involved in the development and maintenance of recovery style; specifically, sealers may have less healthy metacognition.

In a model of the role of cognition in emotional disorder, Wells and Matthews (1996) positioned metacognition as a self-belief. Linking this with the topics included in this review,

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on this basis, metacognition is likely to be closely related to self-esteem and attachment experience. Indeed, Fonagy and Target (1997) argue that attachment experience is central to the development of self-organization. Therefore, if attachment and self-esteem are implicated in recovery style, it must be assumed that metacognition is implicit in the development of recovery style. Given that recovery style develops on a continuum, it is possible that individuals who have had particularly poor attachment experiences or have particularly low self-esteem develop counter-productive metacognitive beliefs which contribute to a sealing-over style of recovering from psychosis. Recently researchers have developed metacognitive psychotherapeutic approaches, which aim to improve individuals' ability to recognise and scrutinise their own thoughts and feelings. This offers a further possibility for treating patients who are hard to engage and so an understanding of how metacognition relates to recovery style would be highly informative.

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Section B: Empirical paper

**An investigation into the relationship between
metacognition and recovery style in people with psychosis**

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Abstract

Objective; Research has shown that individuals with psychosis will either integrate their experience of psychosis or seal the experience over. Little is known about what leads to these different styles of recovery but poor attachment, depression, low self-esteem and poor executive functioning have been linked to a sealing-over style. This study hypothesised that sealing is linked to unhealthy metacognitive beliefs and also to higher levels of anxiety and depression.

Method; Forty-three participants with a diagnosis of psychosis were recruited. They completed the Metacognitions Questionnaire-30, Recovery Style Questionnaire and the Hospital Anxiety and Depression Scale.

Results; Correlational analysis revealed that only one facet of metacognition linked to sealing over; this being positive beliefs about worry and this was maintained when the effects of anxiety and depression were accounted for. Contrary to the hypothesis, recovery style did not correlate with anxiety or depression but unhealthy metacognition was linked to both anxiety and depression.

Conclusions; The findings of this study suggest that a sealing-over recovery style may be linked to one specific area of metacognitive dysfunction. They also cast doubt on previous theories which link low mood to a sealing-over style. Limitations of this study include its cross-sectional design. Future research which expands on these findings is encouraged and longitudinal research is particularly called for.

Introduction

Psychosis was traditionally viewed as a chronic disorder, with long term effects on patients' social functioning (Bellack, 2006). However, in the 1980s using evidence from long-term outcome studies, researchers argued that many patients who meet the diagnostic criteria for psychotic illness have good outcomes, including improved social functioning and return to employment (Harding, Zubin & Strauss, 1987). This, coupled with the growing consumer and political recovery movement, has generated much interest in the concept of recovery from psychosis. Consequently, UK mental health policy now recommends that clinicians adopt a recovery oriented approach when working with patients with psychosis (NICE, 2009).

When working to promote recovery in service-users with psychosis, clinicians require an understanding of the process involved in recovering from mental illness. One widely accepted theory is that individuals adopt one of two different styles of adapting to and recovering from severe mental illness. Specifically, McGlashan (1987) proposed that individuals will adopt an integrative recovery style or a sealing-over style. Patients who adopt an integrative style incorporate their illness into their wider life experience, seeing it as a positive learning experience. Patients who seal-over isolate their experience of illness, regarding it as separate from other life problems and unworthy of exploration. It is unclear how these different recovery styles develop but poor early attachment, depression and low self-esteem have all been found to greater or lesser extents to relate to sealing-over (Drayton, Birchwood & Trower, 1998).

Perhaps not surprisingly, service-users who seal-over have demonstrated poor engagement in treatment with mental health services. Tait, Birchwood and Trower (2003) found that sealers were less likely to engage with services and with treatment than those who integrate, who demonstrated a 46% higher rate of engagement. Sealers were rated by their

case managers as having more difficulty arranging and keeping appointments or developing a collaborative relationship with staff and seeking help in times of crisis. Poor treatment adherence has implications for outcome. For example, Thompson, McGorry and Harrigan (2003), in a study of patients experiencing their first episode of psychosis, found that at twelve months after treatment, integrators had better outcome and functioning than sealers in terms of symptoms and self-reported quality of life.

McGlashan (1988) argued that recovery style reflects fixed aspects of the individual's personality and therefore cannot be changed. However, more recent research has demonstrated that recovery style is, in fact flexible. Thompson, McGorry and Harrigan (2003) found that over two thirds of participants in their study were found to have changed their recovery style at the 12 month assessment, with most moving from a sealing-over style towards integration. This suggests that through psychoeducation and other interventions, clinicians may be able to help service-users to develop a more helpful, integrative style of recovery, which in turn may help support service users' subsequent engagement with services and their ongoing well-being.

Interventions currently available

NICE (2009) recommends that patients with schizophrenia- one of the most commonly diagnosed psychotic illnesses- be offered Cognitive Behavioural Therapy (CBT) or family interventions. With regard to the effectiveness of CBT with sealers, Startup, Wilding and Startup (2006) found that sealers demonstrated poorer therapeutic alliance and a greater tendency to withdraw from treatment than integrators. This suggests that therapeutic treatment approaches which are more appropriate to sealers need to be developed, to ensure their engagement and help them achieve lasting recovery from illness. New treatments, if their aim is to promote recovery, should be based on knowledge of the process involved in the development of recovery style, so that engagement with sealers can be maximised.

Processes involved in recovery style

There is a paucity of research that has investigated the processes involved in the development of recovery style. Although one study has found that sealers have higher levels of executive dysfunction than integrators (Bell & Zito, 2005), the majority of research has focussed on the links between recovery style, attachment and mood. There is some evidence to suggest that sealing-over is linked to poor attachment experiences and evidence that it is linked to high levels of depression, though these findings have not been reported consistently. With this in mind and in light of widely accepted cognitive theories of depression (Beck, Rush, Shaw & Emery, 1979), it is possible that individuals who seal-over have an unhelpful relationship with their thoughts. Further exploration of this would be welcome.

Cognitive models of distress

In recent years, researchers and clinicians working with individuals with emotional disorders have turned their attentions to the process of thought involved in the production and maintenance of distress. Such models may be usefully applied when understanding recovery from mental illness and how individuals come to develop different recovery styles, so they will now be considered. According to cognitive models (e.g. Beck, 1976), people's interpretation of mental experience impacts upon their level of distress, with negative interpretation causing increased distress. Wells and Matthews (1996) proposed a self-regulatory executive function (S-REF) model of emotional disorders. Their model proposes that a cognitive-attentional tendency for high attention focussed on the self, ruminative thinking and dysfunctional beliefs may be involved in psychological dysfunction. They suggest that cognitive processes typically associated with dysfunction, such as biased information processing and intrusions are mediated by executive processes that are partly directed by metacognitive beliefs. Such metacognitive beliefs include beliefs about one's own thought processes, beliefs about the advantages and disadvantages of various thoughts

and beliefs about the content of thoughts. Wells (1995) argues that the appraisal of and response to cognitive processes cause individuals distress, rather than the content of their cognitions.

With a similar focus on thought process as opposed to content, applying cognitive theory to auditory hallucinations in psychosis, Morrison, Haddock and Tarrier (1995) proposed a model of auditory hallucinations which reasons that these experiences may be a result of the individual attempting to reduce cognitive dissonance by attributing to an external source any intrusions which are incompatible with certain metacognitions, such as the belief that thoughts should be completely controllable or that certain thoughts are threatening or dangerous. Alongside beliefs regarding the existence of causal forces and beliefs about mental illness, Morrison, Haddock and Tarrier (1995) suggest that these metacognitive beliefs direct the individual's attention towards certain mental events, thus maintaining the experience of hallucinations. The authors suggest that the model may account for other positive symptoms of psychosis, such as thought withdrawal, thought broadcasting and delusions of control. Support for this model comes from research involving the successful application of cognitive behavioural therapy to modify beliefs associated with delusions and hallucinations (Tarrier et al., 1993). It must be noted; however, that the therapeutic alliance has sometimes been found to be the key variable in producing improvements (Zuroff & Blatt, 2006) and this may explain the success of CBT in this study.

Metacognition

Morrison (2001) later presented an integrative cognitive model of hallucinations and delusions in psychosis. The model is based on the idea that anyone can experience cognitive intrusions, but that some people misinterpret such intrusions, experiencing them as psychotic phenomena. When the individual engages in safety behaviours to cope with the intrusions, the misinterpretations are maintained. Other factors which affect the development of the

misinterpretations include mood, social knowledge and faulty self-knowledge. Morrison notes that both positive and negative metacognitive beliefs are involved in maintenance of the symptoms of psychosis. Indeed, Morrison, Wells and Nothard (2000) suggest that what distinguishes people with psychosis from others who experience auditory hallucinations may be the co-occurrence of negative and positive metacognitive beliefs. For example, an individual may initially engage with voices as they feel they add meaning to their life or make them special, meaning the experience develops. Later negative beliefs about the uncontrollability and dangerousness of voices will mean that the experience of voices causes the individual distress.

Metacognition plays a central role in the models described above and is increasingly seen as an important factor in psychological disorders (Dimaggio & Lysaker, 2010). Metacognition is defined as the capacity to appraise, control and monitor one's own thinking (Lysaker, Buck, Taylor & Roe, 2008). Despite it being a fairly abstract construct, there exist some reasonably well validated measures of metacognition, one of the most prolifically used being Cartwright-Hatton and Wells' (1997) Metacognitions Questionnaire (MCQ). This questionnaire measures beliefs about worry and intrusive thoughts. It taps five distinct dimensions of metacognition: positive beliefs about worry, that is, the belief that worrying helps to solve problems; negative beliefs about worry, that is the belief that worrying is dangerous and can become out of control; cognitive confidence, belief in the efficacy of one's memory and attentional functioning; negative beliefs about the need to control one's cognitions, which includes themes of responsibility, superstition and punishment; and cognitive self-consciousness, or the degree to which the individual focuses on their own thinking processes. People suffering from anxiety and/ or depression have been found to demonstrate less healthy metacognitive beliefs (Nolen-Hoeksema, 1991; Wells & Carter,

2001). A few studies have applied this scale to individuals experiencing psychosis, but most authors have chosen to focus on those experiencing hallucinations.

For example, to explore the links between metacognition and auditory hallucinations, Baker and Morrison (1998) compared the metacognitive beliefs of 15 participants with schizophrenia who heard voices, 15 individuals with schizophrenia who did not hallucinate and 15 controls using the MCQ. The hallucinating group scored significantly higher than controls on all factors of the MCQ apart from cognitive self-consciousness, indicating less healthy metacognitive beliefs. Both psychiatric groups demonstrated less cognitive confidence than the controls and stronger beliefs about the need to control one's thoughts. This suggests that individuals with psychosis do have an unhelpful relationship with their thoughts and that individuals who experience hallucinations are likely to feel less in control of their thoughts and to believe that cognitive intrusions are dangerous and should be controlled. The sample size of this study was small, however and the sample included over twice as many males than females, making it difficult to generalise results.

In order to determine whether there may be a difference in the metacognitive beliefs of individuals with delusions versus those with hallucinations, Morrison and Wells (2003) studied 49 people with a diagnosis of schizophrenia who experienced hallucinations, 24 people with a diagnosis of schizophrenia who experienced delusions of persecution with no hallucinations in the last year, 35 patients with a diagnosis of panic disorder with no psychosis and 50 non-clinical control participants (undergraduate students and health service staff). Each participant completed the MCQ and results revealed that individuals who experience auditory hallucinations demonstrated higher levels of dysfunctional metacognitions in all domains, particularly beliefs about the need to control one's thoughts and positive beliefs about worry. Participants who experienced delusions also exhibited higher levels of dysfunctional metacognitions than the controls. The authors concluded that

metacognitive focussed treatment strategies that modify metacognitive beliefs and improve executive control over attention could be worthwhile. It is unfortunate, however, that a measure of anxiety was not included in the study, since the metacognitive dysfunction may have been an effect of anxiety, common to all groups, rather than being an effect of hallucinations.

