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LAY THEORIES OF BIPOLAR DISORDER: THE CAUSES, MANIFESTATIONS AND CURES FOR PERCEIVED BIPOLAR DISORDER

ADRIAN FURNHAM & ELIZABETH ANTHONY

ABSTRACT

This study aimed to investigate lay theories of the cause and treatment of bipolar disorder, and the recognition of its symptoms. This questionnaire-based study included vignette descriptions of mental disorders and 70 items relating to bipolar disorder. It was completed by 173 participants. Bipolar disorder was recognized less than depression but at the same rate as schizophrenia. Contrary to previous research, analysis showed that lay beliefs of the causes of bipolar disorder generally concur with scientific academic theories. Drug treatment was favoured as a cure rather than psychotherapy. Theories of cause and treatment were logically correlated. Overall, the results suggest that lay people have reasonably informed beliefs about the causes and treatments of bipolar disorder, however recognition of the symptoms is poor.

INTRODUCTION

This study focuses on 'lay people's' theories and beliefs about bipolar bisorder and their ability to recognize the classic symptoms. The term 'lay' refers to those who have not formally studied, extensively read about, or come into contact with, the topic in question (Furnham, 1988). The ability to recognize specific mental disorders is part of a concept known as 'mental health literacy' (e.g. Jorm, 2000), which also includes public conceptions of cause and treatment.

There is a large body of research into public conceptions of mental disorders. This includes studies of attitudes towards people with mental disorders (Nunnally, 1961), and beliefs and theories about specific mental disorders, such as schizophrenia (Siegler & Osmond, 1966) and depression (Rippere, 1977; 1979). More recently, studies relating to lay theories have focused specifically on the nature, causes and treatments of disorders such as heroin addiction (Furnham & Thompson, 1996) and schizophrenia (Furnham & Wong, 2007; Furnham *et al*., 2008) and have been part of an ongoing research programme (Table 1). This encompasses theories of mental disorders, as well as other important issues such as knowing how and where to seek help for a particular condition. These studies are important as lay theories of causes and treatments, and level of mental health literacy in general, may offer an explanation for negative and stigmatizing attitudes towards mental disorder (e.g. Nunnally, 1961; Link *et al*., 1999), and for why so few of those diagnosed seek help (Lin *et al*., 1996; Andrews *et al*., 1999).

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Lay theories of mental disorders

Recent studies into lay theories have focused specifically on beliefs about the causes and treatments of mental disorders and the relationship between them (e.g. Furnham & Thompson, 1996; Furnham & Buck, 2003). Studies have shown that the structure of the categories of lay and academic theories overlap to a certain extent, for example 'biological' and 'psychological', however some may differ, for example 'external' or fatalistic, which includes beliefs about the roles of luck and religion in the aetiology of mental illness (Furnham & Buck, 2003).

There are also differences between the content of lay and academic theories of mental disorders. Lay people, compared to professionals, place more emphasis on psychological, social, and familial cause factors (Sarbin & Mancuso, 1972; Angermeyer & Matschinger, 1996; Furnham & Thompson, 1996), which can be compared to primarily biological and genetic academic theories. However, lay beliefs about cause vary depending on the disorder. Jorm *et al*. (1997a) found that schizophrenia was more likely to be attributed to genetic factors than depression, and lay theories of autism were more likely to be biological than theories of obsessive-compulsive disorder, which were more likely to be psychodynamic (Furnham & Buck, 2003).

Lay theories about the treatment of mental disorders show marked differences from current practices in the mental health service, which involve drug treatment for many mental disorders and/or psychotherapies such as cognitive behavioural therapy (CBT). It has been found that lay people generally prefer psychotherapy to drug treatment (Angermeyer & Matschinger, 1996; Angermeyer & Dietrich, 2006), due to the perceived possible side effects (Angermeyer *et al*., 1993; Priest *et al*., 1996; Fischer *et al*., 1999). There is also a common lay belief that 'willpower' can effectively facilitate recovery from mental disorders (Knapp & Delprato, 1980), such as agoraphobia and anorexia nervosa (Furnham & Henley, 1988). However, medication is believed to be the most

