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A Systematic Review of the Literature Exploring Illness Perceptions in Mental Health Utilising the Self-Regulation Model

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Abstract Psychologists have utilised a range of social cognition models to understand variation in physical health and illness-related behaviours. The most widely studied model of illness perceptions has been the Self-Regulation Model (SRM, Leventhal, Nerenz, & Steele, 1984). The illness perceptions questionnaire (IPQ) and its revised version (IPQ-R) have been utilised to explore illness beliefs in physical health. This review examined 13 quantitative studies, which used the IPQ and IPQ-R in mental health in their exploration of illness perceptions in psychosis, bipolar disorder, eating disorders, depression and adolescents experiencing mood disorders. Across these studies the SRM illness dimensions were largely supported. Mental illnesses were commonly viewed as cyclical and chronic, with serious negative consequences. Perceptions regarding chronicity, controllability and negative consequences were associated with coping and help seeking, while engagement with services and help seeking were also related to illness coherence beliefs. Treatment adherence was linked to beliefs that treatment could control one's illness. Whilst a major limitation of the reviewed studies was the use of cross-sectional designs, overall the applicability of the SRM to mental health was supported. The IPQ and IPQ-R were shown to be valuable measures of illness perceptions in mental health, offering implications for clinical practice.

Keywords Illness perceptions · Health belief model · Mental health · Self-regulation model · Questionnaire

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Introduction

When diagnosed with an illness, individuals are purposed to develop beliefs about their condition influencing behaviour directed at managing their illness (Petrie & Weinmen, 2006). Psychologists have utilised a range of theoretical models on social cognition (Connor & Norman, 1995) to understand variation in physical health and illness related behaviours. The most widely studied theoretical model of illness perceptions has been the Self-Regulation Model (SRM) developed by Leventhal, Nerenz, and Steele (1984), which proposed that individuals develop beliefs to try to understand their symptoms in order to cope with health threats. Beliefs about illness symptoms have been proposed to influence both an individual's coping and emotional response to their illness. Information about the illness or changes in symptoms have been hypothesised to cause a re-evaluation of illness perceptions and a subsequent shift in coping patterns, help-seeking or emotional response.

The SRM proposes that individuals' beliefs about their illness can be represented across five dimensions (Leventhal & Deifenbach, 1991): *causal* (beliefs about why they developed their illness); *identity* (ideas about the label and nature of illness and its associated symptoms); *acute-chronic* dimension (beliefs about how long an illness may last; whether it is a long or short term condition or is *cyclical* in nature, appearing under a particular set of circumstances, such as after stressful life events); *cure-control*

(perceptions regarding available treatment and how one's own behaviour can influence the course of the illness); *consequences* (the perceived effect of the illness on the individual's life). The SRM proposes a causal relationship exists between illness cognitions and health outcomes and that this relationship is mediated by coping (Leventhal et al., 1984).

The (Revised) Illness Perception Questionnaire

The Illness Perception Questionnaire (IPQ; Weinman, Petrie, Moss-Morris, & Horne, 1996) was developed as a quantitative self-report assessment of the SRM components. It was later revised (IPQ-R; Moss-Morris et al., 2002) to include an assessment of an individual's emotional response to their illness (*emotional representation*) and *illness coherence* (the sense of comprehensively understanding one's own illness). In addition, the *timeline* scale was separated into *acute-chronic* and *cyclic* subscales and the *control* scale was separated into *personal control* and *treatment control* components.

The IPQ-R consists of three parts. Part one is the *identity* scale containing fourteen common physical illness symptoms (such as nausea and headaches). Participants are asked if they view these symptoms to be part of their illness. Part two is the *structure* scale consisting of 38 statements assessing illness perceptions regarding: (1) duration; (2) cyclical nature; (3) consequences; (4) personal control; (5) control gained in treatment; (6) coherence and (7) associated emotions. Part three is the *causal* scale, consisting of 18 common causes of a variety of different physical illnesses, such as "stress or worry" and "heredity—it runs in my family". Respondents rate the likelihood that each item is a potential cause of their illness and are then asked to list the three most important causes for them.

Literature on the SRM

The SRM has been applied to explore illness perceptions within physical health across a number of studies. In 2003 Hagger and Orbell published a meta-analysis of 45 studies applying the SRM to the exploration of illness perceptions within physical health (23 studies utilised the IPQ or IPQ-R), exploring the relationships between illness perceptions, coping and outcome. According to Hagger and Orbell's (2003) review, the SRM illness dimensions were identified by individuals with a range of physical health difficulties. Illness perceptions were shown to significantly correlate with both coping and health outcomes as predicted by the SRM.

