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An exploration of emotion regulation in psychosis

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ABSTRACT

The emotional experience of individuals who experience psychosis has historically been neglected, possibly due to the divide between the psychoses and neuroses. This study examined emotional experience and regulation in individuals who had experienced psychosis, individuals experiencing anxiety or mood disorders and non patient controls. Participants completed validated measures of emotional experience and emotion regulation. Both clinical groups were found to experience similar levels of emotions and in comparison to the non patient controls, they experienced greater levels of negatively valenced emotions and lower levels of happiness. Both clinical groups also used similar emotion regulation strategies and in comparison to non patient controls they used significantly more dysfunctional and less functional strategies, suggesting that the emotional experience and emotion regulation strategies of people who have experienced psychosis are more similar to non-psychotic disorders than have previously been thought to be the case. The theoretical and clinical implications of these findings are discussed.

INTRODUCTION

The emotional experience of individuals who have experienced psychosis has been a neglected area of research (Birchwood, 2003). This is likely due to the historical divide between the neuroses and psychoses with the implicit assumption that neurotic disorders have psychological aetiology while psychotic disorders have organic aetiology (Freeman and Garety, 2003). Further, current classification systems describing Schizophrenia as a 'non affective' condition has not encouraged emotion-orientated research in psychosis. This diagnostic anomaly is highlighted by the work of Kendler, Gallagher, Abelson and Kessler (1996) who found that individuals diagnosed with non-affective psychoses had a lifetime prevalence of 73.4% for mood disorders and of 71.4% for anxiety disorders.

A number of researchers and clinicians have suggested that it is more appropriate to study the symptoms and experiences of individuals as opposed to the supposed syndrome of schizophrenia (Bannister, 1968; Bentall, Jackson and Pilgrim, 1988 and Costello, 1993).

Emotional experience in psychosis

Suslow, Roestel, Ohrmann and Arolt (2003) found that regardless of whether patients who had experienced psychosis were diagnosed with or without affective symptoms they reported feeling negative emotions (such as fear, disgust, anger, guilt and shame), more often than a healthy control group. This study found a full range of positive and negative emotional experiences in individuals with a diagnosis of

schizophrenia. Van Os, Gilvarry, Bale, van Horn, Tatten, White and Murray (2000) also found high rates of affective symptoms in patients diagnosed with affective and non-affective psychosis suggesting that overlap between these diagnoses may be common.

In relation to the period prior to acute psychosis there is a consensus that the majority of individuals experience symptoms of anxiety, depression and irritability up to four weeks prior to the appearance of positive psychotic symptoms (Freeman and Garety, 2003). In Docherty, van Kammen, Siris and Marder's (1978) description of the stages of onset of psychosis there appears to be a range of emotions experienced by individuals, such as anxiety and irritability; a sense of being overwhelmed; depression; apathy; hopelessness and disinhibition (with possible elevation in mood). These findings of mood disturbance prior to positive psychotic symptoms may suggest there is an interaction between emotion dysfunction and psychotic symptoms.

With regard to anxiety disorders accompanying psychosis, Cosoff and Hafner (1998) found high rates of comorbid anxiety in schizophrenia, schizoaffective disorder and bipolar disorder. They found the proportion of individuals with an anxiety disorder (43-45%) was almost identical across the three diagnostic groups. They also found that in half of these cases the anxiety disorder appeared to predate the onset of psychosis by 2-5 years.

Johnson (1988) found high rates of depression (65%) in individuals diagnosed with schizophrenia who had recently recovered from an acute episode of psychosis. More than half of these patients experienced depressive symptoms prior to an acute relapse of their psychosis, perhaps suggesting that emotional disturbance was implicated in their relapse.

Overall it can be seen that there is a high frequency of affective disorders, such as anxiety and depression, in individuals who have experienced psychosis. These disturbances can be seen prior to the development of psychosis (Freeman and Garety, 2003) and also appear to be implicated in relapse (Neale, Blanchard, Kerr, Kring and Smith, 1998).

Definition of emotion regulation

Gross (1998) defines emotion regulation as a broad construct that covers a range of processes that may be conscious or unconscious, automatic or controlled. In essence emotion regulation, as defined by Gross (1998), refers to the processes by which individuals shape the emotions they experience in terms of which emotions they experience, when they experience them and how they express them.

Thomson (1994) expands this definition by highlighting the goal-oriented, functional nature of emotion regulation in terms of achieving desired emotional outcomes and broader goals. He further adds that emotion regulation processes can be both internal (e.g. reinterpreting events) and external (e.g. obtaining sympathy from others) to the

individual and stipulates that in order for effective emotion regulation to occur the individual must first possess the ability to access and evaluate their emotions accurately.

Emotion regulation should not be considered simply as a matter of increasing the experience or expression of positively valenced emotions or decreasing the experience or expression of negatively valenced emotions (Cole et al., 1994). Regulation of both positively and negatively valenced emotions may lead to changes in a variety of aspects of emotional experience such as latency, magnitude, duration, expression and behavioural responses (Gross, 1998).