Table 1
Previous studies of lay theories of mental disorder

Disorder	Study
Alcoholism	Furnham & Lowick (1984)
Anorexia nervosa	Furnham & Hume-Wright (1992)
	Furnham & Manning (1997)
Autism and obsessive compulsive disorder	Furnham & Buck (2003)
Depression	Furnham & Kuyken (1991)
	Lauber, Falcato, Nordt & Rossler (2003)
Gender identity disorder	Sen & Furnham (in press)
Heroin addiction	Furnham & Thompson (1996)
Neurosis	Furnham (1984)
Paraphilia	Furnham & Haraldsen (1998)
Phobia	Furnham (1995)
Schizophrenia	Furnham & Rees (1988)
	Furnham & Bower (1992)
	Angermeyer & Matschinger (1994)
	Jorm, Korten, Jacomb, Christensen, Rodgers & Pollitt (1997)
	Furnham & Wong (2007)
	Furnham, Raja & Khan (2008)
Suicide	Knight, Furnham, & Lester (2000)

effective treatment for disorders with a higher perceived severity (Furnham & Rees, 1988; Furnham & Bower, 1992). It is unclear how these findings may relate to bipolar disorder, especially as the perceived severity of the disorder is not known. However, it is predicted that psychotherapy will be preferred to drug treatment.

Studies have also focused on assessing whether there is a logical relationship between lay theories of cause and treatment. For example, it is expected that if cause is attributed to biological factors, medication would be endorsed as treatment. This has been found in a number of studies that show a strong relationship between similar cause and treatment theories (Furnham & Buck, 2003), and those that are 'sensibly' linked (Furnham & Haraldsen, 1998). These findings are not always replicated, for example medication was the preferred treatment for schizophrenia, despite participants attributing the cause to psychosocial factors (Furnham & Bower, 1992; Furnham & Rees, 1988).

Mental health literacy

The term 'mental health literacy' was introduced by Jorm and colleagues to mean 'knowledge and beliefs about mental disorders which aid recognition, management or prevention' (Jorm *et al*., 1997a). This includes the ability to recognize specific disorders, knowledge about the causes and risk factors, and knowledge of the help available. Previous studies relating to mental health literacy have found that people have difficulty recognizing mental disorders when they are described in a vignette (Hillert *et al*., 1999; Link *et al*., 1999), and many people hold common misconceptions, for example, that schizophrenia involves a 'split personality' (Furnham & Rees, 1988; Angermeyer & Matschinger, 1999; Furnham & Chan, 2004). With regards to specific disorders, it was found that correct recognition rates of depression and schizophrenia were 39% and 27% respectively (Jorm *et al*., 1997a). More recently, studies have found that these have increased to around 50% for schizophrenia (Klimidis *et al*., 2007) and 60–70% for depression (Jorm *et al*., 2005). A higher rate for depression than schizophrenia was not explained in these studies, however it may be due to the higher prevalence of depression in the population (Rippere, 1977; 1981), which therefore increases the likelihood of contact with those with the disorder. This suggests that recognition rate for bipolar disorder should be more similar to that of schizophrenia than depression (Kessler *et al*., 1994)

An important finding in this area is that correct recognition of schizophrenia predicts endorsement of a biological or genetic aetiology (Jorm *et al*., 1997a). Higher levels of mental health literacy predict that lay theories will adhere to the 'medical' model as proposed by Rabkin (1974), which therefore leads to a more positive attitude towards mental disorders.

Determinants of lay theories and mental health literacy

It is important to determine why particular theories of cause and cure are endorsed more than others. A number of studies have found that lay theories are predicted by demographic variables. Specifically, studies show that both younger and more educated people have more informed beliefs about mental disorders (Shurka, 1983; Hasin & Link, 1988; Yoder *et al*., 1990; Fisher & Goldney, 2003). Significant effects of gender (Furnham & Manning, 1997), political persuasion (Furnham & Thompson, 1996), and religiousness (Furnham & Haraldsen, 1998) have also been found. This suggests that demographic variables may have some value in predicting theories of bipolar disorder.

In relation to familiarity with, and knowledge about, mental disorders, it has been found that participants with less knowledge of autism endorse 'external' theories of cause such as luck and

religion, rather than academic theories (Furnham & Buck, 2003), whereas correct recognition of schizophrenia predicts more informed causal beliefs (Jorm *et al*., 1997a). A large increase in recognition of mental disorders has also been found for mental health professionals compared to the general public (Jorm *et al*., 1997d). These studies suggest that informed beliefs about the nature, causes and treatments of mental illness come from wide reading and academic study and/or extensive contact with people with mental disorders.