As the SRM has been shown to be a very popular and useful model for understanding illness perceptions within physical health and how illness perceptions potentially influence coping and health outcomes, researchers began exploring the value of applying the SRM to the understanding of illness perceptions within mental health. Lobban, Barrowclough and Jones (2003) reviewed 59 qualitative studies (mostly of participants who had a diagnoses of schizophrenia) to assess the applicability of the SRM to mental illness, exploring links between illness beliefs, emotional and behavioural outcomes.

Lobban et al.'s (2003) review identified that the SRM illness perception domains were largely supported by individuals with mental health problems and that illness perceptions were associated with both coping and outcome. These findings indicated that the SRM was also a useful framework to understand and explore illness perceptions in mental as well as physical health. However, Lobban et al. (2003) stressed that modifications to the SRM applied to mental health were necessary, as there may be different dimensions of understanding to those identified in physical illness. Both reviews cited the main criticism of the SRM literature to be the lack of testing of proposed causal links between beliefs and outcomes, with most evidence being based on associations. It has been argued that longitudinal research is required to test the SRM hypothesis that coping mediates the relationship between illness cognition and illness outcome.

The aim of the current systematic review was to examine the quantitative literature on the applicability of the SRM within mental health through the use of the IPQ and IPQ-R, focusing on (1) whether the illness perceptions reported within mental health problems where consistent with the SRM illness dimensions; (2) whether there were association between different illness dimensions as predicted by the SRM; and (3) whether illness perceptions were significantly statistically associated with clinical outcomes, and coping as the SRM has predicted.

Method

A literature review was conducted using the following search engines: Medline, Science Direct, PubMed, PsychInfo, Web of Science and Google Scholar. The following terms were entered: illness perceptions*beliefs, models of illness perceptions, illness perceptions in mental health, illness perceptions questionnaire, and illness perceptions questionnaire and mental health. Literature searches were conducted between August 2010 and August 2011. Article titles and abstracts produced from literature searches were read for relevance and screened according to specified inclusion/exclusion criteria (see below).

The following inclusion criteria were applied to articles: quantitative studies, studies applying the SRM to mental health, use of the IPQ or IPQ-R to explore illness perceptions, articles written in English and published in peer-reviewed journals. Articles were excluded if they were unpublished, used qualitative methodological designs, were not written in English, or were published as book chapters, explored illness perceptions in physical health or were studies which explored illness perceptions from the perspectives of others (carers, families and professionals) rather from the individual with a mental health problem.

The methodological quality of each paper reviewed was also assessed, giving a maximum possible score of 19. Total scores below eight were considered to indicate a paper of weak quality, scores of 8–14 were indicative of moderate quality and scores above 14 as demonstrating high quality ratings. An independent, experienced reviewer read and rated the articles using the same criteria. Differences between ratings were discussed until agreement between reviewers was obtained.

Results

Literature searches produced 5,324 papers: 1,847 of the papers were excluded because they did not explore illness perceptions; 3,027 articles were excluded because they explored illness perceptions in physical health; 367 articles were excluded because they were duplicates. Sixty-seven articles reporting on illness perceptions in mental health were excluded; sixty-five were excluded as they explored illness perceptions without any reference to the SRM, a further three were excluded because they used qualitative designs. A further five articles were excluded because they explored illness perceptions of people linked to the individual with the mental illness. The 13 remaining articles were reviewed. Papers were grouped according to the mental health problems under investigation. Table 1 provides an overview of the reviewed papers. Table 2 shows which SRM dimensions were significantly related to outcome measures for each disorder studied.

Illness Perceptions in Adults with Psychosis

Illness perceptions in psychosis have been explored across four studies. Lobban, Barrowclough and Jones (2004) assessed the relationships between illness beliefs, severity of mental health problems, coping and appraisal of outcome (all assessed initially and at six-month follow-up). In addition, Williams and Steer (2011) explored the relationship between illness beliefs and self-reported engagement with mental health services.

Lobban et al. (2004) and Williams and Steer (2011) utilised the Illness Perception Questionnaire for Schizophrenia (IPQS), adapting the IPQ-R from information with qualitative interviews with individuals meeting DSM-IV diagnostic criteria for schizophrenia and schizoaffective disorder, to explore illness perceptions. In a later study, Lobban, Barrowclough and Jones (2005) explored the psychometric properties of the IPQS at two time points over a six-month-period, whereas Watson et al. (2006) utilised the original IPQ modified for psychosis to explore associations between illness perceptions, emotional dysfunction, insight and medication adherence in participants experiencing psychosis, who were recruited at a period of relapse (Watson et al., 2006).