Metacognition and adaptation to psychosis

Lysaker, Buck and Ringer (2007) suggest that deficits in metacognition may be a barrier to recovery. They attempted to discover whether the metacognitive capacity of a man with schizophrenia characterised by severe delusions and treatment non-adherence would improve following 32 months of individual integrative psychotherapy. The authors analysed the transcript from one session of each month of integrative psychotherapy and found that seven months into therapy the participant's metacognitive capacity started to dramatically improve, as did his symptoms and insight. Whilst this study shows promising results, it is very difficult to generalise on the basis of a single case.

These findings were expanded upon in a later study by Lysaker, Buck, Taylor and Roe (2008) who correlated self-experience with metacognition in 46 men and five women with diagnoses of a schizophrenic illness who were in the post-acute phase of their illness. Results indicated that individuals who demonstrated higher levels of metacognitive function also demonstrated richer narratives of themselves and the impact that their illness had had upon them. This suggests that healthy metacognition is associated with more positive recovery, and specifically a more integrative style of recovery.

Summary

Individuals with psychosis have been found to demonstrate unhelpful metacognition, with individuals experiencing hallucinations demonstrating dysfunctional beliefs about worry and about thought control. Given Wells' theory highlights the fact that dysfunctional

metacognition involves rumination and high levels of self-focussed attention it is reasonable to assume that dysfunctional metacognitive style may inhibit recovery from illness. The impact that metacognition has on the recovery of individuals has not yet been explored. With regards to psychosis, based on the findings of Lysaker and colleagues, we might expect sealers to demonstrate less healthy metacognitive beliefs than integrators. Were a clear connection found, we might be able to theorise that metacognitive dysfunction is involved in the development of a sealing-over style.

The literature which has so far explored metacognition has found a connection between unhelpful metacognitive beliefs and depression and anxiety. Given that the S-REF theory places emphasis on the role that rumination plays in maintaining distress, it is reasonable to assume that individuals who demonstrate less healthy metacognition may be more likely to report higher rates of anxiety and depression. Therefore, if individuals who seal-over do have less helpful metacognitive beliefs, one might also expect them to demonstrate high levels of anxiety and depression.

Rationale

This research seeks to expand on the literature concerning recovery style by examining the relationship between recovery style and metacognition in a sample of people with psychosis. It is hoped that this will add to the understanding of recovery style and how it may develop. This is worthy of examination because if a relationship is found a case may be made for clinicians refining psychotherapy and working with their clients to develop metacognitive capacity, so as to aid them in developing the most helpful way of adapting to their illness. As well as perhaps improving outcomes of psychotherapy, this may have long-term benefits on patient outcome in maximising social functioning and preventing relapse. Given that high levels of depression and anxiety have been related to dysfunctional metacognition and some research has found sealers to have higher rates of depression, a brief

measure of anxiety and depression will also be administered to determine how mood relates to recovery style and metacognition in the sample.

Hypotheses

On the basis of previous theory and research literature, this study will test the following hypotheses:-

1. There will be a correlation between recovery style and metacognition. The direction will be such that a positive relationship will be found between scores tending towards a sealing-over recovery style and dysfunctional metacognitive beliefs.
2. There will be a correlation between recovery style and mood. The direction of this will be such that a positive relationship will be found scores tending towards sealing-over and anxiety and depression.
3. There will be a correlation between metacognition and mood. The direction of this will be such that a positive relationship will be found between dysfunctional metacognitive beliefs and anxiety and depression.

Methodology

Participants

Forty-three participants who had a diagnosis of psychosis were recruited from community and day services in an NHS mental health trust which serves three relatively deprived metropolitan boroughs.

The sample included participants whose mental health was considered to be stable and were residing independently in the community and receiving regular care from mental health teams. Demographics are described in Table One below.

Table 1: Demographic characteristics of sample (N=43)

Gender	Males	28
	Females	15
Ethnicity	Black African	0
	Black Caribbean	0
	White British	36
	Black British	2
	Mixed Black and White	1
	Other White unspecified	1
	Other Black unspecified	0
	Bangladeshi	0
	Chinese	0
	White and Asian	3
	Asian other	1
Age	18-20	0
	21-29	10
	30-39	15
	41-49	10
	51-59	6
	61-65	2

Inclusion criteria

Any individual aged 18-65 with a confirmed diagnosis of a psychotic illness, as defined by ICD-10 F20-29 codes (WHO, 2007; Appendix 2) who was able to give informed consent was eligible to participate in the study.

Exclusion criteria

Individuals with a learning disability or who were unable to speak and/or read English fluently were excluded from participation, since the standardised questionnaires administered were developed for English speakers. Individuals who were actively psychotic were excluded on the grounds that the questionnaire asks them questions that require them to consider their illness retrospectively during recovery from psychosis.

Design

A cross-sectional design was employed in the study, using correlational analyses.

Measures

Standardised measures were administered at one time point to measure recovery style, metacognition and anxiety and depression. These measures were:

Metacognitions Questionnaire-30 (MCQ-30; Wells & Cartwright-Hatton, 2004):

(See Appendix 3)

The MCQ-30 is a short form of the Metacognitions Questionnaire (MCQ; Cartwright-Hatton & Wells, 1997), which was designed to measure various domains of metacognition. The MCQ-30 contains five subscales, which include cognitive confidence (assessing the individual's confidence in their memory), positive beliefs about worry, cognitive self-consciousness (measuring the individual's tendency to pay attention to their thought processes), beliefs about the uncontrollability and danger of certain thoughts, including negative beliefs about worry, and beliefs about the consequences of not controlling thoughts. The scale has demonstrated good internal consistency (0.72-0.93). Construct and convergent

validity have been reported to be sound (Wells & Cartwright-Hatton, 2004). The full scale MCQ has been used to study populations with psychosis (Morrison & Wells, 2003) and appears relevant to the sample in this study. The MCQ-30 is regarded to be more economical and less time consuming than the full scale MCQ. It shows good internal consistency and construct validity (Wells & Cartwright-Hatton, 2004). Given that the sample in this study was individuals with a diagnosis of psychosis and cognitive difficulties, such as poor concentration, are a symptom of psychosis (Zanelli et al., 2010), the shorter measure was considered more appropriate.

Recovery Style Questionnaire (RSQ; Drayton, Birchwood & Trower, 1998): (See Appendix 4)

The RSQ was developed to measure recovery style in people with psychosis. The questionnaire asks the respondent to either agree or disagree with 39 statements concerning their attitudes to their experience of psychosis. Test-retest reliability has been found to be strong ($r = .81$, $p < .002$) as has internal consistency ($\alpha = .73$). The questionnaire correlates highly with the ISOS, suggesting good concurrent validity. Criterion-related validity is also very high ($r = .92$).

Hospital Anxiety and Depression Scale (HADS; Zigmond & Snaith, 1983): (See Appendix 5)

Given that psychosis can affect people's concentration, making it difficult for them to sustain attention, it was considered important to apply a time-economical measure of mood. The HADS is a 14 item self-report measure of anxiety and depression, widely used both in clinical practice and research and produces scores which indicate mild, moderate, or severe difficulty. The scale demonstrates good internal consistency ($\alpha = 0.90$; Moorey et al., 1991) and test-retest reliability (Visser et al., 1995).

Procedure

Staff from community teams and day centres across the trust were approached with details of the study and asked to identify people on their caseloads who might be eligible to participate. Care co-ordinators informed potential participants about the study and gave an information sheet (Appendix 6) to those who were interested and whom they considered able at that stage to verbally consent. Once participants had given verbal consent to participate the researcher contacted them to arrange a meeting to complete the measures. At this meeting the researcher first ran through the information sheet with participants, so as to ensure they understood the nature of the study and to give them an opportunity to ask questions. At this point, if the researcher considered the participant able to consent to participation in the study, the participant was asked to sign a consent form (Appendix 7), following which the measures were completed.

Questionnaires were administered in the presence of the researcher and in the following order: RSQ, MCQ-30 and finally the HADS. Time was then given for participants to discuss any issues arising during completion of the questionnaires. Participants were paid £5 in cash for their time. Meetings took between 20 and 40 minutes.

Ethical considerations

Ethical approval was gained from an NHS Research Ethics Committee (Appendix 8). Further approval was granted by the Research and Development Department within the trust from which participants were recruited (Appendix 9).

Answers provided by participants were anonymised. A copy of the participant's identifying details and consent forms were kept in a secure location separate from the research data. Anonymised electronic data was kept on a password protected USB stick, which will be securely stored for ten years. Participants were informed of how data they

provided as part of the study would be stored and of their right to withdraw from the research at any point.

Confidentiality was explained at the start of the meeting. All participants were informed that exception was made should they disclose information indicating that they were at risk of self-harm or had intentions to harm others. It was not necessary to breach confidentiality at any stage throughout the study.

Service-user involvement

A group of service users from the Salomons Expert Advisory Group (SAGE) were asked to provide their comments on the measure selected for the study. Specifically they were asked to give their opinions on how it might feel to complete the measures and whether, from a service-user perspective, they felt they accurately captured the constructs they are designed to measure. The group advised that the RSQ was particularly probing and asks questions which participants may not have considered before. They suggested that much of the time spent debriefing participants after they had completed questionnaires should be spent exploring their feelings about having completed the RSQ.

Power calculation and statistical analysis

Clark-Carter (1997) recommends 42 participants for two predictor variables to obtain a medium effect in correlational analysis. Similar sample sizes have been reported in research of a similar nature (Tait, Birchwood & Trower, 2003).

Data were examined to establish whether they conformed to the assumptions required for parametric tests. Shapiro-Wilk's test was used to check that the distribution of data was normal. Given that multiple comparisons of the MCQ-30 were being performed, the Bonferroni correction was applied to the statistics calculated from the five subscales, meaning that for MCQ-30 data to meet assumptions of normality their significance must fall above 0.005 (0.05/9). As can be seen in Table Two, below, two of the variables were found

not to meet the assumption of normality, suggesting that non-parametric analyses should be performed.

Table 2: Shapiro-Wilk test of normality

	Stat	Df	Sig	Adjusted Sig required
MCQ-30 cognitive confidence	.92	43	.004*	≥ 0.005
MCQ-30 positive beliefs about worry	.88	43	.000*	≥ 0.005
MCQ-30 cognitive self-consciousness	.97	43	.21	≥ 0.005
MCQ-30 uncontrollability and danger	.97	43	.27	≥ 0.005
MCQ-30 need to control thoughts	.94	43	.03	≥ 0.005
MCQ-30 TOTAL	.96	43	.12	≥ 0.005
RSQ	.94	43	.03	≥ 0.005
HADS-Anxiety	.97	43	.37	≥ 0.005
HADS-Depression	.94	43	.03	≥ 0.005

*Data does not meet normality assumption

While normality is an assumption of parametric correlational analyses, such analyses can be robust to slight deviation from normality (Havlicek & Peterson, 1977). Correlations computed using both Pearson's product moment correlation parametric analysis and Spearman's rank formula (non-parametric) were compared to examine this and the correlations were found not to be materially different (See Appendix 10). Given that multiple comparisons were being performed, it was considered important to carry out a calculation to determine whether the correlations that the MCQ-30 subscales had with the RSQ differed significantly. This is not possible when using non-parametric analyses. Therefore, the following results will report correlations computed with Pearson's correlational analyses.

To test Hypothesis One, Pearson's two-tailed correlations were performed, correlating total scores on the RSQ and the MCQ-30. After this the total RSQ score was correlated with the five subscales of the MCQ-30. To test Hypothesis Two, Pearson's analysis was performed, correlating total RSQ score with the HADS depression and anxiety subscales score. To test Hypothesis Three; firstly, total MCQ-score was correlated with the HADS anxiety and depression subscale scores and secondly; the HADS anxiety and depression subscale scores were correlated with the five subscales of the MCQ-30.

Partial correlations were performed using Pearson’s analysis to control for the effect of firstly anxiety and secondly depression on any correlation between the RSQ and the MCQ-30.