Bipolar disorder: nature, causes and treatment

The current study focuses on bipolar disorder: an affective disorder involving a cyclical pattern of extreme moods known as 'episodes'. Episodes can be classed as 'depressive', 'manic' or 'mixed', and are interspersed by periods of 'euthymia' (normal mood). Depressive episodes are characterized by a depressed mood, abnormal sleeping and eating (i.e. insomnia, loss of appetite), psychomotor retardation, and recurrent thoughts of death (Carlson & Strober, 1979). Conversely, mania is characterized by a euphoric mood, racing thoughts, reduced need for sleep, increased productivity and reckless behaviour (i.e. impulsive spending and sexual indiscretions) (Kraepelin, 1921; Campbell, 1953; Serretti & Olgiati, 2005; Goodwin & Jamison, 2007). Mixed episodes contain mood, motor and cognitive features from both mania and depression (Kraepelin, 1921). Severe episodes may also contain delusions and hallucinations (Goodwin & Jamison, 2007).

Current academic theories of bipolar disorder can be broadly categorized as 'biological' and 'genetic' and 'psychosocial'. *Genetic* studies show that bipolar disorder is one of the most heritable of all mental disorders, with up to 80% concordance rates in monozygotic twins (Goodwin & Jamison, 2007), therefore many theories are based on particular genes or groups of genes. *Biological* theories include abnormalities in the hypothalamic–pituitary–adrenal axis (Neves-Pereira *et al*., 2002) and neurotransmitter systems (Bunney & Davis, 1965; Young *et al*., 1994). It has also been found that mania can be induced by sleep deprivation and a disruption of circadian rhythms (Wehr *et al*., 1987), which adds a further dimension to biological theories.

Psychosocial theories of aetiology include stressful life events (Hammen & Gitlin, 1997) and dysfunctional attempts to avoid depression (Neale, 1988). A dysregulation of self-esteem has been proposed by Bentall *et al*. (2005), and childhood trauma and abuse has also been linked with bipolar disorder (Kendler *et al*., 1992; Agid *et al*., 1999; Leverich *et al*., 2002). Generally, however, it is believed that bipolar disorder is caused by a complex interaction of genetic, biological and psychosocial factors, which is known as the 'diathesis-stress' model (Nuechterlein & Dawson, 1984; Lam *et al*., 1999).

This model, originally introduced to explain schizophrenia, attempts to explain how genetic predisposition interacts with environmental stressors and life events to trigger disorders. Thus, the greater the vulnerability through dispositional factors the less stress is required to trigger the event. This has also been called the stress-vulnerability protection factors model. It is argued that the model helps mental health workers, family members and clients/patients themselves understand when, why and how a person is suffering/being poorly (diathesis), what particularly causes hurt (stressors) and also what helps them (protective factors).

The primary treatment of bipolar disorder is probably the drug lithium, a mood stabilizer that has been shown to be effective in treating mania and depression (Bowden *et al*., 1994). Along with drug treatment, psychotherapy can reduce the amount and severity of episodes, and can increase adherence to drug regimes (CBT: Lam *et al*., 2000; psychoeducation: Peet & Harvey, 1991). Electroconvulsive therapy is an extremely effective short-term treatment of mania (Fink, 2006)

and depression (Daly *et al*., 2001), however it is currently only used as a last-resort treatment (Goodwin & Jamison, 2007).

Hypotheses

The following hypotheses are based on previous studies of mental health literacy and lay theories of mental disorder:

H1. Participants will be significantly better at recognizing depression than bipolar disorder, however there will be no difference between recognition of bipolar disorder and schizophrenia.
H2. Factor analyses will produce coherent interpretable categories for causes and treatments, which will not contain contradicting items. Certain factors will correspond to current academic theories and treatment practices.
H3. Participants will agree with, and endorse, 'psychosocial' causes and psychotherapy to a greater extent than biological/genetic causes and medication.
H4. Lay beliefs about cause and treatment will be internally coherent and therefore statistically correlated.

METHOD

Participants

Of the 173 participants, 66 were male and 104 were female (three missing data). The age range of participants was 18–77 years (*mean* = 34.18, *SD* =14.44). Twenty one had been diagnosed with a mental disorder (12.1%) although no one had been diagnosed with bipolar disorder. One hundred and twenty participants knew someone else with a mental disorder, including bipolar disorder. Although this is a study of lay beliefs, 52 participants reported that they had studied some psychology, seven had studied psychiatry and 12 had studied medicine. Of this number, 23 had studied bipolar disorder specifically, and 43 had studied other disorders such as depression and schizophrenia. Some of these were non-medical or social science students who had simply done a short course in psychology or even read 'popular books' in the area. This meant that of the 173 participants, 111 (63.8%) were classed as 'lay' as they had not formally studied any mental disorders or medicine, and 36.2% (n = 63) were classed as 'academic'.