Across the four above mentioned studies there were similarities in reported illness perceptions. Participants described experiencing many symptoms, viewed their psychosis as both chronic and cyclical in nature and perceived having some personal control over their condition. In general, participants also perceived treatment as helpful and perceived themselves to have a coherent understanding of their illness. Commonly cited causes of mental health problems were stress or worry, trauma, chemical imbalance and thinking about things too much. These results indicated that the SRM illness dimensions are largely endorsed by individuals experiencing psychosis.

Statistically significant relationships were found between different illness perceptions and between illness perceptions and health outcomes, as predicted by the SRM. Strong relationships were found between illness perceptions (identity, timeline and consequences subscale scores) and the level of anxiety and depression experienced by individuals (Lobban et al., 2004; Watson et al., 2006). Participants who experienced greater anxiety and depression perceived their difficulties as chronic with many negative consequences and many symptoms. Participants who held a greater belief in treatment being able to help control their symptoms believed they were able to control their psychosis; they also had a more coherent understanding of their problem, perceived their difficulties as having fewer negative consequences and scored higher on self-rated engagement (Williams & Steer, 2011). Perceptions that psychosis caused negative consequences were most strongly associated with outcomes in terms of quality of life, satisfaction with mental health and global functioning (Lobban et al., 2004). Medication non-adherence was found to be associated with beliefs that treatment could not be helpful and to difficulties being attributed to other factors rather than mental health problems (Lobban et al., 2005). However, Watson et al.'s (2006) findings indicated that non-adherence was related to limited insight.

Both studies conducted by Lobban et al. (2004, 2005) received high quality ratings due to the use of a longitudinal design and standardised measures, whereas the studies by Williams and Steer (2011) and Watson et al. (2006) were

Table 1 Summary of reviewed articles

Author and date of study	Quality rating	Mental illness explored	Participants	Design	Measures	Findings
Lobban et al. (2004)	High Quality (17/19)	Schizophrenia	124 individuals with a diagnoses of schizophrenia access treatment within community mental heath teams. UK sample	Cross-sectional and longitudinal design	The Positive and Negative Symptom Scale (PANSS), IPQ-R revised for schizophrenia (IPQS), Hospital Anxiety and Depression Scale (HADS), The Manchester Short Assessment of Quality of Life – assessing mean quality of life (QL) and satisfaction with mental health (SMH), Global Assessment of Functioning (GAF)	Beliefs about mental heath were found to be significant predictors of outcome. Beliefs about greater negative consequences were the strongest and most consistent predictors of a poor outcome in both cross-sectional and longitudinal analyses
Lobban et al. (2005)	High Quality (16/19)	Schizophrenia	124 individual with a diagnoses of schizophrenia. UK sample	Cross-sectional and longitudinal design	IPQS, PANSS, HADS, The Drugs Attitude Inventory (DAI)	The IPQS subscales were shown to be internally reliable and reliable over time. Correlations with measure of symptom severity, emotional scale and attitudes towards adherence to medication showed that the subscales were measuring the constructs that they were designed to measure
Watson et al. (2006)	Moderate Quality (13/19)	Non-affective psychotic disorder	100 participants recruited for Psychological Prevention of Relapse in Psychosis Trail. Recruited at time of relapse in positive symptoms. Male and female participants. UK sample	Cross-sectional design	Insight-Scale of Unawareness of Mental Disorder (SUMD), IPQ, Rosenberg Self-Esteem Scale (RSE), Beck Depression Inventory-II (BDI-II), Beck Anxiety Inventory (BAI), PANSS, Medication Adherence Rating Scale (MARS)	Illness perceptions regarding psychosis explained 46 %, 35 % and 34 % of the variance in depression, anxiety, and self-esteem respectively. Self-reported medication adherence was more strongly associated with a measure of insight
Williams & Steer (2011)	Moderate Quality (12/19)	Psychosis	66 participants recruited from secondary mental health services with the National Health Service (NHS). UK sample	Cross-sectional design	IPQS, Engagement Measure (self-report version)	A belief that mental health difficulties have fewer negative consequences, are amenable to personal and treatment control, and a more coherent understanding of mental health difficulties were associated with higher self-reported engagement with services