Development of emotion regulation

Emotion regulation can be viewed as an important developmental task which has its roots in early infancy (Calkins, 1994). Emotion regulation develops as the result of interactions between internal and external factors taking place over a number of years (Thomson, 1994). When considering the development of emotion regulation skills it is important to bear in mind the individual factors that can impinge upon or enhance their development. Calkins (1994) suggests a number of factors which may effect the development of emotion regulation skills: these include factors internal to the infant, such as neuroregulatory systems, behavioural traits and cognitive style, and external factors such as parenting style/practices. Caregivers are viewed as playing a crucial role in the development of emotion regulation, initially by providing regulation through actions such as soothing, progressing towards modelling of emotion regulation strategies, such as distraction (Calkins, 1994). The

development of emotion regulation can therefore be conceptualised as an interactive process involving the combination of experiences of having one's emotions responded to and managed by caregivers and observing how other's regulate their own emotions (Calkins, 1994). The processes through which these developments occur however, are not currently well understood (Cole, Michel and O'Donnell Teti, 1994). During the development of self regulation an emotional regulation style may develop into a more stable characteristic which is less amenable to change (Thomson, 1994).

Our understandings of the development of emotion regulation are similar to concepts of attachment theory: where aspects of the care giving relationship are internalised as working models for future relationships (Bowlby, 1988). For example a key factor in the development of emotion regulation is the beliefs and expectancies the infant holds about their own and their caregiver's abilities to cope with and adapt to their emotions (Calkins, 1994). This internal model then impacts on future emotion regulation strategies by influencing self-regulatory and interpersonal behaviour (Calkins, 1994).

Thomson (1994) defines optimal emotion regulation in terms of outcome (e.g. emotions being sufficiently under control to allow for interpersonal functioning) and process (e.g. enlisting appropriate flexible strategies while allowing access to the broad range of emotions) although notes that what is optimal may vary for different individuals, in different situations, with different goals. Calkins (1994) highlights the importance of effective emotion regulation for successful interpersonal functioning.

The development of optimal emotion regulation is likely to occur in a context of a close match between the infant's emotional needs at different developmental stages and the caregivers' ability to identify and meet those needs (Calkins, 1994).

Emotion dysregulation on the other hand, can be defined, not as an absence of regulation, but as the use of inflexible strategies which may have served a specific function, but now interfere with social, cognitive or interpersonal functioning (Cole et al., 1994). The development of emotional dysregulation may be more likely to occur in an environment where there has been a lack of consistent appropriate intervention when the emotional demands of situations exceed the infant's ability to self regulate (Cole et al., 1994). Once emotional dysregulation has developed as a stable characteristic it may be considered as a vulnerability factor in developing psychopathology due to dysregulation of social and cognitive processes (Cole et al., 1994).

Emotion regulation models

Models of emotion regulation vary in their focus on the types of resources and emotion regulation strategies used, and at which point in the emotion generation process the strategies are employed (Gross, 1998; 1999).

Eisenberg and Fabes (1995) focussed on the types of resources used and identified three types of emotion regulation processes. Cognitive strategies were identified, e.g. cognitive restructuring, in which the emotion experienced was moderated by the interpretations made of the situation. Behavioural strategies, such as seeking support,

were identified in which the behaviour reflected an attempt to cope with the experience of the emotion. The final strategies identified were situational, for example attentional control, in which the situation was modified in some way as a reaction to the initial emotion arousal. These strategies identified by Eisenberg and Fabes (1995) could be seen to occur at varying points in the emotion arousing experience.

Gross and Munoz (1995) take a different approach to understanding emotion regulation processes and focus on the stage in the emotion generation process at which regulation strategies are employed. They propose two broad types of processes: antecedent-focussed and response-focussed. Antecedent-focussed emotion regulation relates to strategies employed to modify the factors that elicit the emotion prior to it being experienced, these can include visiting friends or altering appraisals of the environment. Response-focussed emotion regulation relates to the strategies employed to modify the experience of an emotion while it is being experienced, for example masking feelings of sadness. Gross and Munoz (1995) view these processes as likely to be reciprocal in nature, highlighting the dynamic nature of emotion regulation. They suggest however, that antecedent-focussed strategies are more likely to be effective overall as they modulate both the experience and expression of the emotion while response-focussed strategies only impact upon its expression, with limited impact on the subjective experience of the emotion.

Another important consideration for emotion regulation theorists is whether emotion regulation strategies can be considered as functional or dysfunctional. Gross (1998)

notes that no emotion regulation strategy in itself can be considered functional or dysfunctional without taking into consideration the context in which it is employed. Thomson (1994) suggests the use of outcomes, such as the ability to control emotions sufficiently for interpersonal relatedness, to assess functionality. Phillips (2005) meanwhile, proposes that individual emotion regulation strategies may be considered as generally functional or dysfunctional in relation to their relationship with acceptance of emotions. This proposal distinguishes between emotion regulation strategies which signify acceptance of emotion and the meaning of that emotion and those which indicate rejection of the emotion and its meaning, the latter resulting in the functional value of the emotion being neglected.