The 63 classified as 'academic' were those people who had had at least one year's formal education in medicine, psychology or psychiatry. This included the 23 who had studied bipolar disorder, the other 20 who had studied other disorders and a further 20 who had a year's full-time education in a mental health-type discipline. Overall, the sample was skewed towards a better educated and informed group who may therefore be more sophisticated in terms of their thinking and knowledge about mental illness than a more representative sample of the population.

Questionnaire

Part I included a brief introduction that stated that the questionnaire was completely confidential and anonymous. The questionnaire then directed participants to label three vignettes of depression, schizophrenia and bipolar disorder (a manic episode) respectively (Klimidis *et al*., 2007). The vignette

described a manic episode only and may have been more appropriate to stress the change between mania and depression. The descriptions were based on symptoms for each disorder specified in DSM-IV, and the content was verified by a social worker to ensure the descriptions were valid. Part I also contained questions relating to whether the participant had ever studied psychology, psychiatry, medicine, bipolar disorder or any other mental illness. Finally, participants had to rate their interest in mental illness on a scale of 1–7 (where 1 signified not at all interested), and were asked if they or anyone they knew had been diagnosed with a mental illness, and to give brief details of the disorder and their relationship to that person.

Part II consisted of a 70-item questionnaire in which participants had to rate their agreement with the statements on a scale of 1–10 (1 = strongly disagree, 10 = strongly agree). There was also a short description of bipolar disorder to ensure that participants responded with beliefs about the correct illness. The statements were derived from 15 preliminary interviews with lay people to ascertain the types of beliefs people hold, and from questionnaires used in previous studies into lay beliefs (e.g. Furnham & Bower, 1992). The items related to the nature (i.e. 'People with bipolar disorder are always either manic *or* depressed, never both at the same time'), causes (i.e. 'Bipolar disorder can be caused by childhood emotional trauma'), and treatments (i.e. 'Bipolar disorder should be treated with medication (drug treatment)') of bipolar disorder, as well as questions that could demonstrate stigma (i.e. 'People with bipolar disorder should be released from psychiatric hospitals when they can act in a socially acceptable manner'), or referred to the more contentious issues surrounding bipolar disorder. The questionnaire did not describe the diathesis-stress model in that none of the items reflected the core idea. On reflection it may have been a good idea to ask participants to rate their understanding of, and beliefs in, this particular model of bipolar disorder.

Part III contained questions relating to demographic information: date of birth, sex, nationality, ethnicity, religion, religiousness, marital status, highest educational qualification, political views, and socio-economic status.

Procedure

Questionnaires were completed either through email or post. Where possible, participants were debriefed. The response rate was approximately 85%.

RESULTS

Mental health literacy

Vignette 1 described depression, and was marked 'correct' if depression or bipolar disorder were mentioned in the response. The correct response to vignette 2 was schizophrenia, and 'plausible' was given for a diagnosis of psychosis or bipolar disorder. Vignette 3 described an episode of mania in bipolar disorder, therefore responses of 'mania' or 'bipolar disorder' were marked as 'correct'. ADHD was marked as 'plausible'. The classification of responses was verified by a psychologist to ensure that the vignettes were reliably scored. 'Correct', 'plausible', 'incorrect' (including 'don't know' and blank responses) were scored as 1, 2 and 3 respectively, therefore a mean response rate closer to 1 denotes better recognition.

The correct response rate for recognizing bipolar disorder was 43.4%, which was lower than that for depression (89.6%), but higher than that for schizophrenia (34.1%). Paired samples *t*-tests were used to test for significant differences between the mean response rates for each vignette.

As predicted (H1), there were significantly more correct responses for depression (mean = 1.19, $SD = 0.57$) than bipolar disorder (mean = 1.91, $SD = 0.88$) ($t(172) = -10.61$, $p < 0.001$). However, no significant difference was found between response rates for bipolar disorder and schizophrenia (mean = 2.05, $SD = 0.85$) ($t(172) = 1.76$, $p > 0.05$). Overall, these recognition or labelling rates probably indicate the above average education of this particular sample, although these are similar to recent studies (Klimidis *et al*., 2007; Jorm *et al*., 2005).

The predictors of recognition rate

All mental illness (block 1) and demographic variables (block 2) were regressed onto the mean score for each participant across the three vignettes ('vignette score'). None of the regressions were significant, indicating that the demographic factors here did not relate to psychiatric literacy. The only variable found to be significant was 'interest', in that those with a greater interest were more likely to correctly recognize the vignettes. The vignette analysis therefore shows that recognition of bipolar disorder is significantly lower than that for unipolar depression, however there is no difference between recognition of bipolar disorder and schizophrenia.