Table 1 continued

Author and date of study	Quality rating	Mental illness explored	Participants	Design	Measures	Findings
Hou et al. (2010)	Moderate Quality (14/19)	Bipolar disorder	35 participants recruited from secondary psychiatric services. UK sample. 10 male, 25 female	Cross-sectional design	The Beliefs about Medicine Questionnaire (BMQ), IPQ-R, Morisky Medication Adherence Scale (MMAS)	Univariate analyses indicated age, beliefs that medications are overprescribed, IPQ-R timeline and consequence subscales scores were significant predictors of medication non-adherence. IPQ-R timeline and consequence subscale scores were also correlated with age. In multiple regressional analyses only age and beliefs that medications are overprescribed, predicted medication non-adherence
Holliday et al. (2005)	Moderate Quality (14/19)	Anorexia Nervosa (AN)	95 participants had AN, 91 were female, 4 were male, 80 participants performed the lay sample, 44 were female, 36 were male. UK sample	Cross-sectional design	Eating Disorders Examination Questionnaire (EDE-Q), IPQ-R for AN for lay sample (AN-IPQ-R)	Participants with AN viewed their illness as chronic and highly distressing, with negative consequences. The sample with AN had negative perceptions of illness controllability and curability, which contrasted with more optimistic beliefs held by the lay sample
Marcos et al. (2007)	Moderate Quality (12/19)	Eating Disorders (ED); AN, Bulimia Nervosa (BN) and ED not otherwise specified	98 female participants, outpatients attending ED unit, Spanish sample	Cross-sectional design	Psychological Adjustment to Illness Scale (PAIS), HADS, Physical Consequences Related to Eating Disorders Questionnaire, Eating Disorder Spanish Version of IPQ-R	ED perceived as controllable, treatable, highly distressing, as a chronic condition, with serious consequences. Emotional representation was the most significant dimension related to emotional adjustment. Illness identity an cure dimensions were the most significant dimensions associated with psychological adaptation
Stockford et al. (2007)	Moderate Quality (14/19)	ED; AN; BN and ED not otherwise specified	69 participants with a diagnoses of ED. All but two participants were female. UK sample	Cross-sectional design	Survey for Eating Disorders (SEDs), Eating Attitudes Test (EAT), IPQ-R, Stages of Change Questionnaire (SCQ), BDI-II, RSE, Perceived Social Support Questionnaire (PSS), Recovery Locus of Control Scale (RLOC)	With the exception of the causal subscales, the modified version of the IPQ-R had good internal validity and good test–retest reliability. Consequences, treatment control, as well as cyclical timeline perceptions accounted for a significant and unique amount of variance in readiness to change stage scores

Table 1 continued

Author and date of study	Quality rating	Mental illness explored	Participants	Design	Measures	Findings
Brown et al. (2001)	Moderate Quality (14/19)	Depression	41 participants, primary care patients. US sample	Cross-sectional design	Mood Module of Primary Care Evaluation of mental Disorders Patient Questionnaire (Prime-MD PO), Medical Outcomes Study, 36 Item Short-Form Heath Survey, Adapted Version of COPE, Morisky Medication Adherence Scale, IPQ, Beck Depression Inventory (BDI)	Participants' illness cognitions for depression were significantly associated with current and past treatment-seeking behaviour and, medication adherence and coping strategies
Fortune et al. (2004)	Moderate Quality (11/19)	Depression	101 women with a history of depression (half of whom were still actively depressed). UK sample	Cross-sectional design	IPQ, Free Association Task Investigating Depression and Physical Illness Dimensions	The IPQ was a reliable measure for depressed experiences and discriminated between women who were currently depressed and those who were not
Cabassa et al. (2008)	Moderate Quality (13/19)	Depression	339 participants of Latino origin recruited from public primary care centres. US sample	Cross-sectional design	IPQ-R, Patient Health Questionnaire (PHQ-9), PRIME-MD	IPQ-R acute/chronic timeline and consequence subscale scores were positively correlated. Acute/chronic timeline scores were negatively correlated personal and treatment control scores. Personal control beliefs were negatively correlated with beliefs depression caused a number of consequence. Personal and treatment control beliefs were positively correlated with each other and cyclical timeline scores were positively correlated with both control scores. Cyclical timeline and acute/chronic timeline scores were negatively correlated
O'Mahen et al. (2009)	Moderate Quality 13/19)	Perinatal Depression	82 pregnant females who screened over to on the Edinburgh Postnatal Depression Scale (EPDS). US sample	Cross-sectional and longitudinal design	EPDS, IPQ, BDI-II	Depression was attributed to stress, hereditary and interpersonal difficulties by pregnant and postpartum women, and pregnancy related changes by prenatal women. Perceptions regarding illness chronicity influenced whether or not females sought treatment

Table 1 continued

Author and date of study	Quality rating	Mental illness explored	Participants	Design	Measures	Findings
Munson et al. (2009)	Moderate Quality (12/19)	Mood Disorders (Bipolar Spectrum, Major Depression, Substance Induced Mood Disorder and Dysthymia)	70 adolescents from outpatient clinics and community mental health settings. US sample	Cross-sectional design	Kiddi Schedule for Affective Disorders for School Age Children Present and Lifetime Version (K-SADS-PL), Attitudes Towards Seeking Mental Health Services Scale (ATSMHS), IPQ	Adolescents had fairly positive attitudes towards mental health services. Illness perceptions were related to personal openness (acknowledgment of psychological problems and possibly seeking help for them) and indifference to stigma (one's concern how people in their lives would react to the seeking help)

rated as being of moderate quality, as illness perceptions, adherence to medication, perceived engagement with services, insight and outcome were not assessed over time. As illness perceptions changed little above a six-month period, Lobban et al. (2004) suggested that illness perceptions should be assessed over a longer period of time or at key time points, such as initial onset, recovery and relapse.