Ellring and Smith (1998) propose that in psychosis the affective regulation systems are focussed on internal regulation, as opposed to social regulation, and the individual's resources are directed towards internal regulation. This over absorption with internal events precludes social regulation as the individual is no longer attending to external stimuli. The individual is therefore less able to make use of affect regulation from social encounters and has to rely more heavily on self-generated affect regulation (Ellring and Smith, 1998).

Emotion regulation theories may offer a possible explanation for the differences found between emotion experience and expression found in individuals who have experienced psychosis (Kring and Neale, 1996). In healthy samples, use of emotional suppression reduces the experience of positive emotions but not negative ones (Gross and Levenson, 1997). In order to regulate their emotions, individuals who have

experienced psychosis may over rely on suppression. The reduced emotional expression found in individuals who have experienced psychosis may therefore reflect emotion regulation strategies as opposed to a deficit in expression (Buck, Goldman, Easton, and Norelli Smith, 1998). This style of emotion regulation may generate a vicious circle in which negative emotions are unregulated by suppression while positive emotions are reduced therefore increasing negative emotional experiences and the outward expression of flat affect.

The literature reviewed above indicates that while emotion regulation is developing as a field of psychological theory and research (Gross, 1998) little has been written about emotion regulation in relation to psychosis. Emotion regulation can be understood as the processes by which an individual shapes their emotional experience and expression (Gross, 1998). Models of emotion regulation vary as to whether they focus on the stage in the emotion generation process strategies are employed or on the types of resources used.

Given the limited research in this area, this study aims to explore issues of emotional regulation in psychosis. Psychosis can be viewed as a continuum in a similar way to other mental health problems. Emotion regulation strategies may also form a continuum, whereby healthy individuals have greater capacity to regulate their emotions and those with mental health problems have greater difficulty regulating their emotions. The ability to regulate emotions may be related to the amount of strategies utilised or to the functionality of the strategies used. This study seeks to better understand the emotional experiences of, and the emotion regulation strategies

used by, individuals who have experienced psychosis in comparison with individuals with a mood or anxiety disorder who have not experienced psychosis and with individuals who have not experienced any mental health problems.

Research Hypotheses

The research hypotheses are as follows:

1. Emotion regulation strategies in the Psychosis and the Anxiety/Depression Groups will not be significantly different
2. Emotion regulation strategies in the Psychosis and Anxiety/Depression groups will be significantly different from non patient controls
3. The current emotional state of the Psychosis and Anxiety/Depression Groups will not be significantly different
4. The current emotional state of the Psychosis and Anxiety/Depression groups will be significantly different to non patient controls
5. The general emotional state of the Psychosis and Anxiety/Depression groups will not be significantly different
6. The general emotional state of the Psychosis and Anxiety/Depression group will be significantly different from non patient controls

METHODOLOGY

Participants

Three groups of participants were recruited for this study. The first group consisted of 21 individuals (12 males, 9 females; mean age = 39.26, s.d. = 11.30) who had experienced one or more psychotic episodes in their lives and who were currently outpatients and considered well enough to consent and take part in the study. All participants had a diagnosis of Schizophrenia, Paranoid Schizophrenia, Schizoaffective Disorder, Psychosis or Bipolar Disorder with psychotic features, confirmed by their referring clinician. The diagnoses were not confirmed through diagnostic interview, as for the purposes of this study, the experience of psychosis was considered more important than specific diagnoses. Further, measures of ongoing positive or negative symptoms were not administered as it was not felt that they would directly influence emotion regulation strategies as such strategies are considered to be developmentally constructed rather than state specific. However it is recognised that not controlling for on going symptoms could be considered as a limitation of the study.

The second group consisted of 21 individuals (5 males, 16 females; mean age = 40.52, s.d. = 10.67) who were currently being seen by Clinical Psychologists for help with anxiety or mood disorders and had never experienced a psychotic episode. Neither the Psychosis group nor the Anxiety/Depression Group had measures of distress administered. Again it was not considered that this would directly influence emotion regulation strategies (as above) although it is acknowledged that omitting such measures could be considered as a limitation of the study. Further, care was

taken not to overload participants with questionnaires, which influenced the limited selection of measures utilised in this study.

Participants in the two clinical groups were given a Participant Information Sheet during a routine appointment with their Clinical Psychologist and invited to take part in the study. The third group consisted of 21 non patient control participants (12 males, 9 females; mean age = 40.00, s.d. = 11.88) with no known history of (or current) emotional disorder who were matched to the psychosis group for age and gender. All participants met with the researcher (KL) individually to complete the measures outlined below.