The structure of lay theories

A factor analysis using Varimax rotation was performed separately on the cause ($n = 14$) and treatment ($n = 13$) sections of the questionnaire. These produced five factors each (discounting eigenvalues less than 1), accounting for 62.6% and 63.2% of the variance respectively. The items in each factor were all readily interpretable with the exception of cause Factor 1 (*Internal/Learning*), therefore H2 is supported (Tables 2 and 3).

From the factor analysis of cause items, Factor 1 was labelled *Internal/Learning* as items related to whether bipolar disorder can be internally attributed – i.e. the type of coping mechanism used, or whether 'bipolar' behaviour had been rewarded in childhood (items 34, 43, 42, 32). Factor 2 was labelled *Psychodynamic* as the items suggested that bipolar disorder results from childhood trauma or suppressed feelings in the subconscious (items 33, 36). It was the stress on the subconscious and trauma that suggested this label, though it could be disputed. Factor 3 included items relating to social factors, parenting and drugs (items 37, 30, 38), and was labelled *Socialization*. Factor 4 was labelled *Genetic* as the items (35, 31) both suggested that bipolar disorder has a genetic origin. Finally, Factor 5 was labelled *Biological* and included items relating to neurotransmitters and circadian rhythms (items 41, 39). Factors 4 and 5 correspond to current academic theories.

A factor analysis of treatment items also produced five factors. Factor 1 was labelled *Willpower* as the items suggested that willpower is the only necessary 'treatment' of bipolar disorder (items 47, 44, 50). Factor 2 was labelled *ECT* as it contained the two items (55, 56) stating that electroconvulsive therapy is used to treat bipolar disorder. Factor 3 was labelled *Psychological* as the items endorsed psychodynamic therapies due to the inadequacies of drug treatment (items 45, 52, 49). Factor 4 was labelled *No Treatment* as the items included exercise as a treatment for depression rather than medication (items 54, 53). Factor 5 was labelled *Academic* as the items corresponded to current recommendations in the mental health service (drug treatment and seeing a clinical psychologist: items 46, 51). *ECT* and *Academic* are the only factors that overlap with academic theories of treatment.

Individual item analysis found that, overall, the items that participants agreed with (items 31, 36, 38, 41, 49) stated that bipolar disorder is caused by childhood trauma, drugs, genes and a chemical imbalance in the brain. Participants also agreed that lack of sleep can cause mania.

Table 2
Results of a Varimax factor analysis of 'cause' items including item loadings and means

Factors/items	Loading	Mean	Eigenvalue	Variance accounted for (%)
Internal/Learning			3.67	26.24
34. People with bipolar disorder act the way they do because they want to be different	0.65	2.54		
43. Bipolar disorder is a defence mechanism displayed by people who cannot cope with everyday life	0.60	3.48		
42. Bipolar disorder is little more than a dramatic or flamboyant personality	0.56	2.61		
32. People with bipolar disorder act the way they do because that behaviour has often been rewarded in their childhood	0.47	3.68		
Psychodynamic			1.67	11.91
33. Bipolar disorder is caused by repressed feelings and emotions in the subconscious	0.87	5.17		
36. Bipolar disorder can be caused by childhood emotional trauma	0.56	5.92		
Socialization			1.35	9.63
37. Bipolar disorder is caused by parents bringing up their children incorrectly	0.59	3.05		
30. Bipolar disorder can be caused by being brought up by others with the disorder	0.53	3.39		
38. Bipolar disorder can be brought on by taking drugs	0.37	6.01		
Genetic			1.12	8.02
35. Blood relatives of a manic depressive are likely to have other mental disorders	0.74	5.01		
31. Bipolar disorder can be caused by inheriting the genes of someone with the disorder	0.57	5.90		
Biological			0.96	6.85
41. Episodes of mania can be triggered by lack of sleep	0.49	5.51		
39. Episodes of mania and depression have a purely biological basis (i.e. they are caused by chemical imbalances in the brain)	0.38	6.35		

With the exception of drugs, all of these correspond to current academic theories and show that lay theories of the causes of bipolar disorder are becoming more similar to academic theories. This does not support H3.