Illness Perceptions in Adults with Bipolar Disorder

Hou, Cleak and Peveler (2010) explored the influence of illness perceptions (using the IPQ-R) on medication adherence in 35 individuals with bipolar disorder. Nineteen participants rated themselves as medication non-adherent, 16 as adherent. The medication non-adherent group believed their illness was chronic and caused more negative consequences, compared to the mediation adherent group. IPQ-R consequences and acute/chronic timeline subscale scores predicted medication non-adherence in univariant analyses. However, within multiple regressional analyses, only age (younger age) and beliefs that medications were overprescribed were significant predictors of medications non-adherence. IPQ-R consequences and acute/chronic timeline subscale scores were not significant predictors, perhaps as these scores were highly correlated with age and the sample size was not large enough for multiple regressional analyses. Young participants scored higher on the personal control and lower on the acute/chronic timeline and consequences subscales of the IPQ-R than older participants. The results indicated that illness perceptions alone did not predict medication adherence for individuals with bipolar disorder. This paper was given a moderate quality rating. Strengths of the study included confirmation of participants' diagnoses, while weaknesses were its small sample size, the use of a cross-sectional design and a self-report measure of predictions of medication non-adherence.

Illness Perceptions in Adults with Eating Disorders

The IPQ-R has also been used to explore illness perceptions within the field of eating disorders (ED) in studies conducted by: Holliday, Wall, Treasure and Weinman (2005), Marcos, Cantero, Escobar and Acosta (2007) and Stockford, Turner and Copper (2007). Across these studies, participants perceived their ED as chronic, highly distressing, as varying over time, with a number of symptoms and negative consequences, suggesting that the SRM illness dimensions were largely supported within ED. As predicted by the SRM associations were found between different illness perceptions. Beliefs that treatment for ED could be helpful and that ED were controllable, were associated with greater perceptions of personal control over ED. Perceptions of EDs as chronic were linked to

Table 2 Outline of SRM dimensions significantly associated with outcome measures within each disorder

Disorder	SRM dimensions significantly associated with outcome measures	Outcome measures associated with
Psychosis	Identity, timeline and consequences	Levels of anxiety and depression experienced
	Treatment belief, personal control and illness coherence	Engagement with mental health services
	Consequences	Quality of life, satisfaction with mental health and global functioning
	Treatment control	
		Medication adherence
Bipolar disorder	Timeline (acute/chronic) and consequences	Medication adherence
Eating disorders	Emotional representation, identity, treatment control	Levels of anxiety, depression and general psychological distress
	Illness coherence, consequences and emotional representation	Stages of change
		Social functioning and global adjustment
	Identity and personal control	
Depression	Identity, timeline, personal control and consequences	Depression severity
	Consequence, identity and control beliefs	Coping strategies
	Causal beliefs, control, and timeline	Medication adherence
Mood disorders	Emotional representation	Concern regarding seeking support and stigma
	Illness coherence	Openness to seek support and less regarding stigma

beliefs that these conditions were not amenable to treatment or personal control.

Some differences between illness perceptions were observed across the three ED studies. Holliday et al. (2005) noted that participants with anorexia nervosa (AN) struggled to make sense of their ED, as participants' scores on the illness coherence subscale were low. A high number of perceived negative emotions and life consequences within the AN sample was associated with high levels of distress. According to Stockford et al. (2007), both severity and chronicity of ED as well as high levels of depression were associated with the perception that the ED was untreatable and not amenable to personal control.

In Marcos et al.'s study (2007) different ED groups did not differ significantly in identity scores. However, individuals with bulimia nervosa (BN) showed more somatisation. Individuals with AN and BN only differed significantly on the cyclical timeline subscale, where individuals with BN produced higher scores. This may be due to the more cyclical nature of eating patterns within BN (i.e., cycles of restricted eating, then binging and purging), in contrast to a more consistent restrictive pattern within AN. Low self-esteem and own behaviour were commonly identified causes for both AN and not otherwise specified ED and both AN and BN, respectively. Participants who viewed their ED as a chronic condition reported more serious consequences. Emotional representation was associated with a strong illness identity, a perceived longer time scale and the belief that their ED had serious consequences. Psychological and ED-specific causes were associated with a strong illness identity, perceptions that their ED was a chronic condition and high levels of distress experienced. External causes were linked with a lower perception of personal control. Participants who were receiving psychological therapeutic intervention (Marcos et al., 2007) appeared to hold more positive perceptions than those who were not (Holliday et al., 2005; Stockford et al., 2007).