Results

Internal consistency of measures

Chronbach’s alpha was performed to check the internal consistency of the MCQ-30 and the RSQ with this sample. Klein (1999) proposes that an alpha of 0.7 or greater indicates satisfactory internal consistency. Both measures were found to have satisfactory internal consistency. Chronbach’s alpha for the MCQ-30 was $\alpha = 0.87$ and for the RSQ, $\alpha = 0.74$.

Data screening

Since the researcher was present whilst participants completed the measures, no missing data was found on any of the questionnaires completed. Table Three provides descriptive statistics for the main variables investigated.

Table 3: Descriptive statistics

	Range	Min	Max	Mean	SD
Age	43	22	65	39	11.19
MCQ cognitive confidence	18	6	24	12	4.04
MCQ positive beliefs about worry	18	6	24	12	5.11
MCQ cognitive self-consciousness	18	6	24	16	4.65
MCQ uncontrollability and danger	17	7	24	15	4.39
MCQ need to control thoughts	18	6	24	13	4.53
MCQ total	63	42	105	67	15.01
RSQ	77	23	100	71	16.48
HADS Anxiety	18	0	18	9	4.63
HADS Depression	17	0	17	6	4.04

Hypothesis Testing

Results will be presented according to the hypotheses.

Hypothesis one: There will be a correlation between recovery style and metacognition. The direction of this will be such that a positive relationship will be found between scores tending towards a sealing-over style of recovery and dysfunctional metacognitive beliefs.

No significant relationship was found when total RSQ and MCQ-30 scores were correlated, contrary to the hypothesis in its general sense.

However, a significant relationship was found when total RSQ and individual subscale scores for the MCQ-30 were correlated. Pearson's r revealed a negative correlation between total recovery style score and the positive beliefs about worry subscale of the MCQ-30 ($r = -.43, p = .004$). This finding remained when the Bonferroni correction for multiple comparisons was applied and it is in the direction predicted by the hypothesis.

No other significant relationships were found; correlations between recovery style and the other subscales of the MCQ were all weak (see Table Four, below).

Table 4: MCQ-30 and RSQ correlations

	Correlation with RSQ
MCQ-30 Cognitive confidence	R .046 Sig .770
MCQ-30 Positive beliefs about worry	R -.430** Sig .004
MCQ-30 Cognitive self-consciousness	R .056 Sig .723
MCQ-30 Uncontrollability and danger	R .132 Sig .400
MCQ-30 Need to control thoughts	R -.297 Sig .053
MCQ-30 TOTAL	R -.104 Sig .505

**Significant at the 0.01 level

In order to check whether the correlation between the MCQ-30 positive beliefs about worry subscale and the RSQ differed significantly from the correlation between the other

MCQ-30 subscales and the RSQ, a statistical test for non-independent groups; described in Clark-Carter (1997, p. 526-527) was carried out. This method produced t-values which, after the Bonferroni correction was applied, demonstrated that the only correlations that differed significantly were those between the RSQ and MCQ-30 positive beliefs subscale and the RSQ and MCQ-30 cognitive self-consciousness subscale. See Table Five, below.

Table 5: T values showing difference between correlations

	T Value	Probability
Difference between correlations between RSQ and MCQ-30 positive beliefs subscale and RSQ and MCQ-30 cognitive confidence subscale	2.3	0.02
Difference between correlations between RSQ and MCQ-30 positive beliefs subscale and RSQ and MCQ-30 cognitive self-consciousness subscale	2.8	0.01*
Difference between correlations between RSQ and MCQ-30 positive beliefs subscale and RSQ and MCQ-30 uncontrollability & danger subscale	2.1	0.04
Difference between correlations between RSQ and MCQ-30 positive beliefs subscale and RSQ and MCQ-30 need to control thoughts subscale	0.7	0.5

*Probability required is equal to or less than 0.01.

A partial correlation was performed to control for the effect of anxiety on the correlation between the MCQ-30 and the RSQ. Although a couple of the correlations doubled in size, these did not reach significance and therefore controlling for the effect of anxiety did not alter the results of the study. See Table Six, below.

Table 6: Results of partial correlation between MCQ-30 and RSQ, controlling for the effect of anxiety.

	Correlation with RSQ	Correlation with RSQ-adjusted r
MCQ-30 Cognitive confidence	R .046 Sig .770	R .088 Sig .580
MCQ-30 Positive beliefs about worry	R -.430** Sig .004	R -.430** Sig .004
MCQ-30 Cognitive self-consciousness	R .056 Sig .723	R .122 Sig .440
MCQ-30 Uncontrollability and danger	R .132 Sig .400	R .239 Sig .128
MCQ-30 Need to control thoughts	R -.297 Sig .053	R -.289 Sig .064
MCQ-30 TOTAL	R -.104 Sig .505	R -.146 Sig .355

**Significant at the 0.01 level

A partial correlation was also performed to control for the effect of depression on the correlation between the MCQ-30 and the RSQ. This did not affect the findings, as can be shown in Table Seven below.

Table 7: Results of partial correlation between MCQ-30 and RSQ, controlling for the effect of depression.

	Correlation with RSQ	Correlation with RSQ-adjusted r
MCQ-30 Cognitive confidence	R .046 Sig .770	R .067 Sig .674
MCQ-30 Positive beliefs about worry	R -.430** Sig .004	R -.432** Sig .004
MCQ-30 Cognitive self-consciousness	R .056 Sig .723	R .066 Sig .679
MCQ-30 Uncontrollability and danger	R .132 Sig .400	R .161 Sig .310
MCQ-30 Need to control thoughts	R -.297 Sig .053	R -.321 Sig .38
MCQ-30 TOTAL	R -.104 Sig .505	R -.185 Sig .240

**Significant at the 0.01 level

Hypothesis Two: There will be a correlation between recovery style and mood.

The direction will be such that a positive relationship will be found between scores tending towards a sealing-over style of recovery and anxiety and depression.

Preliminary analysis revealed that the mean of the sample showed a moderate level of anxiety, with a mean score of nine on the anxiety scale of the HADS. The mean of the sample indicated a minimal level of depression, scoring a mean of six on the depression scale of the HADS.

Additional Pearson’s correlations were performed to establish any connection between current mood and recovery style. As can be seen in Table Eight below, no significant correlations were found, contrary to the hypothesis.

Table 8: Correlations between RSQ and HADS

	HADS- Anxiety	HADS- Depression
RSQ	R -.104 Sig .505	R -.032 Sig .837

Hypothesis Three: There will be a correlation between metacognition and mood.

The direction of this will be such that a positive relationship will be found between unhelpful metacognitive beliefs and anxiety and depression.

Additional Pearson’s correlations were performed to establish any correlation between current mood and metacognition.

Pearson’s r revealed that total score on the MCQ-30 correlated positively with anxiety as measured by the HADS ($r = .72, p = .000$). Total MCQ-30 score also correlated positively with depression, as measured by the HADS ($r = .51, p = .000$). These results support the hypothesis.

Analysis of how the individual subscales of the MCQ-30 correlated with the anxiety dimension of the HADS was performed, with Bonferroni correction applied, meaning that the significance level must be 0.01 or below. This analysis revealed that positive beliefs about

worry correlated positively ($r = .44, p = .003$). Cognitive self-consciousness correlated positively ($r = .48, p = .001$). Uncontrollability and danger correlated positively and most strongly ($r = .58, p = .000$) and need to control thoughts correlated positively ($r = .55, p = .000$).

In terms of depression, as measured by the HADS, three MCQ subscales correlated significantly with depression. Cognitive confidence correlated positively ($r = .43, p = .003$). Uncontrollability and danger correlated positively ($r = .42, p = .005$) and need to control thoughts correlated positively ($r = .47, p = .000$). Table Nine gives all correlations between the MCQ-30 and the HADS and scatter plots can be found in Appendix 14.

Table 9: Correlations between MCQ-30 and HADS

	HADS- Anxiety	HADS- Depression
MCQ-30 Cognitive confidence	R .345 Sig .023	R .437** Sig .003
MCQ-30 Positive beliefs about worry	R .441** Sig .003	R .193 Sig .214
MCQ-30 Cognitive self-consciousness	R .486** Sig .001	R .248 Sig .109
MCQ-30 Uncontrollability and danger	R .585** Sig .000	R .424** Sig .005
MCQ-30 Need to control thoughts	R .551** Sig .000	R .477** Sig .000
MCQ-30 Total	R .724** Sig .000	R .511** Sig .000

**Significant at the 0.01 level

Discussion

This study sought to investigate the relationship between recovery style and metacognition in individuals with psychosis and to determine how mood related to these constructs. It was hypothesised firstly, that a sealing-over recovery style would be associated with more dysfunctional metacognitive beliefs. Secondly, it was hypothesised that a sealing-over recovery style would be associated with higher rates of anxiety and depression. The final hypothesis was that higher levels of dysfunctional metacognitive beliefs would be

associated with higher rates of anxiety and depression. Findings only partly supported the hypotheses in that sealers were found to be more likely to endorse positive beliefs about worry on the measure of metacognition applied. It is important to bear in mind that the cross-sectional design of the study means that causal inference is not possible and we can only speculate on the meaning of findings. Further research, using a longitudinal design would be necessary in order to establish the direction of relationships found in this study. The findings will now be discussed in detail.

This main finding, concerning positive metacognitive beliefs about worry in sealers is an interesting one and suggests that unhelpful beliefs about worry may be involved in a sealing-over style. Specifically, sealers in this sample tend to report that they felt worrying helped them prepare for difficult future events and organise their thoughts. Therefore, despite sealers not wishing to discuss the difficulties associated with their illness, they do appear to engage with worrying thoughts and hold beliefs that worrying is a useful exercise. The S-REF model, which was introduced in the introduction, places great importance on positive beliefs about worry. The model proposes that positive beliefs about worry may cause the individual to worry more, and that worrying depletes the resources available to them to process information which might disconfirm their worrying thoughts.

Since sealing-over is considered an avoidant coping style, one model that can be applied to explain this finding of a link between sealing-over and positive beliefs about worry is the cognitive avoidance model of worry (Borkovec, 1994). The model proposes that worry is a way of avoiding future threat, since it allows the individual to reduce negative emotions by focusing on mentally preparing for anticipated negative outcomes. Based on Borkovec's theory, one reason why sealers might endorse positive beliefs about worry is that it allows them to avoid deeper emotional processing of the impact of their illness; that is, the emotional energy required to worry means that they can avoid processing their experience of illness.

So, sealers may hold a particular cognitive-affective process which maintains worrying.

What is interesting, however, is that sealers in this study did not demonstrate higher levels of anxiety on the HADS than did integrators, suggesting that this finding is not confounded by anxiety; something which was confirmed by the partial correlation. It would have been interesting to have explored the nature of worrying thoughts since it is unclear whether these thoughts are illness related or not. Borkovec (1994) proposes that worry may serve an avoidance of catastrophe function, with the individual believing either that worrying makes it less likely that a feared event will occur or that it will help, thereby acting as a negative reinforcer in the event that the feared event does not occur. One could speculate that one feared event about which sealers may endorse worry is the recurrence of illness, with these individuals perhaps believing that worry helps to prevent relapse.

It is quite understandable that individuals who have experienced psychosis would be fearful of a relapse, since the experience of a psychotic episode can be extremely traumatic. In fact, Meyer, Taiminen, Vuori, Aejjaelae and Helenius (1999) note that an episode of psychosis may lead to post-traumatic stress disorder (PTSD). Wells' (2000) metacognitive theory of post-traumatic stress disorder asserts that following a traumatic event, the individual's metacognitive beliefs motivate them to engage in dysfunctional responses, such as rumination and worry as a thought control strategy. Such responses serve to prevent adaptive processing of the trauma, locking the individual in a state of distress. One study which explored the trauma of first episode of psychosis found that sealers were more likely to report emotional avoidance following the episode (Jackson, Knott, Skeate & Birchwood, 2004). With this in mind, it is possible that sealing-over is a reaction by those who have been most traumatised by their experience of psychosis and engage in dysfunctional metacognitive strategies, such as using worry as a coping mechanism. In line with Borkovec's theory;

worry may enable these individuals to avoid processing the traumatic events surrounding their episode of illness.