Individual analysis of treatment items showed that only four items (48, 54, 46, 51) were agreed with overall (Table 3). Participants believed it is important to see a clinical psychologist during the treatment of bipolar disorder, and that bipolar disorder should be treated by medication. Yet, participants also agreed with the statement that drug treatment may not be accepted due to possible side effects, and that certain drug treatments can change people's personality (item 48). To test H3, a paired samples *t*-test showed that the item relating to the effectiveness of drug therapy (46) (mean = 6.29, *SD* = 2.06) was endorsed to a greater extent than items relating to psychotherapy

Table 3
Results of a Varimax factor analysis of 'treatment' items including item loadings and means

Factors/items	Loading	Mean	Eigenvalue	Variance accounted for (%)
Will power			2.81	21.64
47. People with bipolar disorder should try and ignore their episodes and 'get on with it'	0.65	2.92		
44. When people are depressed, they can 'snap out of it' at any time	0.56	2.22		
50. People with bipolar disorder who do not accept drug treatment or adhere to a drug regime prescribed by a doctor do not deserve any other help	0.51	2.84		
ECT			1.59	12.25
56. It is important to use ECT when patients are psychotic (out of touch with reality)	0.83	3.51		
55. ECT (electric shocks) can be used to treat bipolar disorder	0.65	4.44		
Psychological			1.38	10.61
45. Bipolar disorder can be successfully treated by Freudian psychoanalysis	0.63	4.12		
52. Bipolar disorder can be successfully treated by hypnosis	0.49	4.72		
49. Drug treatment does not affect the feelings and emotions attached to moods, only the behaviour	0.31	4.18		
No treatment			1.23	9.44
54. Drug treatment may not be accepted because of the possible side effects	0.55	6.96		
53. Depressive episodes can be treated by rigorous exercise	0.45	5.06		
Academic			0.97	7.45
51. Seeing a clinical psychologist is very important during the treatment of bipolar disorder	0.59	7.34		
46. Bipolar disorder should be treated with medication (drug treatment)	0.38	6.26		

(52, 51, 45) (mean = 5.40, $SD = 1.20$) ($t(166) = 4.86$, $p < 0.001$). This shows that H3 was supported with regards to treatment but not theories of cause.

The relationship between cause and treatment theories

H4 stated that lay theories would be internally consistent and therefore similar cause and treatment factors would be significantly positively correlated. In all, 25 correlations were computed of which five were significant and positive, and four showed internal consistency (Table 4). The *Internal/Learning* cause factor was significantly correlated with both *Willpower* ($r = 0.39$, $p < 0.001$) and *No Treatment* ($r = 0.15$, $p < 0.05$), which suggests internal consistency. Factor scores for the *Psychodynamic* cause factor were significantly correlated with the *Psychological* treatment factor ($r = 0.30$, $p < 0.001$), and factor scores for the *Genetic* cause factor were significantly correlated

Table 4
Significant correlations between cause and treatment factors

	Cause	Treatment	Correlation	Internal consistency?
1	Internal/learning	Willpower	0.39***	Yes
2	Internal/learning	No treatment	0.15*	Yes
3	Psychodynamic	Psychological	0.30***	Yes
4	Genetic	No treatment	0.21***	No
5	Genetic	Academic	0.15*	Yes

* $p < 0.05$
*** $p < 0.001$

with *Academic* treatment factor scores ($r = 0.15, p < 0.05$). The only significant correlation that did not show internal consistency was *Genetic* cause and *No Treatment* ($r = 0.21, p < 0.001$). It should also be noted that certain internally coherent correlations were not found, for example biological cause and academic treatment; however, the results generally support H4.

The predictors of cause and treatment theories

Mental illness interest/literacy (including vignette score) and demographic variables were regressed onto each factor to ascertain if any variables predicted the nature of lay theories. None of the regressions were significant though some betas indicate significant associations. The results show that a low vignette score and being male predicted endorsement of the *Psychodynamic* cause factor, and right wing participants believed in socialization cause factors more than left wing people. With regards to treatment, lay people, widowers, right wing participants, and those who had no higher educational qualification than GCSEs believed in the effectiveness of *Psychological* treatments, whereas those with no interest in mental disorders believed that *Willpower* is an effective treatment.

DISCUSSION

Analysis of the mean response rate to the vignette literacy exercise supported H1, as bipolar disorder was recognized significantly less than depression, but roughly to the same extent as schizophrenia. This is consistent with the suggestion that recognition of mental disorders varies as a function of prevalence. The higher prevalence of depression means it is more likely that people have been diagnosed with, or know someone diagnosed with the disorder, and it may also be publicized to a greater extent. Alternatively, it is possible that bipolar disorder and schizophrenia are more difficult to recognize from a single description because different episodes or sub-types do not look alike, therefore the behavioural manifestations are highly variable compared to depression.