Health outcomes and contemplation to change were shown to be associated with particular illness perceptions. Illness perceptions within ED were found to influence psychosocial adjustment (Marcos et al., 2007). Higher levels of anxiety, depression and general psychological distress were associated with higher levels of illness-related distress (i.e., emotional representation), believing that treatment was able to control their symptoms and more symptoms. In addition, participants who reported experiencing a large number of ED-related symptoms were more likely to have worse functioning in their work or at school, suffer from sexual difficulties, have poorer family relationships and less global adjustment. Participants who reported feelings of personal control over their ED were more likely to have better functioning in their work, better health care orientation, better family relationships and better global adjustment. Pre-contemplation was best predicted by low levels of ED coherence, while reluctance to engage in change was associated with low levels of emotional distress and the ED making sense to the individual (Stockford et al., 2007). Whereas high scores on the IPQ-R emotional consequences subscale were important in predicting contemplation scores, which suggests that increased emotional distress might be a motivating factor influencing change.

Most of the participants sampled within these studies had a diagnoses of AN. It was therefore unclear if the illness perceptions found in these studies reflected perceptions across all EDs or were mostly applicable to AN. As a cross-sectional design was utilised across all ED studies, there was no exploration of illness perceptions, readiness to change or psychosocial adaptation over time; and causal links between these variables could not be determined. Based upon these limitations all three studies were given a moderate quality rating.

Illness Perceptions in Adults with Depression

The IPQ has been utilised to explore illness perceptions in depression across four different samples: in primary care patients (Brown et al., 2001), in an all-female sample of individuals with a history of depression approximately half of whom were still actively experiencing depression (Fortune, Barrowclough & Lobban, 2004), in a US sample of Latino individuals experiencing depression (Cabassa, Lagomasino, Dwight-Johnson, Hansen, & Xie, 2008) and in a sample of pregnant women experiencing depression (O'Mahen, Flynn, Chermack, & Marcus, 2009).

Across the studies the SRM dimensions were largely consistent with the illness perceptions identified. Participants perceived their depression as having many symptoms and negative consequences, but that their depression was amenable to control/cure and cyclical in nature. Commonly attributed causes of depression were stress, own behaviour, hereditary, relationship and physical health difficulties. O'Mahen et al. (2009) found that perinatal women were less likely to identify medical illness causes, attributing their depression to their own behaviour, state of mind and pregnancy-related changes, such as hormonal changes, lack of sleep and difficulties in adjusting to being pregnant, in contrast to pregnant and postpartum women.

A number of significant associations were identified between illness perceptions. Women with a stronger depression identity were more likely to perceive their depression as chronic with more serious consequences, women perceiving depression as chronic were less likely to view their depression as potentially controllable/curable and to have more severe personal consequences (Fortune et al., 2004). Cabassa et al. (2008) also identified similar relationships and in addition identified negative correlations between consequences and personal control IPQ-R subscales scores and positive correlations between beliefs that treatment and personal efforts could help control symptoms. Participants who viewed their depression as cyclical in nature did not view their condition as chronic. Interestingly, a perception of depression as cyclical was also positively associated with beliefs that treatment and one's own actions could help control their symptoms.

As predicted by the SRM, illness perceptions were found to be statically associated with health outcomes (depression severity) and coping (including treatment seeking and medication adherence). High IPQ identity, timeline and consequences subscale scores were positively associated with greater depression severity, whereas greater perceived personal control over depression was related to lower depression severity (Fortune et al., 2004). Beliefs that depression resulted in many negative consequences were found to be associated with both active coping and self-blame coping strategies (Brown et al., 2001). Whereas the use of more religious coping strategies was associated with less perceived controllability over depressive symptoms. High identity subscales scores were associated with coping strategies, such as self-distraction, emotional venting and self-blame (Brown et al., 2001). Beliefs that depression was caused by relationship problems were associated with poorer medication adherence (Brown et al., 2001), whereas current medication use was associated with perceptions of depression as chronic. These findings suggest that perceptions regarding the cause, chronicity, seriousness and amenability of depression with medication may have influenced treatment use and medication adherence.

O'Mahen et al.'s results (2009) also suggested that treatment-seeking was related to beliefs regarding the chronicity of depression. Participants who perceived symptoms as long-lasting were significantly more likely to seek treatment for their depression during the course of the study, even after controlling for depression severity.