Measures

The Emotion Regulation Questionnaire (ERQ)

The Emotion Regulation Questionnaire (ERQ; Gross and John, 2003) is a self report questionnaire designed to measure the use of 2 emotion regulation strategies: Cognitive Reappraisal and Expressive Suppression. Cognitive Reappraisal is a form of antecedent-focussed emotion regulation whereby the individual modifies their thoughts about a potential emotion-eliciting situation in order to alter its emotional impact (e.g. Item 7 “When I want to feel more positive emotion (such as joy or amusement), I change the way I’m thinking about the situation”). Expression Suppression is a form of response-focussed emotion regulation whereby the individual inhibits their emotional expression once the emotion has been elicited (e.g. Item 9 “When I am feeling negative emotions, I make sure not to express them”). Gross and John (2003) have found antecedent and response-focussed strategies to be

relatively independent of one another. Gross and John (2003) report data for non-clinical groups suggesting the scales have good internal reliability (Reappraisal $\alpha=.79$; Suppression $\alpha=.73$) and good test-retest reliability ($\alpha=.69$ over 3 months for both scales). In addition, Gillanders and colleagues found the Emotion Regulation Questionnaire to have similar psychometric properties in a sample of 103 people with kidney disease (Reappraisal $\alpha=.76$; Suppression $\alpha=.64$), (Gillanders, Wild, Deighan and Gillanders, 2008).

The Emotion Regulation Questionnaire 2 (ERQ-2)

The ERQ-2 (Phillips, 2005) was developed as a measure of emotional regulation for children and adolescents, in the context of a lack of existing measures. It is based on a model of emotion regulation, derived from the literature, which categorises emotion regulation strategies as functional or dysfunctional (in relation to acceptance or rejection of emotional state) and as an internal regulatory strategy (e.g. cognitive change) or an external regulatory strategy (e.g. environmental change) (Phillips, 2005). The ERQ-2 asks respondents to rate how often, in general, they engage in the use of the strategies in response to their emotions, on a 5 point Likert Scale. Confirmatory factor analysis (based on a sample of 351 questionnaires completed by children and adolescents) supported a model of emotion regulation strategies which categorises strategies on the basis of functionality and the use of internal/external resources. The child and adolescent validation sample showed good internal reliability. Phillips and Power (2007) added 2 further items to the External-Functional scale in an attempt to increase the internal reliability of this scale. At the time of writing there was no data available on the test-retest reliability of the scales.

An example of a functional internal regulatory strategy would be item 4: “I review (rethink) my thoughts or beliefs”. An example of a dysfunctional internal regulatory strategy would be item 14: “I think about people better off and make myself feel worse”. An example of a functional external regulatory strategy would be item 1: “I talk to someone about how I feel”. An example of a dysfunctional external regulatory strategy would be item 10: “I take my feelings out on others physically”.

Philips (2005) assessed the construct validity of the ERQ-2 by comparing the scores with a number of existing child and adolescent measures relating to emotional and behavioural functioning. The outcome of the analyses were favourable, with strong relationships being found between the dysfunctional scales and the experience of negative emotions, difficulties (as measured by the Strengths and Difficulties Questionnaire, Goodman 1997) and increased psychosomatic complaints. The functional scales were found to be negatively correlated with difficulties and positively correlated with health related quality of life. Overall the findings are supportive of good construct validity in the ERQ-2. As the ERQ-2 has not yet been validated with the general adult or adult clinical populations this will place limitations on the interpretation of the present studies findings. However, given the dearth of appropriate measures of emotion regulation and the unique consideration of functionality of emotion regulation strategies, the ERQ-2 may be viewed as a valuable addition to the research design.

The Basic Emotions Scale

The Basic Emotions Scale (BES, Power, 2006) is a self report measure of emotion which measures experience of five 'basic' emotions (anger, sadness, disgust, fear and happiness) over the last week and in general, as well as including a scale of perceived coping with emotions. The respondent uses a 7-point Likert Scale to rate the degree to which they have experienced the emotions. A total score is then derived for each scale.

The BES was developed from a categorical approach to emotions which views emotions in terms of discrete categories of 'basic' emotions from which more complex emotions are derived (Power, 2006). The emotions are considered as 'basic' as they can be identified early in development and appear across cultures. Although there has been some debate as to the exact number of 'basic' emotions (Power and Dalgleish, 1997) the five emotions (anger, sadness, disgust, fear and happiness) included in the BES appear on nearly all 'basic' emotion lists (Power, 2006). Confirmatory factor analysis (based on a sample of 219 questionnaires completed by students) supported a model of five 'basic' emotions, correlated with each other, which can become 'coupled' together in the form of more complex emotions. The scales were found to have good internal reliability. The analyses were carried out in relation to the trait-like 'in general' scale of the BES as the state-like 'past-week' ratings showed poor item distributions (particularly in the disgust category). At the time of writing there was no data available on the test-retest reliability of the scales.

As the BES has not yet been validated with clinical populations caution will be used in the interpretation of the present studies findings. However the benefits of the BES are that it allows for the assessment of a number of emotions in one scale, thereby reducing participant response burden, and is derived from a clear categorical theory of basic emotions.