The only predictor of correct recognition of the vignettes was an interest in, not education about, mental illness. This may be due to personal research into the topic that was not taken into account in this study. There are negative implications for the finding that 'lay status' does not predict recognition rates, as this suggests that academic study in the area does not increase the likelihood of recognizing specific mental disorders. However, the exact amount and content of study (academic

or otherwise) of mental disorders was not quantified, as they are extremely difficult to measure. This may account for the low predictive value of 'mental health variables'. This is surprising given that this sample was overall younger and better educated than the population as a whole. Overall, the low recognition rate of bipolar disorder and schizophrenia suggests that programmes aimed at improving mental health literacy should focus on increasing interest in mental disorders other than depression.

A factor analysis showed that lay theories have a coherent structure relating to both the cause (*Internal/Learning*, *Psychodynamic*, *Socialization*, *Genetic*, *Biological*) and treatment (*Willpower*, *ECT*, *Psychological*, *No Treatment*, *Academic*) of bipolar disorder, which supports H2. This suggests that lay people have at the least an implicit understanding that there are different levels of explanation for bipolar disorder, and that features of different theories are not logically continuous. The factor structure of lay beliefs corresponds in part to academic theories of bipolar disorder (*Biological* and *Genetic* cause factors), or academic paradigms from which theories are derived (*Psychodynamic*), which is consistent with previous findings. A clear factor structure suggests that lay theories do not correspond to the diathesis-stress model, however this was not fully tested. The diathesis-stress model despite its title seems logical and commonsensical, which is why it seems endorsed by patients, their families and mental health workers. It may be desirable in future studies in this area to investigate it specifically and in more detail.

The most highly endorsed theories of cause were a chemical imbalance in the brain, drug taking, childhood emotional trauma, genes and a disruption of circadian rhythms. Results showed that there was no difference between participant agreement with 'psychosocial' and 'biological/genetic' cause factors, which shows a shift towards biological theories compared to previous research. However, the individual items endorsed did show a large overlap with academic theories, with the exception of drug taking. Current academic understanding, however, endorses the role of drug taking in the aetiology of manic episodes (Henquet *et al*., 2006). A regression analysis showed that lay status did not predict scores on any cause factor; therefore, the strong reflection of academic theories cannot be due to formal study of any related area. With regards to treatment, the only items endorsed were medication and seeing a clinical psychologist; both of which are currently recommended by the mental health service. Conversely, lay people believed that the side effects of medication are an important factor in not accepting drugs as a treatment, although this did not result in greater endorsement of psychotherapy, and suggests that people accept the effectiveness of drug treatment despite the side effects.

Overall, these findings show that lay beliefs about the cause of bipolar disorder primarily adhere to current academic theories, but do not show a bias towards either psychosocial or biological theories. Despite the belief that there are strong side effects, medication was endorsed to a greater extent than psychotherapy. These findings do not support H3, however they have positive implications for attitudes towards bipolar disorder and levels of mental health literacy as beliefs are generally more informed than previous research suggests, and are thus consistent with current academic theories and practices.

Lay theories about causes and treatments of bipolar disorder were strongly related. For example, for beliefs related to *Internal/Learning* cause factors, *Willpower* was seen as being the most effective 'treatment', as it also has an internal basis. In addition, those who agreed with *Psychodynamic* cause factors were more likely to endorse psychotherapy. *Academic* treatments were correlated with *Genetic* but not *Biological* cause factors. This suggests that lay beliefs are not as informed as the individual item analysis suggests, as there was no relationship between agreement

with biological aetiology and drug treatment. However, the majority of correlations between causes and treatments showed logical continuity, thus supporting H4.

Finally, it was found that demographic and mental illness variables can predict lay theories of bipolar disorder to a certain extent. A belief in *Psychodynamic* rather than *Biological* or *Genetic* cause factors was predicted by having a low psychiatric literacy score. This may reflect a lack of knowledge on the subject, leading to stereotypical views of Freudian psychology, being about parenting, the unconscious, etc. Right wing political views predicted the belief in socialization cause factors such as parents or drug taking. This has moral implications as it suggests that the parents or the person themselves are responsible for the disorder. This result reflects the previous finding that right wing political views predict the belief that heroin addicts are 'immoral' (Furnham & Thompson, 1996). Of the treatment factors, *Psychological* treatments were endorsed by lay people, and *Willpower* was believed to be effective by those with little interest in mental disorders. This may be due to a lack of knowledge about effective treatments. These findings show that more psychosocial causes and treatments are endorsed by those with less knowledge on the subject of mental disorders.