Across all four of the depression studies, mood (e.g., depression) may have influenced individuals' illness perceptions. For example, the perception of depression as chronic, with many symptoms and negative consequences, may be the result of negative and critical thinking, which is common within depression. However, the SRM purposed a bi-directional relationship between illness symptoms and illness perceptions, with one being able to influence the other (Leventhal et al., 1984). The use of cross-sectional designs across the majority of studies meant that illness perceptions and their relationship with treatment seeking and adherence could not be explored over time. Each of the four studies were given a moderate quality rating: methodological strengths across these studies were the detailed descriptions of modifications to the IPQ/IPQ-R and the use of validated tools to assess depression severity and one example of a longitudinal design exploring treatment use over time within O'Mahen et al.'s (2009) paper. As the original IPQ was used across all but one of these studies, illness coherence and emotional representation beliefs were largely not assessed.

Illness Perceptions in Adolescents with Mood Disorders

The IPQ-R was used in a study by Munson, Floerson and Townsend (2009) of 70 adolescents with mood disorders. The relationship between attitudes towards mental health services and illness perceptions were explored. SRM illness dimensions were largely consistent with the illness perceptions identified by adolescents. The majority of participants perceived their mood disorders as chronic and with major consequences. Over half of the adolescents perceived their own actions and treatment as being able to influence their disorder. As predicted by the SRM, there were associations found between different illness perceptions. Adolescents who perceived their disorder as chronic were less likely to believe they had personal control over their symptoms and that treatment could help control their disorder. In contrast, adolescents with greater perceived personal control over their mood were more likely to believe treatment could control their disorder.

Particular illness perceptions were found to be associated with attitudes towards mental health services and seeking help (i.e., coping). The greater the emotional representation, the greater participants' expressed concern regarding how people in their lives would react to them choosing to seek help. Greater emotional responses to mood disorders were associated with greater stigma experienced. Illness coherence scores were marginally positively related to openness towards professional help and indifference to stigma, suggesting that if adolescents had a coherent understanding of their illness, they may have been more open to receiving professional support and less influenced by stigma.

There were limitations with this paper. There was no objective confirmation of diagnoses for all participants. Attitudes towards mental health services and seeking support from services were generally positive, this may have been positive as a result of participants' current experiences of being involved with mental health services. Adolescents not currently accessing services may hold different attitudes towards seeking support and possibly different illness perceptions. Within this research there was no exploration of causal beliefs (as the control subscale of the IPQ-R was not found to be reliable) or illness perceptions and attitudes towards services over time. Based upon the methodology utilised this paper was given a moderate quality rating.

Discussion

Across all the reviewed papers, most of the illness dimensions within the SRM were supported by participants experiencing a range of mental health problems, indicating this is a very useful model to enable understanding of how individuals with mental health problems perceive their illness. There were a number of consistencies in illness perceptions reported across different mental health problems. Commonly cited causes of mental illness included stress or worry, own behaviour and low self-esteem. Mental illnesses were commonly viewed as chronic and cyclical in nature, with serious negative consequences. As predicted by the SRM, significant associations were found between different illness perceptions and between illness perceptions, coping (including engagement with services and support seeking) and health outcome measures. Perceptions of mental illnesses as chronic, controllable and having negative consequences were found to be associated with more active coping strategies and help-seeking across a range of mental health problems. In addition, beliefs that treatment could adequately control one's illness and symptoms were associated with greater treatment adherence and more positive attitudes towards taking medication, although demographic variables (such as age) may also have had a role to play. Adolescents who had a more coherent understanding of their mood disorder appeared more likely to be more open to seek professional help. Similarly for individuals experiencing psychosis, a more coherent understanding of mental health difficulties was associated with greater levels of self-reported engagement with services. A stronger illness identity was associated with greater levels of anxiety and depression for individuals experiencing depression and those with EDs. In addition, illness severity was associated with lower perceived personal control over one's illness in both ED and depression. The perception of more negative consequences was associated with greater depression experienced in those with depression or psychosis. These findings suggest the SRM can be used within mental health to help make predictions regarding how an individual may cope with their mental illness and what their health outcomes may be. The vast majority of samples within the reviewed studies were accessing mental health services, with findings suggesting that experience of receiving treatment or interventions may have an influence on illness perceptions.

There were some differences between the illness perceptions of individuals experiencing different mental health problems. In general, individuals with EDs believed they were experiencing a greater number of negative consequences and were more pessimistic about the ability of treatment and their own actions to help control their symptoms in contrast to individuals experiencing psychosis, depression and adolescents experiencing mood disorders. Individuals experiencing psychosis tended to perceive having a more coherent understanding of their difficulties than those experiencing EDs.