RESULTS

Sample characteristics

The overall mean age for the participants in this study was 39.93 years ($SD=11.12$). A one-way ANOVA revealed no significant difference in age between the 3 groups, $F(2,60) = 0.065$, $p > 0.05$. The psychosis and healthy volunteer groups had the same ratio of males to females while the anxiety/mood disorder group consisted of a greater proportion of females. A 2x3 chi square found a significant difference in gender between the 3 groups, $\chi^2(2) = 6.262$, $p < 0.05$. Gender differences in the measures were examined with two-tailed independent samples t-tests. In the psychosis group males were found to score significantly higher than females on the Cognitive Reappraisal subscale of the ERQ, $t(19) = 2.918$, $p < 0.05$ (male mean score = 28.25, female mean score = 18.78). Gender was therefore controlled for in the analyses of this variable. There were no other significant gender differences.

Descriptive statistics regarding the self-report measures for each group are presented in Table 1.

Insert Table One Here

Hypotheses Testing

Hypotheses 1 and 2

Scores on the Emotion Regulation Questionnaire (ERQ) and the Emotion Regulation Questionnaire-2 (ERQ-2) were used to assess the first two hypotheses:

1. Emotion regulation strategies in the Psychosis and the Anxiety and Depression Groups will not be significantly different
2. Emotion regulation strategies in the Psychosis and Anxiety and Depression groups will be significantly different from non patient control group

The ERQ is designed to measure the use of 2 emotion regulation strategies: Cognitive Reappraisal and Expressive Suppression. The Cognitive Reappraisal subscale of the ERQ has a range of 6-42, while the Expressive Suppression subscale has a range of 4-28 with higher scores indicating greater use of each strategy. As shown in Table 1 the group mean total scores show a difference in the predicted direction with the 2 clinical groups scoring similar to each other and different to the healthy volunteers for both Cognitive Reappraisal and Expressive Suppression subscales.

As noted above males in the psychosis group were found to score higher than females on the Cognitive Reappraisal subscale of the ERQ. Gender was therefore controlled for in a one-way ANCOVA analysis of this variable and was found to have no significant main effect ($F=0.923$, d.f.=1,59, $p>0.05$) while group was found to have a significant main effect ($F=4.611$, d.f.=2,59, $p<0.05$). A one-way ANOVA

revealed a significant main effect of group ($F=5.161$ d.f.=2,60, $p<0.05$). Planned Post hoc comparisons, using between groups t-tests (and applying a Bonferonni correction) found a significant difference when comparing the 2 clinical groups together to the non patient control participants ($t=-4.003$, $p<0.025$) with no significant difference when comparing the 2 clinical groups to each other ($t =0.000$, $p>0.025$). A one-way ANOVA revealed no significant main effect of group on the Expression Suppression subscale ($F=2.158$, d.f.=2,60, $p>0.05$).

The results of the ERQ suggest that the non patient control participants were more likely to regulate their emotions through Cognitive Reappraisal (such as thinking about the situation in a different way) than the clinical groups. No significant differences were found between the groups on Expressive Suppression (suggesting that the groups were equally as likely to endorse strategies such as keeping their emotions to themselves).

The ERQ-2 is based on a model of emotion regulation which categorises emotion regulation strategies as functional or dysfunctional (in relation to acceptance or rejection of emotional state) and as an internal regulatory strategy (e.g. cognitive change) or an external regulatory strategy (e.g. environmental change). The Internal-Dysfunctional, Internal-Functional and External-Dysfunctional subscales have a range of 5-25 (higher scores indicating greater use of each strategy). The External-Functional subscale has a range of 6 - 30 (higher scores indicating greater use of this strategy).

As shown in Table 1 the group mean total scores show a difference in the predicted direction for the Internal-Dysfunctional and Internal-Functional subscales with the 2 clinical groups scoring similar to each other and different to the non patient control participants. The group mean total scores of the External Dysfunctional subscale do not show the pattern of scores that were predicted, while the group mean total scores of the External-Functional subscale show a trend towards the predicted direction.

A one-way ANOVA revealed a significant main effect of group on the Internal-Dysfunctional subscale ($F=37.517$ d.f.=2,60, $p<0.05$). Post hoc comparisons, again using a Bonferroni corrected t-test found a significant difference when comparing the 2 clinical groups to the non patient control participants, ($t=8.661$, $p<0.025$) with no significant difference between the 2 clinical groups, ($t=-0.115$, $p>0.05$). A one-way ANOVA revealed a significant main effect of group on the Internal-Functional subscale ($F=4.861$, d.f.=2,60, $p<0.05$). Post hoc comparisons found a significant difference between the clinical and non patient control participants ($t = -3.009$, $p<0.025$) with no significant difference when comparing the 2 clinical groups to each other ($t=-0.816$, $p>0.05$). A one-way ANOVA revealed no significant main effect of group on the External-Dysfunctional subscale, ($F=2.611$, d.f. 2,60, $p>0.05$). A one-way ANOVA revealed no significant main effect of group on the External-Functional subscale ($F=1.383$, d.f.=2,60, $p>0.05$).

The results of the ERQ-2 suggest that the clinical groups used higher levels of Internal-Dysfunctional emotion regulation strategies (such as dwelling on their thoughts and feelings) and lower levels of Internal-Functional emotion regulation

strategies (such as reviewing their thoughts of beliefs) than non patient control participants. No significant differences were found between the groups on External-Dysfunctional or External-Functional emotion regulation strategies.