Another possibility is that underlying paranoia is involved, with sealers endorsing positive beliefs about worrying thoughts in the form of paranoia, believing that paranoia is protective. Clinical levels of worry have been found in almost two-thirds of individuals with persecutory delusions (Bassett, Sperlinger, & Freeman, 2009). A catastrophising worry style ('what ifs...') has been found to predict the occurrence of non-clinical paranoia and the persistence of persecutory delusions (Freeman et al., 2008). Although individuals in the sample included in this study were stable in terms of symptomatology, had a measure of residual symptoms of psychosis been administered, we could have investigated this possibility.

It is unfortunate that the first hypothesis in its general sense was not supported by the findings. With regard to the MCQ subscales, one other subscale appeared to correlate well with the total RSQ score but did not reach significance. This was the belief about the need to control thoughts subscale. Had the sample been larger, this correlation might have reached significance. The poor correlations between the other MCQ-30 subscales and the RSQ held, even when the effects of anxiety and depression were controlled for. One possible explanation for the lack of support for Hypothesis One in its wider sense, is that the previous study (Lysaker, Buck, Taylor and Roe, 2008) which found results indicating that more integrative recovery styles may be associated with better metacognitive functioning applied a different measure of metacognition; the Metacognitive Assessment Scale (MAS; Semerari et al., 2003). The MAS measures the individual's capacity to understand their own and other's minds, to decenter and to master problems, thus explores different aspects of metacognition to the MCQ-30. The MAS was originally designed to be administered to individuals with

personality disorders to measure metacognition within psychotherapy settings, hence why the MCQ-30 was chosen in preference for this study.

The RSQ did not correlate with anxiety or depression, suggesting that sealers do not have greater levels of anxiety and depression, which is contrary to Hypothesis Two. This finding, in relation to depression is in line with those of Tait, Birchwood and Trower (2004) who studied a similar sample size. Anxiety has not been explored in relation to recovery style before. The poor correlation between recovery style and anxiety could be explained by the fact that anxiety is common in individuals with schizophrenia (Cosoff & Hafner, 1998) and an integrative style of recovery is not necessarily protective. Given that the sample was moderately anxious, one could tentatively hypothesise that it is possible that individuals with psychosis respond to anxiety in different ways depending on other variables. One variable which may be involved is attachment style. Since attachment style has been found to correlate with recovery style (Drayton, Birchwood & Trower, 1998; Tait, Birchwood & Tower, 2004), one could speculate that those with a secure attachment style may feel able to express their anxiety to others and thus go on to develop an integrative style. On the other hand, those who have an insecure style may feel unable to discuss their worries and so develop a sealing-over style. This is speculative and further research would be necessary to establish these links.

Exploration of the links between scores on the HADS and the MCQ-30 did reveal some significant correlations. As one might expect, those individuals who achieved higher scores on the MCQ-30, demonstrating more dysfunctional metacognitive processes, tended to report greater feelings of anxiety on the HADS. This finding is consistent with literature which has previously demonstrated that high levels of anxiety tend to correlate with higher scores on MCQ subscales (Wells & Carter, 2001).

Importantly, a link is also made with metacognitive dysfunction and depression, as measured by the HADS. Specifically, individuals who reported greater feelings of depression

tended to endorse more negative beliefs about worry and they also endorsed a greater need to control their thoughts. This finding contradicts what has been found in previous literature. For example, Barahmand (2009), in a study of how different metacognitive processes linked to anxiety disorders and depression in people without psychosis, found that people with depression were more likely to endorse positive beliefs about worry, which has been explained in terms of rumination. It is possible that depression has a different effect on the metacognition of individuals with psychosis; or that metacognition has a different effect on the mood of these individuals. Further investigation of these links is warranted.

Methodological considerations

Before we consider the implications of this study, its results must be appraised in the context of certain weaknesses within its design. Firstly, as previously highlighted, the cross-sectional design prohibits the drawing of firm conclusions regarding causality and as such it is not known exactly how metacognition and recovery style in psychosis are related. We can only say where there appears to be a link. The study was designed to be exploratory in nature and furthermore its time scale meant that a cross-sectional design was most appropriate.

The measures administered to assess the constructs under investigation also warrant consideration when discussing the findings of the study. The bi-dimensionality of the HADS has been questioned for example. Reviewing 22 studies which had factor analysed the HADS, Martin (2005) proposed that its anxiety sub-scale is 'split' between negative affectivity and autonomic arousal. Allan and Martin (2009) later also warranted caution in using the HADS to measure depression in individuals with schizophrenia, since their factor analysis found two distinct factors; one measuring anhedonia and one measuring negative affectivity. The superiority of this three factor model was, however marginal. So, whilst it is possible that the HADS may be measuring negative symptoms of psychosis as well as

depression in these individuals, this may be the case for other measures of depression, meaning the HADS may not have been any less appropriate than any other measure.

As previously highlighted, while the MCQ-30 was the best measure of metacognition available and has shown good psychometric properties in populations with psychosis, it does not enable distinction of worry from positive symptoms of psychosis such as paranoia. For example negative thoughts about the dangers of worry would be distinct from negative thoughts about the dangers of paranoia. For the purpose of this study; given that the sample were stable and largely free from symptoms of psychosis and given the high rates of anxiety in individuals with psychosis, the measure was applied usefully. However, future research could adapt the MCQ-30, so that it applies more specifically to the symptoms of psychosis, which would be informative and is certainly possible. Lobban, Haddock, Kinderman and Wells (2002), for example adapted the MCQ to determine differences in metacognition between voice hearers and non-voice hearers with schizophrenia.

With regards to the RSQ, one must bear in mind that this is largely a retrospective measure which relies upon individuals to accurately recall the experience of being acutely unwell. Many participants had not relapsed for some years, meaning that for these people it would have been difficult to accurately recall the experience, which holds implications for the validity of their answers. Moreover, retrospective memory deficits have been reported in individuals with schizophrenia (Heinrichs & Zakzanis, 1998).

The order of presentation of measures was decided on the basis of feedback from service users who felt that the RSQ was emotionally demanding and would warrant time to debrief. The RSQ was administered to all participants first in order to allow them time to process the questions it asked and any difficult emotions roused by completing it. This decision did not take account of response order effects which may affect the validity of the findings.

Symptom severity was not assessed because participants were considered to be in recovery and as such the majority were recruited from recovery teams. Moreover, adding a fourth measure would have lengthened the timescale of the study and may have negatively affected recruitment. However, it would have been helpful to have measured whether participants were experiencing residual symptoms since this would have allowed us to hypothesise on the nature of the worrying thoughts that individuals had in mind whilst completing the MCQ-30. It would also have been useful to determine how symptomology interacted with metacognition and recovery style in this sample, if indeed it did. Previous research applying the MCQ to individuals experiencing different symptoms of psychosis has found contradictory evidence. One study found that individuals who experience hallucinations endorse stronger need to control thoughts and more positive beliefs about worry than non-hallucinators (Baker & Morrison, 1998). Lobban, Haddock, Kinderman and Wells (2002) on the other hand, found that the only difference between hallucinators and non-hallucinators was that the hallucinators tended to report less cognitive confidence. Any interaction between symptoms and metacognition is likely to have an impact upon the individual's recovery from psychosis and quite possibly their recovery style.

The sample size included in this study was small, which limits the generalizability of the findings. A reasonably broad age range was included as was, compared to similar studies (e.g. Mulligan & Lavender, 2010), a reasonable gender mix.

Clinical and research implications

The finding that sealers endorse positive beliefs about worry suggests that it could be helpful to address the nature of anxiety amongst sealers and to engage them in exploration of the advantages and disadvantages of worry and how anxiety may relate to their symptoms and their experience of illness. This may be a gentle way of engaging individuals who are hard to reach and may be carried out through group work if the individual is more amenable

to this way of working. Wells (2008) discusses the principles of metacognitive therapy, which include focussing less on the content of cognition and more on the way individuals control their thinking. Attention training technique (ATT) is one metacognitive therapy designed to reduce self-focussed attention. ATT has been successfully applied to patients experiencing hallucinations (Valmaggia, Bouman & Schurman, 2007).

The main finding warrants further research investigation. Specifically, the idea that worrying may be a coping strategy for certain individuals requires exploration. It would be useful to determine whether this effect is specific just to individuals with psychosis or whether individuals with other disorders, such as depression and the anxiety disorders who hold positive beliefs about worry or rumination, also avoid discussion or exploration of their illness during recovery. A ruminative response style has, for example been found to prolong the course of depressive episodes (Nolen-Hoeksema, 1991). Any maladaptive effects that worrying or rumination may have upon recovery can be targeted in future practice.

As discussed, future research should aim to examine the impact that symptoms of psychosis have upon any connection between metacognition and recovery style. Longitudinal studies which determine whether metacognition changes post illness with recovery style or whether it is long standing are welcome. There is literature which demonstrates that metacognition can be improved in individuals with psychosis and research examining the resulting effects upon recovery style would certainly add to the literature.

Conclusions

The findings of this study demonstrate that individuals who adopt an integrative style of recovering from psychosis hold different metacognitive beliefs to those who seal-over. Sealers are more likely to endorse positive beliefs about worry. Individuals who demonstrated more dysfunctional metacognitive beliefs also tended to report higher levels of anxiety and depression. Recovery style did not correlate with depression or anxiety. Future

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research should examine the longitudinal interaction of these phenomena in order to determine the direction of causality. Once clear links have been made, metacognitive or worry-based interventions may be usefully applied to individuals during their adaptation to and recovery from psychosis.

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Section C: Critical appraisal

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JULY 2011

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1. What research skills have you learned and what research abilities have you developed from undertaking this project and what do you think you need to learn further?

Through developing the idea for this project I became aware of the importance of being realistic when designing research projects and the need to think prospectively; anticipating difficulties which might arise and possible ways of avoiding them or thinking in advance of solutions to overcome them. This has improved my awareness of the scale different research projects should take and how realistic one can be when designing a project one will carry out in a large NHS trust from conception to completion with relatively few resources.

I have enhanced my literature search skills and specifically, have honed my ability to apply searches to meet the aim of developing a research question. This experience has also improved my ability to synthesise literature and to use theory and research evidence to inform new hypotheses, which may not have been previously explored. I have learned that by thoroughly familiarising oneself with a given theory which may appear only tentatively relevant to the question one seeks to answer, one can apply the theory logically to form a new, plausible hypothesis.

Applying a positivist epistemological position meant that I had to be objective; something which is a skill that completing this project developed in me. As a clinician who is required to develop a relationship with service-users one is working with and often apply clinical intuition and judgement, it was difficult at times to maintain my position as an objective researcher. On a few occasions the debriefing discussion I held with participants after they had completed the questionnaires led to participants disclosing on-going fears or concerns they had in relation to their diagnosis. It was difficult for me as a therapist who has recently worked with individuals with psychosis to remain objective and not to use therapeutic techniques to support participants in this instance. I learnt to be aware of my role

as a researcher and how distinct this role is from my role as a therapist and I tended to manage these situations by suggesting to participants that they discuss their concerns with their care co-ordinator, in line with protocol suggested by the research ethics committee.

With regards to things I need to learn further; I have learnt that I need to develop my statistical abilities and my confidence in attempting more complex data analysis to expand on findings and get the most out of relatively simple analysis such as correlation. My lack of confidence with mathematics and statistics meant that I required support from my supervisor to compute the correlation significance tests, since I found the formula required to do this daunting. On reflection, the anxiety this raised in me and the level of procrastination I demonstrated has taught me that I have a tendency to let my lack of confidence with mathematics and statistics cloud my mind, rendering me incapable of understanding what might actually be quite simple formulas, as was the case with the correlation significance test formula referred to in Section B.