Eleven of the 13 papers reviewed were given a moderate quality rating for the methodology used. Particular

methodological strengths across the studies were detailed descriptions of modifications to the IPQ and IPQ-R, large sample sizes and the use of standardised measures to assess outcomes. In contrast, methodological weakness included limited assessments of illness severity and participants' diagnoses and the use of cross-sectional designs. As cross-sectional designs were used across many of the studies, there was limited assessment of the relationships between illness perceptions and outcomes (including functioning, coping, treatment adherence, engagement with services and readiness to change) over time. The majority of the reviewed studies used correlations to make links between illness beliefs and clinical outcomes, meaning firm cause and effect conclusions could not be drawn. In attempts to determine the nature of such relationships, longitudinal and intervention studies are required to show the influence of interventions aimed at challenging negative illness perceptions and exploring how this impacts upon clinical outcome. These designs will also allow exploration of how illness perceptions may change over time. A particular strength of the two studies by Lobban et al. (2004, 2005), which were both deemed of high quality, was the use of longitudinal designs. The study by Cabassa et al. (2008) suggests that the IPQ-R can be used successfully in exploring illness perceptions in mental health in participants from ethnic minority backgrounds.

The reviewed studies show the value of using the IPQ and IPQ-R measures within mental health samples to explore illness beliefs which in turn offer possible explanations and predictions as to which individuals may or may not seek help, how they will cope with their mental illness and what their outcome may be; thus, offering important implications for clinical practice. Across the majority of the reviewed studies, perceptions of personal control over one's illness and beliefs that treatment can help control symptoms were associated with greater engagement with services, readiness to change, treatment adherence, a reduction in symptoms and emotional distress. Therefore, interventions aimed at targeting illness beliefs regarding one's own personal control over their mental illness and the potential benefits of interventions may lead to more positive outcomes. The evidence suggested that individuals with a more coherent understanding of their mental illness were more likely to engage with services and be more open to seeking professional help. Therefore, helping individuals develop an understanding of their difficulties (for example, through the development of an idiosyncratic psychological formulation) may lead to greater engagement with mental health services.

The findings from this review strengthen the applicability of the SRM to the understanding of illness beliefs within the field of mental health and enable predictions regarding individuals' coping and health outcomes. However, one must take into consideration some conceptual challenges of applying the SRM within mental health. Research findings have suggested that individuals' beliefs regarding mental illnesses may not be stable over time and that in particular individuals experiencing schizophrenia may not strive to hold a coherent understanding of their illness or even perceive their difficulties as an "illness" (Holzinger, Kilian, Lindenbach, Petscheleit, & Angermeyer, 2003; Williams & Healy, 2001). Using a qualitative methodology, Kinderman, Setzu, Lobban and Salmon (2006) discovered that participants' relationship with mental health difficulties differed over time and that they did not make simple distinctions between oneself and their mental illness. In addition, within AN, the distinction between oneself and illness has been hypothesised as an important aspect of recovery (Higbed & Fox, 2010). Qualitative research by Pollack and Aponte (2001) exploring illness perceptions within bipolar disorder identified illness perception dimensions not referred to within the SRM. Research using interviews and qualitative analyses may help identify additional key themes of illness perceptions in mental health and enable refinement of the SRM and measures to assess the model (such as the IPQ and IPQ-R).

In order to gather further support for the applicability of the SRM to mental health, research designs exploring the long-term relationship between illness perceptions and clearly defined mental health outcomes (thorough the use of longitudinal designs) are required. Intervention studies showing the influence of interventions aimed at challenging particular illness perceptions and exploring how these impact upon clinical outcome may help determine the casual nature between these variables. Qualitative methodologies may help explore if there are any additional themes of illness perceptions not currently captured within the SRM and IPQ and IPQ-R measures. Research exploring illness beliefs within the same clinical sample comparing the SRM with other illness belief models may help determine how valuable and useful the SRM is to the exploration of illness perceptions in mental health compared to other models. Studies of samples with the same diagnoses; comparing the illness perceptions of those currently accessing and those who are not will allow exploration of the influence of accessing services upon one's illness perceptions.

In conclusion, from the reviewed papers, the reported illness perceptions of individuals experiencing mental health were largely consistent with the illness dimensions outline within the SRM and have been shown to correlate with each other in addition to measures of health outcomes and coping, as predicted by the SRM. However, there are some conceptual difficulties which require consideration. The 13 studies reviewed using the IPQ and IPQ-R have provided valuable insight into relationships between illness

perceptions, seeking support, adherence to treatment and mental health outcomes, offering valuable implications for clinical practice.

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