As such, the results of the ERQ and ERQ-2 provide partial support for Hypotheses 1 and 2, which predicts that the clinical groups will attempt to regulate their emotions in a similar way, which will be different from non patients. In particular it was found that the clinical groups used higher levels of maladaptive emotion regulation strategies and lower levels of adaptive emotion regulation strategies than non patient participants.

Hypotheses 3 and 4

Scores on the 'last week' subscale of the Basic Emotions Scale (BES) were used to assess hypotheses 3 and 4:

3. The current emotional state of the Psychosis and Anxiety and Depression Groups will not be significantly different
4. The current emotional state of the Psychosis and Anxiety and Depression groups will be significantly different to non patient control participants.

The BES measures the experience of five 'basic' emotions over the last week, higher scores indicate greater experiences of the emotions. The anger, sadness, disgust, fear and happiness subscales have a possible range of 4-28.

As shown in Table 1 the group mean total scores show a difference in the predicted direction for the 'last week' sadness, disgust, fear and happiness subscales of the BES with the 2 clinical groups scoring similar to each other and different to the non patient group. The 3 groups appeared to have experienced similar current levels of anger.

A one-way ANOVA revealed no significant main effect of group on the anger subscale ($F=0.348$, $d.f.=2,60$, $p>0.05$). A one-way ANOVA revealed a significant main effect of group on the sadness subscale ($F=8.505$, $d.f.=2,60$, $p<0.05$). Post hoc comparisons found a significant difference when comparing the 2 clinical groups to the non patient group, ($t=4.796$, $p<0.025$) with no significant difference when comparing the 2 clinical groups to each other, ($t=-0.282$, $p>0.025$). A one-way ANOVA revealed a significant main effect of group on the disgust subscale, ($F=5.694$, $d.f.=2,60$, $p<0.05$), with the clinical groups both experiencing more sadness than the non patient group ($t=4.048$, $p<0.025$) and no significant difference between the 2 clinical groups ($t=-0.760$, $p>0.025$).

A one-way ANOVA revealed a significant main effect of group on the fear subscale ($F=13.445$, $d.f.=2,60$, $p<0.05$), both clinical groups experience more fear than the non patient group, ($t=5.120$, $p<0.025$) with no significant difference when comparing the 2 clinical groups to each other ($t=-0.823$, $p>0.025$). A one-way ANOVA revealed a significant main effect of group on the happiness subscale, $F=13.613$, $d.f.=2,60$, $p<0.05$). The clinical groups experience significantly less happiness than the non

patient group ($t=-5.658$, $p<0.025$) with both clinical groups experiencing similar levels of happiness, ($t=-1.505$, $p>0.025$).

The results of the 'last week' subscale of the BES suggest that clinical groups experienced similar levels of sadness, disgust and fear to each other, greater than the non patient group and similar levels of happiness, lower than the non patient group. The groups were not found to experience significantly different levels of anger.

As such the results of the BES 'last week' subscale support Hypotheses 3 and 4 (with the exception of anger), which predicts that the current emotional experience of individuals who experience psychosis will be similar to that of those with an anxiety/mood disorder and that this will differ from non patient control participants. .

Hypotheses 5 and 6

Scores on the 'in general' subscale of the BES were used to assess hypotheses 5 and 6:

5. The general emotional state of the Psychosis and Anxiety and Depression groups will not be significantly different
6. The general emotional state of the Psychosis and Anxiety and Depression group will be significantly different from non patient control group

As shown in Table 1 the group mean total scores show a difference in the predicted direction for the 'in general' anger, sadness, disgust, fear and happiness subscales of

the BES with the 2 clinical groups scoring similar to each other and different to the non patient group. The 3 groups appeared to experienced similar levels of anger.

A one-way ANOVA revealed no significant main effect of group on the anger subscale ($F = 2.140$, $d.f.=2,60$, $p>0.05$). A one-way ANOVA revealed a significant main effect of group on the sadness subscale ($F=17.107$, $d.f.=2,60$, $p<0.05$). The 2 clinical groups experienced more sadness than the non patient group ($t=5.848$, $p<0.025$), whilst experiencing similar levels of sadness to each other ($t=-0.140$, $p>0.05$). A one-way ANOVA revealed a significant main effect of group on the disgust subscale ($F=6.506$, $d.f.=2,60$, $p<0.05$). Again, the 2 clinical groups experienced more disgust than the non patient group ($t=4.503$, $p<0.025$), with no significant difference when comparing the 2 clinical groups to each other ($t=0.487$, $p>0.025$). A one-way ANOVA revealed a significant main effect of group on the fear subscale ($F=25.264$, $d.f.=2,60$, $p<0.05$). Both clinical groups experienced more fear than the non patient group ($t=7.087$, $p<0.025$), with the clinical groups experiencing similar levels of fear ($t=-0.553$, $p>0.05$). A one-way ANOVA revealed a significant main effect of group on the happiness subscale, ($F=15.409$, $d.f.=2,60$, $p<0.05$). *Post hoc* t-tests found a significant difference when comparing the 2 clinical groups together to the non patient group ($t=-5.351$, $p<0.025$), with no significant difference when comparing the 2 clinical groups to each other ($t=-1.478$, $p>0.025$).