When attempting to recruit participants from teams which may not have research at the forefront of their minds, I need to develop my ability to promote research as being in the interests of patients generally and the wider mental health community. Instead, as recruitment started to appear difficult and I visited more teams to explain my project and promote recruitment I perhaps approached teams with an amount of humble reverence which, I learnt was not a successful way of approaching recruitment. I now know that it is important not just to visit teams and be polite, friendly and transparent with regards to the project aims and measures, but to show real enthusiasm for the project concerned and how its findings may change wider mental health practice. The poor amount of referrals I initially received from community teams compared to day centres indicates the importance of developing individual relationships with staff. A significant amount of time was spent encouraging teams to refer patients on their caseloads to the project and much time was spent travelling to

meetings where I would present for 15 minutes at the start, then leave the team to conduct their meeting and await referrals. In hindsight, my short visit at the beginning of a long clinical meeting would have been quickly forgotten, even by psychologists in the teams, which explains the lack of referrals. Far better would have been to have developed relationships with individual care co-ordinators or to shadow members and obtain referrals that way.

2. If you were able to do this project again, what would you do differently and why?

In order to make more efficient use of time, I would have gone about recruitment in a different way. Specifically, it would have been helpful to have spent time with individual care co-ordinators in teams from which I was trying to recruit in order to build a relationship with them so that my project remained in their consciousness and I received more referrals. It may have been helpful to have shadowed each member for a few hours to gain a better understanding the service users who accessed these services. This would have been very time consuming, however and may not have been possible given the time I had available for recruitment. I was probably naïve to think that it would be adequate to work through team psychologists, who I expected might be interested in the research. In reality, the psychologists were probably just as busy as care co-ordinators and therefore too busy to advertise my project with any aplomb within team meetings. Relying on team psychologists to encourage care co-ordinators to refer participants was not a successful approach and meant that the final stages of the recruitment were rushed. Thus, whilst the required sample size was reached, it was done so in a manner that was not speedy or as efficient as I would have hoped. This in turn depleted the resources I had available to begin a competent write up of the research and so it had a knock on effect on the project as a whole.

Secondly, I would have attempted to recruit sealers by targeting assertive outreach teams in the trust as well as the recovery teams from where the majority of participants were recruited. I made the decision not to approach assertive outreach teams initially, because we expected to glean few referrals from these teams, since such teams tend to work with clients who find it difficult to engage with mental health services. I felt it would be more fruitful to approach recovery teams and analyse the recovery style of individuals referred from there. It was not until the final stages of recruitment that I approached assertive outreach teams and although not all participants from these teams were classed as sealing-over, it may have been a more productive way of reaching sealers way of reaching sealers. I did consider approaching voluntary services, who with less emphasis on diagnosis and symptom management and more emphasis on social model of mental illness, may be more likely to attract sealers to use their services. I did not make this decision until quite late in the project, when recruitment within the trust was proving difficult. Consequently, my initial phone calls to service managers of local voluntary centres proved unsuccessful, with many managers expressing frank distrust in research, telling me that they had been approached by many students wishing to carry out research and often did not receive copies of any results stemming from research projects to which they had aided recruitment. Had I contacted such agencies prior to this point I am certain that I would have managed to develop relationships with voluntary service managers and put their minds at rest that I would conduct research in a responsible, transparent and ethical manner.

3. Clinically, as a consequence of doing this study, would you do anything differently and why?

The findings have developed my interest in metacognition as well as in recovery style in individuals with severe mental illness. This research has highlighted the importance of higher level thinking in emotional disorder. In the future, when working with individuals

with psychosis I will ask questions pertaining to metacognition in my assessment with them in order to determine how metacognition might be impacting upon their level of distress. When treating such individuals using cognitive models, I would hope to incorporate metacognitive therapy techniques to address any unhelpful metacognitive beliefs.

When working with service-users with psychosis, I will also pay attention to their recovery style and will adapt the pace and approach of therapy according to their recovery style. This research has highlighted to me that teams can sometimes be too quick to dismiss individuals as unwilling or unable to engage in psychological therapy. In fact, psychologists have the breadth and depth of training to enable them to work with individuals who cannot engage in traditional therapeutic methods and use their academic creativity to adapt techniques based on empirical evidence to work successfully with such individuals. With this in mind, I feel better able to encourage other professional to refer service-users for psychological work in cases where the service-user may on the face of it appear an inappropriate candidate for psychological work.

4. If you were to undertake further research in this area what would that research project seek to answer and how would you go about doing it?

There are several areas I would like to explore in relation to the links between metacognition and recovery style. In order to further explore the links between the two, I would conduct qualitative research, interviewing participants about how they adapted to their illness and about their metacognitive beliefs before, during and after recovery, so as to substantiate the findings in this study and enrich the data I obtained. I would base the interview questions largely on the MCQ-30 and would analyse responses using content analysis. Given the difficulties in recruiting sealers, I would hope to make contact with a selection of participants who took part in this research, inviting them to participate in further interview-based research.

Further research would also seek to answer how the variables which have previously been found to relate to recovery style mediate the relationship between recovery style and metacognition. This may require a larger scale quantitative project, examining several variables including metacognition, recovery style, symptoms of psychosis, attachment, mood and self-esteem. I would apply regression analyses to determine the connections between these variables.

In relation specifically to recovery style, I would be interested to explore the role that trauma plays in recovery style. To explore the role of trauma, I would conduct a simple quantitative project, recruiting participants who have experienced their first episode of psychosis and administering a measure of trauma alongside the RSQ and correlating these measures. Since shame has not been explored in relation to recovery style, I would also be interested to administer a standardised measure of shame and determine any correlation here.

The nature of recovery style means that one cannot ascertain an individual's style until after the episode of illness, which renders it difficult to conduct longitudinal research. However, one could follow people diagnosed with psychosis, charting the way their recovery style changes as they grow older and establishing what events might have led to these changes, by measuring metacognition, self-esteem, mood and symptoms of psychosis- be it through interview or otherwise.

Section D: Appendices

JULY 2011

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Appendix 1: Literature search methodology

Search strategy

The literature search was carried out between October 2010 and February 2011. Literature was identified through computer based searches of the following databases;

- Psychinfo (1806-2011)
- Science Direct (1823-2011)
- Web of Knowledge (1950-2011)

Searches included the following key terms; “recovery style” combined with “psychosis” and “schizophrenia.”

Additional searches were made through manual searches of reference sections of relevant literature and an internet search using the ‘Google Scholar’ search engine.

Criteria

Literature which involved empirical tests of the association of one or more variables with recovery style was included in the study.

Given the intended focus of the review was factors which may contribute to recovery style, literature which examined the impact of recovery style on another variable/s (such as engagement and outcome) was excluded. The empirical focus of the review also stipulated the following exclusions: dissertation abstracts international, non-peer reviewed papers and case studies.

Identified literature

16 studies were identified using the above key terms. Those which did not meet criteria included eight studies investigating the impact recovery style has on other variables, two case studies and two dissertations. Although this literature was excluded from the main body of the review, it was used to inform the introduction and context. Thus this review considers evidence presented by four papers.

Appendix 2: ICD-10 codes

Mental and behavioural disorders

F20-F29: Schizophrenia, schizotypal and delusional disorders

F20 Schizophrenia

- F20.0 Paranoid schizophrenia
- F20.1 Hebephrenic schizophrenia
- F20.2 Catatonic schizophrenia
- F20.3 Undifferentiated schizophrenia
- F20.4 Post-schizophrenic depression
- F20.5 Residual schizophrenia
- F20.6 Simple schizophrenia
- F20.8 Other schizophrenia
- F20.9 Schizophrenia unspecified

F21 Schizotypal disorder

F22 Persistent delusional disorders

- F22.0 Delusional disorder
- F22.8 Other persistent delusional disorders
- F22.9 Persistent delusional disorder, unspecified

F23 Acute and transient psychotic disorders

- F23.0 Acute polymorphic disorder without symptoms of schizophrenia
- F23.1 Acute polymorphic psychotic disorder with symptoms of schizophrenia
- F23.8 Other acute and transient psychotic disorders
- F23.9 Acute and transient psychotic disorder, unspecified

F24 Induced delusional disorder

F25 Schizoaffective disorders

- F25.0 Schizoaffective disorder, manic type
- F25.1 Schizoaffective disorder, depressive type
- F25.2 Schizoaffective disorder, mixed type
- F25.8 Other schizoaffective disorders
- F25.9 Schizoaffective disorder, unspecified

F28 Other nonorganic psychotic disorders

F29 Unspecified nonorganic psychosis

Appendix 3: Metacognitions Questionnaire-30

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Appendix 4: Recovery Style Questionnaire

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Appendix 5: Hospital Anxiety and Depression Scale

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Appendix 6: Participant Information Sheet

Participant Information Sheet

Thinking and Recovery Style from Psychosis: Is there a link?

I would like to invite you to take part in a research study. Before you decide you need to understand why the research is being done and what it would involve for you. Please take time to read the following information carefully. Talk to others about the study if you wish.

If there is anything that is not clear or if you would like more information, please feel free to contact me at the number at the bottom of this sheet. Take time to decide whether or not you wish to take part.

What is the purpose of the study?

I am a clinical psychology student and I am carrying this research out as part of my doctorate degree.

Researchers have found that psychosis can affect people's ideas about their own thinking processes.

You may be familiar with the concept of recovery. It has been found that people who have experienced mental illness develop one of two different styles of recovery: either shutting their experience of illness off and not thinking about it; or giving their illness consideration and trying to incorporate it into their life experience.

My aim is to determine whether there is a connection between people's thinking processes and their recovery style.

Why have I been invited?

You have been chosen to participate in this study because you have received a diagnosis of psychosis at some point. I will be inviting at least 42 people to take part, all of whom have been given a diagnosis of psychosis.

Do I have to take part?

It is up to you to decide. You will be able to go through this information sheet with me and I will be able to answer any questions you may have before deciding whether to take part. You are free to withdraw from this study at any time,

without giving a reason. This will not affect the normal standard of care you receive from [REDACTED] NHS Trust.

What will happen to me if I take part?

I will contact you by telephone to introduce myself and answer any initial questions you may have about the study. If during this phone call you are still keen to proceed and participate, we can agree a suitable time for you to visit your local clinic on one occasion to meet me. During this visit, I will ask you to sign a consent form to show that you agree to take part in the study. You will then complete 3 questionnaires about your thinking style, your recovery style and your mood.

These questionnaires will take about 30 minutes to complete in total. When you have completed them you will not be asked to do anything else and your involvement in the study will be finished.

Your care co-ordinator will also have access to the 3 questionnaires you completed, should they wish to see them but your normal treatment at the clinic will be in no way affected by participating in this research.

Will I incur any expenses by taking part or receive any payments?

You will need to travel to your clinic as you normally do, be it by public transport or other means. You will be paid £5 in cash once you have completed the questionnaires.

What are the possible disadvantages of taking part?

Participating in this project carries a slight risk of you becoming distressed in relation to certain questions. Should this happen we can take a moment's rest before deciding whether to continue. When you have finished completing the questionnaires, you will have the chance to talk with me about what was good and bad about answering the questions and how you found it.

What are the possible benefits of taking part?

Whilst there are no immediate benefits for those participating in this project, other than the small payment mentioned above, it is hoped that this work will lead to recommendations for improving psychological approaches to psychosis and to recovery.

What happens when the research study finishes?

In the summer of 2011 I will send you a brief written report about the results of the study, should you wish to receive this.

In accordance with the Data Protection Act (1997) all data relating to this project will be kept for ten years. It will be stored securely and you will not be identifiable as your name will not be recorded.

What if there is a problem?

Should you have any complaint or concern about any aspect of the study or how you have been treated, then please contact me and I will do my best to answer your concerns. You can call me, [REDACTED], on [REDACTED] - please leave a message and I will return your call.

What will happen if I don't want to carry on with the study?

If at any point you decide that you do not wish to continue completing the questionnaires and being involved in the study you may do so and your data will not be used in any part of the study. All data you have previously been given will be destroyed.

What if I want to make a complaint about the study?