The results of the 'in general' BES subscale suggest that the clinical groups experienced similar levels of sadness, disgust and fear to each other, greater than the non patient group and similar levels of happiness, lower than the non patient

participants. The groups were not found to experience significantly different levels of anger.

As such the results of the BES 'in general' subscale support Hypotheses 5 and 6 which predicts that the general emotional experience of individuals who experience psychosis will be similar to that of those with an anxiety/mood disorder and that this will differ from non patients..

DISCUSSION

While more research is required in order to clarify and validate the key findings of this study a number of clinical implications can be identified. These include the importance of assessing emotion regulation strategies and considering the implications of these for therapy, paying greater attention to the role of emotional dysregulation in the formation, maintenance and course of psychosis, identifying beliefs about emotion regulation, modifying these where they may be unhelpful and enhancing emotion regulation skills. Individuals for whom emotional regulation is particularly difficult may benefit from a therapeutic approach which places emotional functioning and the development of emotion regulation skills at its core.

The implication of an emotion regulation approach to psychosis would suggest that instead of focussing on symptoms such as delusions and hallucinations, as outlined in many textbooks (e.g. Morrison, 2002), the focus could be on emotional dysfunction, perhaps focussing on the 5 basic emotions proposed by Power (Power, 2006). This

approach would be characterised by honing in on emotional dysfunction as opposed to psychotic symptomatology. The aim of psychological interventions for psychosis such as cognitive-behavioural therapy (CBT) is to reduce psychotic symptoms in order to reduce the distress which accompanies them, however no consistent effect has been found on emotional dysfunction using CBT for psychosis (Birchwood, 2003), suggesting that changing the focus of treatment to emotional dysfunction may prove more fruitful. Bach and Hayes (2002) suggest that the focus of therapy could be less on the psychotic processes and more on the accompanying feelings of failure, depression and anxiety.

The finding that individuals who experience psychosis experience greater difficulty with the internal regulation of their emotions would suggest that therapeutic approaches could focus on developing functional internal emotion regulation strategies. This approach might be characterised by the development of self-soothing techniques (Linehan, 1993, Gilbert, 2005) and mindfulness (Kabat-Zinn, 1990) as well as strategies already used in many cognitive-behavioural therapies such as relaxation. Perhaps the most comprehensive clinically based model incorporating mindfulness strategies in treatment of psychosis is that proposed by Chadwick (2006). Here emotional disturbance is considered to arise from several domains including that of relationship to psychotic experiences. Mindfulness based interventions are suggested directly to assist people in regulating their responses to psychotic experiences. Such a conceptualisation may be implicitly viewing distress associated with psychosis from an emotion dysregulation perspective and, as a part

of therapy, mindfulness based interventions as assisting development of emotion regulation strategies.

The finding that individuals with psychosis were less likely to employ Cognitive Reappraisal as an emotion regulation strategy may be linked with the studies investigating reasoning biases in psychosis. Dudley, John, Young and Over (1997) found that individuals who experienced psychosis were more likely to jump to conclusions based on limited information, in relation to emotional regulation. Such cognitive biases may be related to a relative lack of use of Cognitive Reappraisal to regulate emotion, as demonstrated in the current study. An interesting finding of the Dudley et al. (1997) study was that when provided with greater amounts of evidence, the individuals with psychosis were willing to change their conclusions, perhaps suggesting that if jumping to conclusions is related to emotion regulation style then individuals with psychosis may be helped therapeutically by increasing their ability to use Cognitive-Reappraisal through cognitive therapy techniques such as evidence gathering.

Critique of the study design

Although cross sectional rather than longitudinal, the current study is considered a worthwhile first step in the investigation of emotional dysregulation in psychosis. The cross-sectional design of this study means that it is not possible to reliably establish the direction of any causal relationships between the variables. For example, it is not possible to determine whether differences in emotion regulation represent a vulnerability to developing psychosis or an anxiety/mood disorder, or

whether these differences develop alongside mental health difficulties. As noted earlier taking measures of on going psychotic symptoms, anxiety and depression would have been useful additions to the study as such factors may be considered confounding variables in this study.

The numbers in the three groups in this study can be considered as relatively small. A prospective power analysis was carried out (Clark-Carter, 2004) in order to establish the number of participants required in each group. As there was no data available which may have indicated the expected effect sizes of the between group differences on the relevant variables the effect size was set at large $d = 0.8$, as large between group differences were considered to be of clinical import. It may be prudent in future research to increase the participant numbers to allow the detection of any subtle differences in emotional experience and emotion regulation strategies used between the clinical groups.

Demographic factors such as employment, level of schooling/academic achievement and overall social functioning may have been useful to have controlled for in this study as they may be found to interact with emotional experience and emotion regulation.