If after talking with your care co-ordinator you remain unhappy with any aspect of the study or how you have been treated, you may make a formal complaint. You can do this through the NHS complaints procedure and contact the [REDACTED] NHS Trust customer relations department on [REDACTED].

If you would like independent advice about the project then you can contact a member of the Patient Advice and Liaison Service (PALS) on [REDACTED].

Will my taking part in the study be kept confidential?

In accordance with the Data Protection Act (1998) all information which is collected about you during the course of the research will be kept strictly confidential. The questionnaires which you and your care co-ordinator complete will have your name removed once they reach the researcher. The answers you provide on the questionnaires will be inputted into a computer spreadsheet anonymously.

Only your care co-ordinator and I will have access to the answers you provide on the questionnaires. I will not be informing your GP that you are taking part, though you are free to do so if you wish.

Your data will not be used for any future research.

Your name will not be included on any reports or presentations and no-one will be able to identify you.

However, please note that if you tell me anything that I think means that you or someone else is at risk of harm, I will be obliged to inform your care co-ordinator immediately.

What will happen to the results of the study?

The results of the study will be written up into a thesis report as part of my doctorate degree. I also aim to publish the results of the study in an international journal. No one will be able to identify that you have taken part in the study as your name will not be used.

As, mentioned above, you will also receive a summary of the report.

Who is funding the study?

This study is funded by Canterbury Christ Church University.

Who has reviewed the study?

All research in the NHS is looked at by independent groups of people called a Research Ethics Committee to protect your well-being, safety, dignity and your rights. This study has been reviewed and given favourable opinion by the [REDACTED] Research Ethics committee on [REDACTED].

Further information and contact details

If you would like further information about the research project and/or copies of any reports that come out of this work, please contact me, [REDACTED] on [REDACTED]. Ask for [REDACTED], leave your name and number and I will return your call.

Appendix 8: Approval letter from Research Ethics Committee

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Appendix 9: Approval letter from Research and Development Department

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Appendix 10: Comparison between Spearman and Pearson's correlations

Comparison between Spearman and Pearson's correlations for MCQ-30 and RSQ

	Spearman correlation	Pearson's correlation
MCQ-30 Cognitive confidence	R .001 Sig .996	R .046 Sig .770
MCQ-30 Positive beliefs about worry	R -.447** Sig .003	R -.430** Sig .004
MCQ-30 Cognitive self-consciousness	R .082 Sig .600	R .056 Sig .723
MCQ-30 Uncontrollability and danger	R .141 Sig .366	R .132 Sig .400
MCQ-30 Need to control thoughts	R -.168 Sig .281	R -.297 Sig .053
MCQ-30 TOTAL	R -.090 Sig .568	R -.104 Sig .505

**Significant at the 0.01 level

Comparison between Spearman and Pearson's correlations for RSQ and HADS

	Spearman correlation Anxiety	Pearson's correlation Anxiety	Spearman correlation Depression	Pearson's correlation Depression
RSQ	R -0.092 Sig .559	R -.104 Sig .505	R -.104 Sig .505	R -.032 Sig .837

Comparison of Spearman and Pearson's correlations for MCQ-30 and HADS

	Spearman correlation-Anxiety	Spearman correlation-Depression	Pearson's correlation-Anxiety	Pearson's correlation-Depression
MCQ-30 Cognitive confidence	R .330 Sig .031	R .339 Sig .026	R .345 Sig .023	R .437** Sig .003
MCQ-30 Positive beliefs about worry	R .290 Sig .059	R .247 Sig .110	R .441** Sig .003	R .193 Sig .214
MCQ-30 Cognitive self-consciousness	R .498** Sig .001	R .186 Sig .233	R .486** Sig .001	R .248 Sig .109
MCQ-30 Uncontrollability and danger	R .626** Sig .000	R .414** Sig .006	R .585** Sig .000	R .424** Sig .005
MCQ-30 Need to control thoughts	R .543** Sig .000	R .450** Sig .002	R .551** Sig .000	R .477** Sig .000
MCQ-30 TOTAL	R .730** Sig .000	R .510** Sig .000	R .724** Sig .000	R .511** Sig .000

** Significant at the 0.01 level

Appendix 11: Feedback to participants

Thinking and recovery style in psychosis research project

Feedback for participants

You may remember participating in this research study earlier this year, for which you were asked to complete three short questionnaires about your thinking style, your recovery from illness and your mood. I am writing to let you know what the study found. May I take this opportunity to thank you again for your participation in the study.

Aims

The study ran in [REDACTED] NHS trust and aimed to recruit 42 participants with a diagnosis of psychosis in the hope of finding out whether there were any links between their thinking style and the way they recovered from and thought about their illness. We also hoped to determine whether mood (anxiety/ depression) had any effect on these things.

The study was based on the idea that there are two ways of recovering from psychosis. These are sealing-over and integration. Sealing-over is when someone blocks out their experience of illness and simply wants to forget it. Integration is when someone considers their illness a positive learning experience and is happy to think and talk about their illness and what it means.

Results

The study found that:

- 1) People who seal-over tended to hold more positive beliefs about worry (i.e. they see worrying as helpful for them in anticipating and avoiding problems).
- 2) People who held more unhelpful thinking styles such as monitoring their thoughts closely, believing that worrying is dangerous and believing that one should control ones thoughts tended to be more anxious.
- 3) People who held more unhelpful thinking styles such as believing that they have a poor memory, believing that worrying is dangerous and believing that one should control ones thoughts tended also to be more depressed.

- 4) There was no difference in mood between people who seal-over and those who integrate.

What does this mean?

These results suggest that psychologists might be able to help people who seal-over by talking to them about worry and helping them find more helpful ways of approaching problems.

It also suggests that, when working with people with psychosis who may be anxious or depressed, psychologists would do well to assess the person's thinking styles and help them develop more helpful ways of thinking as this might improve their mood.

We hope to publish the findings of this study in a journal that is read by Psychologists working with people who have psychosis. By doing this, we can make psychologists aware of what we have found, so that they can hopefully better understand and work with people who seal-over.

Once again, many thanks for your participation and I hope you have found these results interesting.



Trainee Clinical Psychologist

Appendix 12: Feedback summary for REC

Research summary for REC

Metacognition and recovery style in psychosis: Is there a link?

Objective: This study aimed to determine whether metacognitive dysfunction is linked to the recovery style adopted by individuals with psychosis and also how mood relates to recovery style. The study was sponsored by Canterbury Christ Church University and recruited participants from █████ NHS Foundation Trust. As a reminder; it has been found that following an episode of psychosis, individuals adopt one of two recovery styles: either a sealing-over style or an integrating style. The former is characterised by dismissing one's experience of the illness episode and the latter is characterised by viewing the episode as a positive learning experience worthy of exploration and discussion. The study achieved its objectives and the required number of participants was also achieved.

Findings: The study hypothesised that a sealing-over style would correlate with more dysfunctional metacognitive beliefs. Analysis revealed that metacognition in a general sense did not correlate with recovery style, thus disproving the wider hypothesis. However, when the subscales of the measure of metacognition were correlated with recovery style, a significant correlation was found between one area of metacognitive dysfunction and a sealing-over style of recovery; this being positive beliefs about worry. This finding remained when the effects of anxiety and depression were controlled for. Anxiety and depression did not correlate with recovery style.

Arrangements for dissemination: Participants who requested a copy of the summary will be sent this via their care-co-ordinators and should expect to receive this by the end of August 2011.

Arrangements for publication: The report stemming from this study will be sent to the peer reviewed journal 'Schizophrenia Bulletin' for consideration for publication.

Appendix 13: Submission guidelines for Schizophrenia Bulletin

INFORMATION FOR AUTHORS

New for 2010 – Please note that the journal now encourages authors to complete their copyright license to publish form online

Schizophrenia Bulletin is an international peer-reviewed journal that publishes unsolicited and invited reports and reviews of clinical and experimental research relating to all aspects of schizophrenia. Each issue is based on one or more themes with articles about recent advances in the clinical and basic scientific aspects of that area. A guest editor will be responsible for planning and organizing the theme content and will typically invite contributions from leaders in the field. Themes for future issues will be published in advance online. *Schizophrenia Bulletin* will consider unsolicited full-length manuscripts relating to any aspect of a future theme issue provided they have scientific merit and represent an important advance in knowledge. The *Bulletin* will also periodically publish an *At Issue* section focusing on theory or controversial topics including issues in ethics. Historical perspectives from patients and their families are also welcome.

EDITORIAL POLICIES

Manuscripts must be written in English and are accepted for consideration with an explicit understanding that the material has not been previously published in whole or substantial part and is not currently under consideration for publication by any other journal. All matters relating to the editorial policies of *Schizophrenia Bulletin* should be addressed in writing to Prof. William Carpenter, M.D., Editor-in-Chief, *Schizophrenia Bulletin* Editorial Office, Maryland Psychiatric Research Center, PO Box 21247, Baltimore, MD 21228, USA. Manuscripts should be submitted through the journal's web-based manuscript submission system as instructed below.

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Informed Consent and Ethics Committee Approval

Manuscripts reporting experiments on patients or healthy volunteers must record the fact that the subjects' consent was obtained and include a statement that the research was approved by the responsible ethical committee of the institution (e.g., an institutional review board) and was consistent with the principles outlined in an internationally recognized standard for the ethical conduct of human research. Consent must be also recorded when photographs of patients are shown or other details given that could lead to the identification of the individuals. Authors may be required to provide tangible proof that the necessary permissions and consents have been obtained from study participants.

Laboratory Animals

Manuscripts reporting the results of experiments involving laboratory animals must contain a statement indicating that the procedures used were in accordance with the guidelines published in the Institute of Laboratory Animals Resources Commission on Life Sciences' 1996 *Guide for the Care and Use of Laboratory Animals* (Washington, DC: National Academic Press; <http://www.nap.edu/readingroom/books/labrats>) or a similar internationally recognized standard. The species, sex, source, and genetic background of the animals as well as a detailed description of the experimental procedures, including any anesthetics and/or analgesics, must be provided in the Methods section of the manuscript.

Manuscripts containing data from human or animal experimentation may be rejected if the ethical aspects are open to question. The corresponding author will be held responsible for false statements or for failure to meet the aforementioned requirements.

Conflict of Interest

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Examples of potential conflicts include a proprietary interest in a drug or product mentioned in the study, equity interest in the sponsor of the study or any other commercial entity with a potential financial interest in its outcome, or payments with a cumulative monetary value exceeding \$ 2,000 made by the sponsor to the investigators or their family members during or within two years of the completion of the study. Institutional support for the study should be included in the Acknowledgments section of the manuscript.

All manuscripts submitted for publication will contain a Conflict of Interest statement. The corresponding author will describe each circumstance in sufficient detail to enable the editors and reviewers to assess its scope and to identify the author(s) with whom the conflict(s) exist. If the corresponding author has indicated that no conflict exists, the following statement will be inserted by the publisher and will appear at the end of the published manuscript:

"The Authors have declared that there are no conflicts of interest in relation to the subject of this study."

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Details of all funding sources for the work in question should be given in a separate section entitled 'Funding'. This should appear before the 'Acknowledgments' section.

The following rules should be followed:

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- The full official funding agency name should be given, i.e. 'the National Cancer Institute at the National Institutes of Health' or simply 'National Institutes of Health', not 'NCI' (one of the 27 subinstitutions) or 'NCI at NIH' ([full RIN-approved list of UK funding agencies](#)).
- Grant numbers should be complete and accurate and provided in parentheses as follows: '(grant number xxxx)'
- Multiple grant numbers should be separated by a comma as follows: '(grant numbers xxxx, yyyy)'
- Agencies should be separated by a semi-colon (plus 'and' before the last funding agency)
- Where individuals need to be specified for certain sources of funding the following text should be added after the relevant agency or grant number 'to [author initials]'.

An example is given here: 'This work was supported by the National Institutes of Health (P50 CA098252 and CA118790 to R.B.S.R.) and the Alcohol & Education Research Council (HFY GR667789).'

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MANUSCRIPT PREPARATION

All manuscripts are submitted and reviewed via the journal's web-based manuscript submission system accessible at <http://mc.manuscriptcentral.com/szbltn>. New authors should create an account prior to submitting a manuscript for consideration.

Manuscripts submitted to *Schizophrenia Bulletin* should be prepared following the *American Medical Association Manual of Style*, 10th edition. The manuscript text (including tables) should be prepared using a word processing program and saved as an .rtf or .doc file. Other file formats will not be accepted. Figures must be saved as individual .tif files and should be numbered consecutively (i.e., Figure 1.tif, Figure 2.tif, etc.). The text must be double-spaced throughout and should consist of the sections described below.

Title Page

This page should consist of (i) the complete title of the manuscript, (ii) a running title not to exceed 50 characters including spaces, (iii) the full name of each author and the authors' institutional affiliations, (iv) name, complete address, telephone, fax, and e-mail address of the corresponding author, and (v) separate word counts of the abstract and text body.

Manuscript Length

Manuscripts should be concisely worded and should not exceed 6,000 words for invited articles for theme issues, 4,500 words for regular articles, or 2,500 words for invited special features. The word

count should include the abstract, text body, figure legends, and acknowledgments and must appear together with the abstract word count on the title page of the manuscript. Supplementary data, including additional methods, results, tables, or figures will be published online.

Abstract

Provide a summary of no more than 250 words describing why and how the study, analysis, or review was done, a summary of the essential results, and what the authors have concluded from the data. The abstract should not contain unexplained abbreviations. Up to six key words that do not appear as part of the title should be provided at the end of the abstract.

Main Text

Unsolicited original manuscripts reporting novel experimental findings should be comprised of these sections, in this order: Abstract, Introduction, Methods, Results, Discussion, Acknowledgments, References, and Figure Legends. Review articles must contain an abstract; however, the body of the text can be organized in a less structured format. Authors of review articles are encouraged to use section headers to improve the readability of their manuscript.

Number pages consecutively beginning with the title page. Spelling should conform to that used in *Merriam-Webster's Collegiate Dictionary*, eleventh edition. Clinical laboratory data may be expressed in conventional rather than Système International (SI) units.

Acknowledgments

These should be as brief as possible but include the names of sources of logistical support.

References

Authors are encouraged to be circumspect in compiling the reference section of their manuscripts and to adhere to the following guidelines: Invited article for a theme: up to 50 references; Regular article: up to 40 references; Theme introduction and Special features: up to 25 references. Authors who anticipate submitting a manuscript with additional citations are encouraged to contact the editorial office before proceeding.

Each reference should be cited in consecutive numerical order using superscript arabic numerals, and reference style should follow the recommendations in the *American Medical Association Manual of Style*, 10th edition, with one exception: in the reference list, the name of all authors should be given unless there are more than 6, in which case the names of the first 3 authors are used, followed by "et al."

- Book: Talairach J, Tournoux P. *Co-planar stereotaxic atlas of the human brain*. New York, NY: Thieme Medical Publishers; 1998.
- Book chapter: Goldberg TE, David A, Gold JM. Neurocognitive deficits in schizophrenia. In: Hirsch SR, Weinberger DR, eds. *Schizophrenia*. Oxford, England: Blackwell Science; 2003:168-184.
- Journal article: Thaker GK, Carpenter WT. Advances in schizophrenia. *Nat Med*2001;7:667-671.
- Journal article with more than 6 authors: Egan MF, Straub RE, Goldberg TE, et al. Variation in GRM3 affects cognition, prefrontal glutamate, and risk for schizophrenia. *Proc Natl Acad Sci USA* 2004;101:12604-12609.
- Article published on Advance Access only: Gilad, Y. and Lancet, D. March 5, 2003. Population Differences in the Human Functional Olfactory Repertoire. *Mol Biol Evol*doi:10.1093/molbev/msg013.
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Journal names should be abbreviated in accordance with *Index Medicus*(www.nlm.nih.gov/tsd/serials/lji.html).

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Figures and Tables

Full length manuscripts including regular and invited theme articles should contain no more than a combined total of 5 tables and figures. Theme introductions and special features are limited to 2 tables or figures (total). Figures and tables must be referred to using arabic numbers in order of their appearance in the text (e.g., Figure 1, Figure 2, Table 1, Table 2, etc.).

Tables should be created with the table function of a word processing program; spreadsheets are not acceptable. Include only essential data, and format the table in a manner in which it should appear in the text. Each table must fit on a single manuscript page and have a short title that is self-explanatory without reference to the text. Footnotes can be used to explain any symbols or abbreviations appearing in the table. Do not duplicate data in tables and figures.

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Appendix 14: Scatter plots

Figure 1: Scatter plot demonstrating significant correlation between positive beliefs about worry and sealing-over. Note that lower MCQ-30 scores equate to less helpful metacognitive beliefs and higher RSQ scores equate to a more integrative recovery style

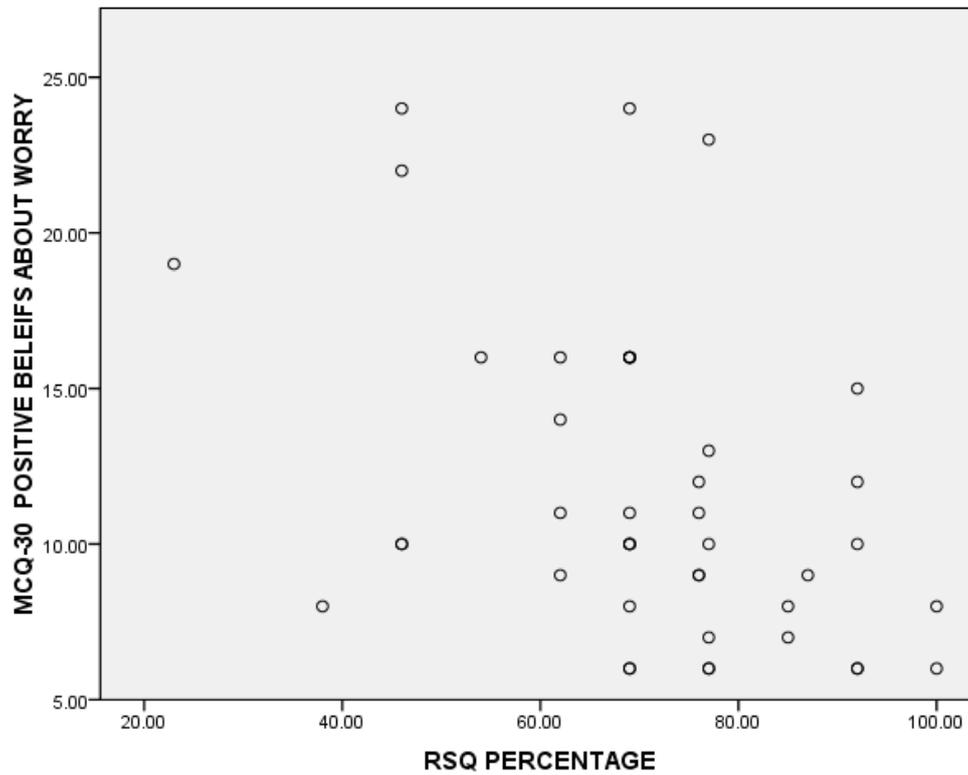


Figure 2: Scatter plot demonstrating significant correlation between MCQ-30 total and HADS anxiety.

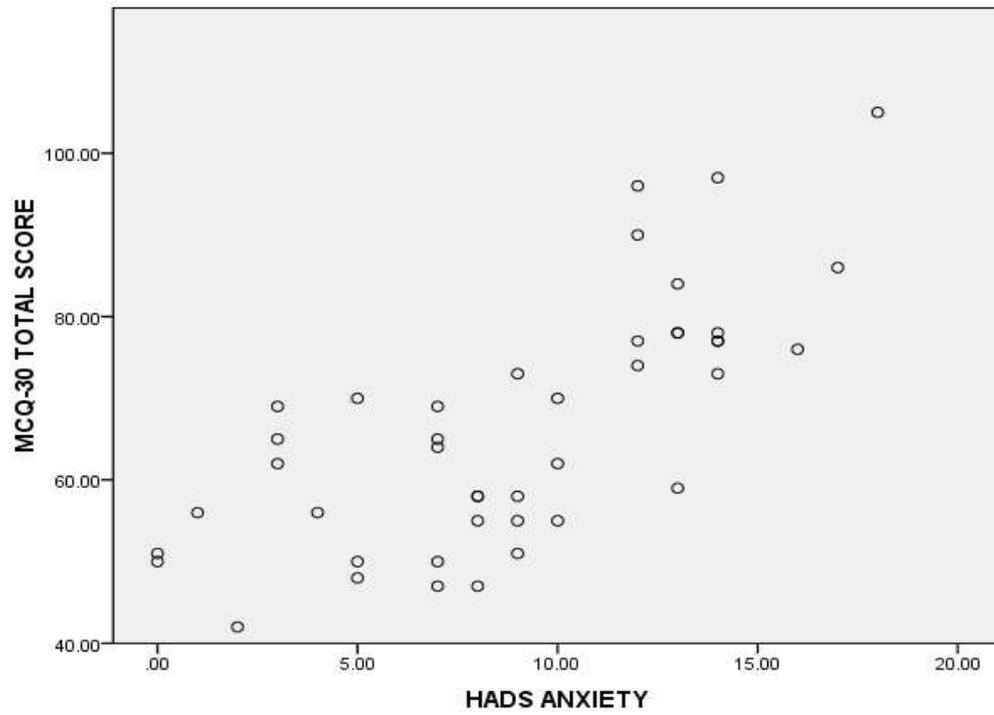


Figure 3: Scatter plot demonstrating significant correlation between MCQ-30 total and HADS depression.