Areas for further research

The key findings of this research require replication in order to be confident that the differences found would also be evident in other samples. In particular it would be beneficial to determine whether the gender differences found in Cognitive

Reappraisal in psychosis are specific to this sample or a more widespread finding. As noted above it may be useful to control for demographic factors in future research such as employment, level of schooling and overall social functioning.

Some of the measures of emotion regulation chosen for this study were only recently developed and no published research was identified which reported on their use with individuals who had experienced psychosis. Future research into emotion regulation would benefit from the validation of and further development of emotion regulation measures with the general as well as clinical populations.

If future research establishes links between emotion regulation and psychosis, this would lead to the critical question of whether difficulties with emotion regulation precede the onset of and can be considered vulnerability factors for psychosis. This question would need to be addressed by a prospective research design taking a developmental psychopathology approach whereby vulnerability factors, such as emotion regulation strategies, could be assessed over the long term to determine whether there is any association with later mental health difficulties. Longitudinal research may also contribute to understanding whether particular styles of emotion regulation influence specific difficulties.

Future research may also consider investigating links between the pathways proposed by Birchwood (2003) to emotional dysfunction in psychosis and emotion regulation. Birchwood (2003) suggests that emotional disorders in psychosis may develop as a reaction to the psychosis itself or from developmental disturbance

triggered by childhood trauma or emerging psychosis or both. It may be useful to determine whether individuals in each of the pathways attempt to regulate their emotions in similar or different ways; the first pathway where emotional disturbance arises as a reaction to the psychosis, treatments might focus on cognitive appraisals as a focus for intervention. In the second pathway where emotional disturbance arises as a result of developmental trauma; treatments might be appropriately aimed at schema level work, such as that suggested by Chadwick (2006).

During the recruitment of participants for this study a number of comments were made by individuals about their beliefs about emotions and whether they are within our control. An interesting aside from the focus of this research would be to develop a qualitative research methodology to investigate the beliefs of individuals who experience psychosis about their ability to regulate their emotions. Geekie's (2004) research, based on grounded theory, identified emotional experience as an important aspect of psychosis for the participants involved in his research and highlighted 'overwhelming emotional arousal' (Geekie, 2004: 154) as of particular significance, suggesting that some of the participants in his study may have felt they had little control over their emotional arousal. Such metacognitive beliefs about controllability of emotions are likely to play an important role in emotion regulation attempts and may offer insights into the internal working models of emotions in this group. This approach may be particularly useful given the early stage of our knowledge in this area.

Conclusions

The findings of this study provide support for a continuum model of mental health whereby psychosis can be understood alongside other mental health problems such as anxiety and depression. The significant differences found between the clinical groups and the non patient group but not between the 2 clinical groups suggest that at the level of emotion regulation, psychotic and anxiety/depressive disorders may be more similar than traditionally thought.

This study suggests that emotional regulation should be considered as an important factor in understanding the development, maintenance and course of mental health difficulties, including psychosis, and that treatment should therefore focus on emotional dysfunction and regulation as opposed to focussing solely on psychotic symptoms. Developing a better understanding of emotional experience and regulation in psychosis may provide valuable insights into the development, maintenance and course of psychosis, which could allow for further developments of treatment approaches with this client group.

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Table 1. Mean (standard deviation) ERQ, ERQ-2 and BES scores for psychosis, anxiety/mood disorder and healthy volunteer groups

Measure		Psychosis Group	Anxiety/Mood Group	Healthy Volunteers
ERQ	Reappraisal	24.19 (8.63)	24.19 (9.18)	30.76 (4.11)
	Suppression	16.81 (5.76)	16.33 (4.83)	13.71 (4.96)
ERQ-2	Internal Dysfunctional	14.95 (2.64)	15.05 (3.35)	8.76 (1.89)
	Internal Functional	13.05 (2.42)	13.67 (2.94)	15.33 (1.91)
	External Dysfunctional	6.76 (1.58)	7.71 (2.00)	6.76 (0.89)
	External Functional	15.48 (2.66)	16.81 (4.93)	17.33 (3.23)
BES General	Anger	15.00 (5.03)	14.90 (5.02)	12.33 (4.52)
	Sadness	15.86 (5.83)	16.10 (6.30)	7.33 (4.28)
	Disgust	11.38 (6.48)	12.76 (6.8)	7.00 (2.51)
	Fear	20.57 (4.35)	21.29 (4.01)	13.00 (4.18)
	Happiness	13.00 (4.44)	15.10 (5.53)	20.62 (3.61)
BES Last Week	Anger	12.24 (4.55)	12.95 (4.75)	11.76 (4.67)
	Sadness	12.10 (5.47)	12.62 (6.52)	6.48 (3.67)
	Disgust	9.67 (5.40)	11.05 (6.34)	5.95 (2.75)
	Fear	17.52 (4.80)	18.76 (5.14)	11.48 (4.66)
	Happiness	11.90 (5.23)	14.43 (5.67)	19.62 (3.54)