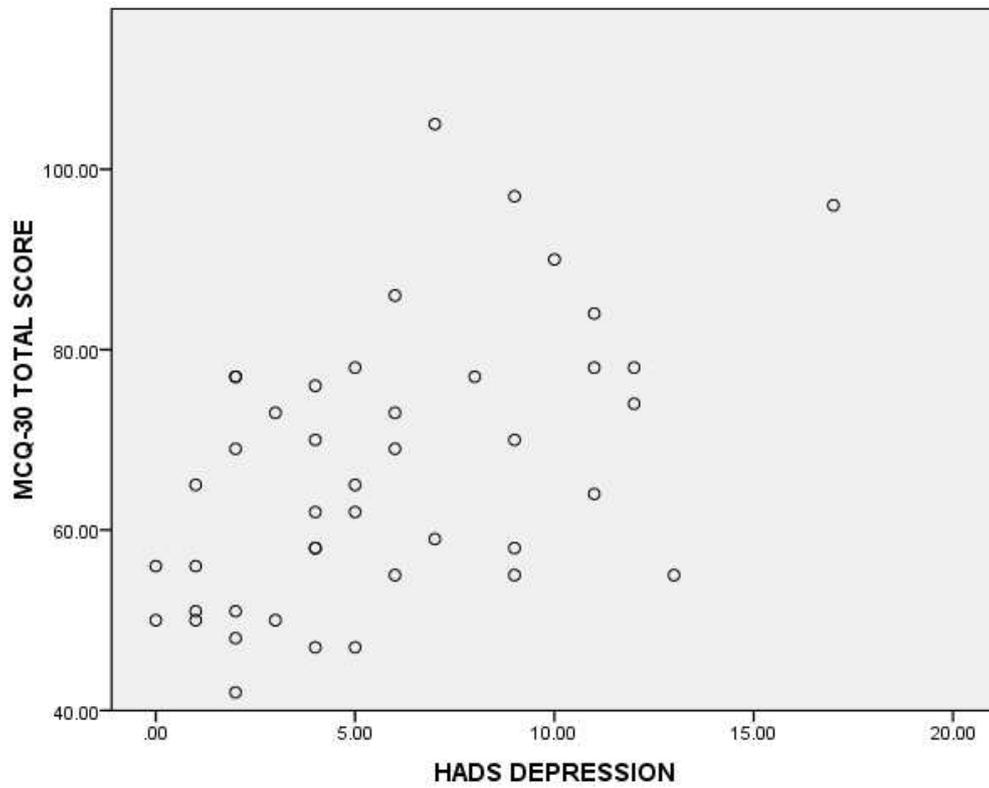
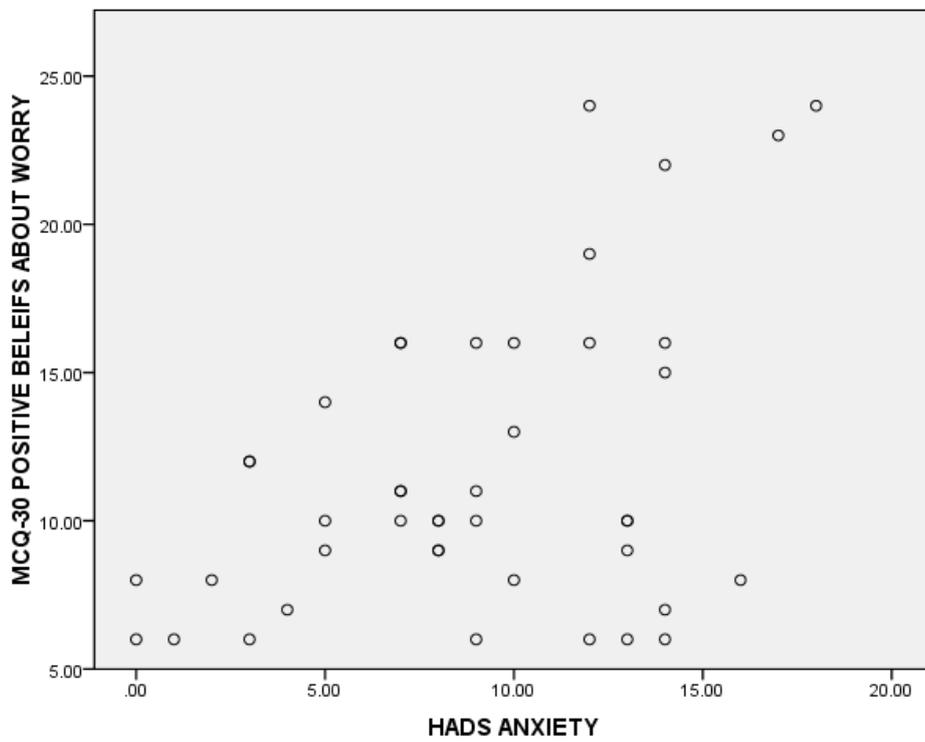
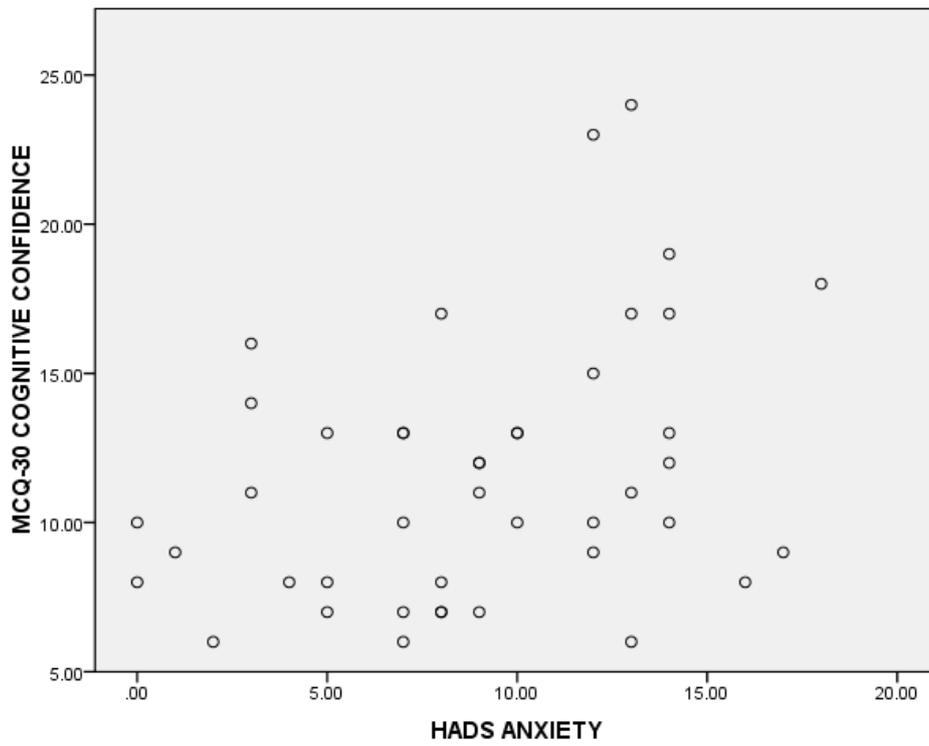
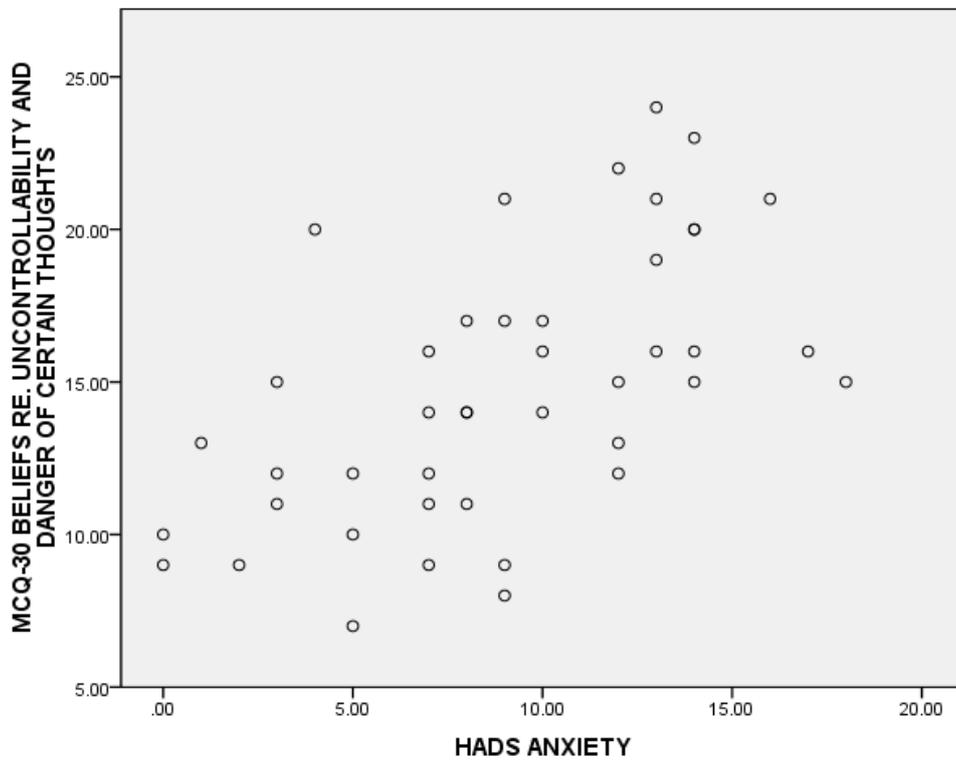
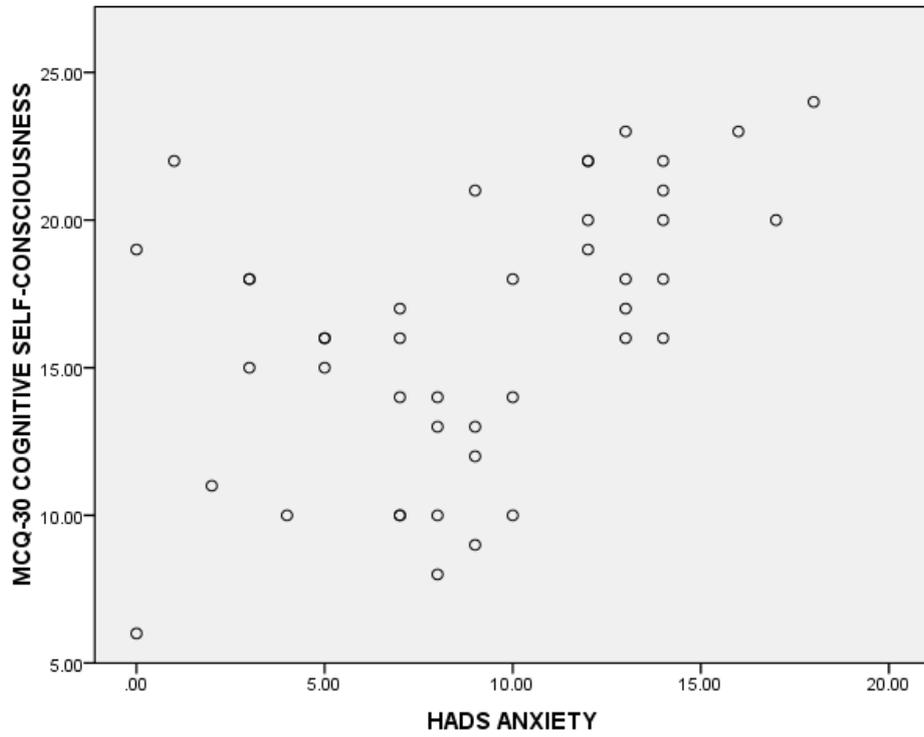


Figure 4: Scatter plots demonstrating significant correlations between HADS anxiety and MCQ-30 subscales





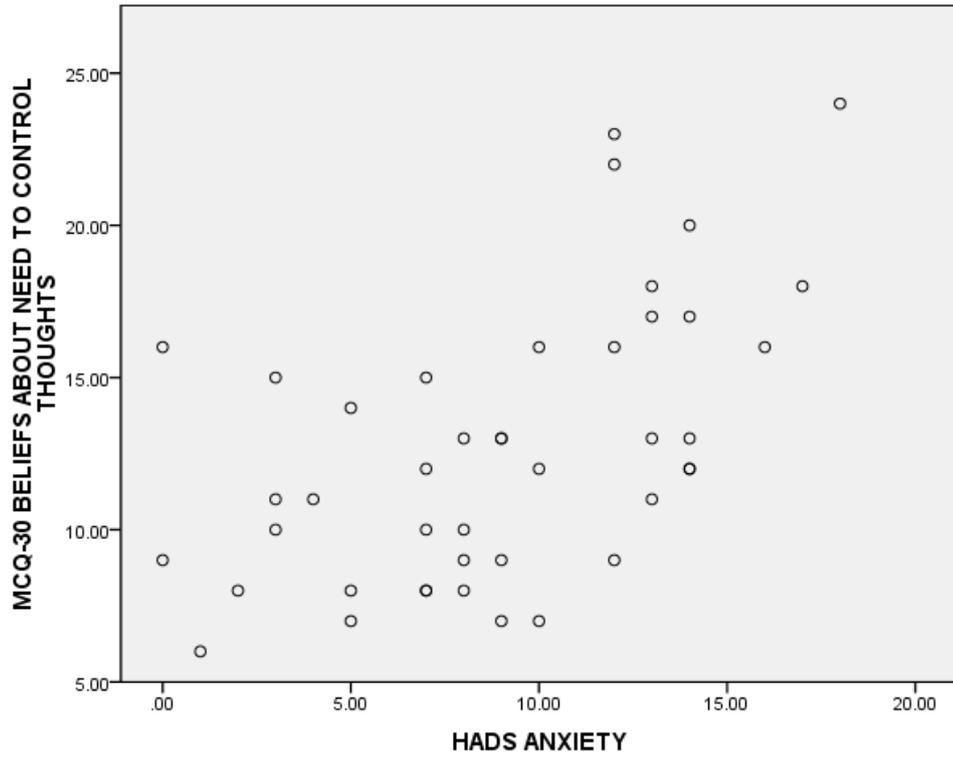


Figure 5: Scatter plots demonstrating significant correlations between HADS depression and MCQ-30 subscales