These results show that generally lay people's theories of the causes of bipolar disorder correspond to both the 'medical' model (Rabkin, 1974), and 'psychosocial' model (Sarbin & Mancuso, 1972) of lay beliefs. However, this may be exaggerated in this sample, which was probably better informed about mental illness than the general population. A bias is shown, however, towards 'academic theories', which contain aspects of both. This is not consistent with previous studies, but suggests that lay people have more informed beliefs, and therefore higher levels of mental health literacy, supported by the finding that recognition rates of depression have increased. This has positive implications for attitudes towards bipolar disorder, as a belief in biological aetiology means that the illness and the person should be treated in the same way as those with physical disorders. However, the belief that drug taking has a causal role has moral implications for those with the bipolar disorder because it suggests that they are responsible for their illness and behaviour, a connotation that does not exist in the biological or genetic model (Henquet *et al*., 2006).

A central issue for this research is to consider how lay public and scientific understandings and theories influence and enrich one another. Sometimes they are very similar, which could reflect the efforts of certain patient groups to 'educate' the public. Equally it could be argued that this occurs because 'science' has eventually caught up with what has long been known to the lay public. An example of the latter is the role of drug taking in the aetiology of manic episode (Henquet *et al*., 2006). Certainly those interested in increasing psychiatric literacy are eager to help lay people become more sophisticated and differentiating with respect to relatively common mental illnesses. However, studies such as this may be important to ascertain what they do and do not know, as well as the many misconceptions that they may hold. Both lay and academic theories evolve over time with new findings and popularization in books and 'high-profile cases'. It is thus important to regularly update studies on lay theories of mental illness to see show they change over time.

REFERENCES

Agid, O., Shapira, B., Zislin, J., Ritsner, M., Hanin, B., Murad, H., Troudart, T., Bloch, M., Heresco-Levy, V. & Lerer, B. (1999) Environment and vulnerability to major psychiatric illness: A case control study of early parental loss in major depression, bipolar disorder and schizophrenia. *Molecular Psychiatry*, 4, 163–172.

Andrews, G., Hall, W., Teesson, M. & Henderson, S. (1999) *The Mental Health of Australians*. Canberra: Commonwealth Department of Health and Aged Care.

Angermeyer, M.C. & Dietrich, S. (2006) Public beliefs about and attitudes towards people with mental illness: a review of population studies. *Acta Psychiatrica Scandinavica*, 113(3), 163–179.

Angermeyer, M.C., Daumer, R. & Matschinger, H. (1993) Benefits and risks of psychotropic medication in the eyes of the general public: Results of a survey in the Federal Republic of Germany. *Pharmacopsychiatry,* 26, 114–120.

Angermeyer, M.C. & Matschinger, H. (1994) Lay beliefs about schizophrenic disorder: The results of a population survey in Germany. *Acta Psychiatrica Scandinavica*, 89*,* 39–45.

Angermeyer, M.C. & Matschinger, H. (1996) Public attitude towards psychiatric treatment. *Acta Psychiatrica Scandinavica*, 94, 326–336.

Angermeyer, M.C. & Matschinger, H. (1999) Social representations of mental illness among the public. In *The Image of Madness: The Public Facing Mental Illness and Psychiatric Treatment* (eds J. Guimon, W. Fischer & N. Sartorius). Basel: Karger.

Bentall, R.P., Kinderman, P. & Manson, K. (2005) Self-discrepancies in bipolar disorder: Comparison of manic, depressed, remitted and normal participants. *British Journal of Clinical Psychology,* 44(4), 457–473.

Bowden, C.L., Brugger, A.M., Swann, A.C., Calabrese, J.R., Janicak, P.G. & Petty, F. (1994) Efficacy of divalproex versus lithium and placebo in the treatment of mania. *Journal of the American Medical Association*, 271, 918–924.

Bunney Jr, W.E. & Davis, J.M. (1965) Norepinephrine in depressive reactions: A review. *Archives of General Psychiatry*, 13, 483–494.

Campbell, J.D. (1953) *Manic-Depressive Disease*. Philadelphia: J.B. Lippincott Co.

Carlson, G.A. & Strober, M. (1979) Affective disorders in adolescents. *Psychiatric Clinics of North America*, 2, 511–526.

Daly, J.J., Prudic, J., Devanand, D.P., Nobler, M.S., Lisanby, S.H., Peyser, S., Roose, S.P. & Sacteim, H.D. (2001) ECT in bipolar and unipolar depression: Differences in speed of response. *Bipolar Disorder*, 3, 95–104.

Fink, M. (2006) ECT in therapy-resistant mania: Does it have a place? *Bipolar Disorder*, 8, 307–309.

Fischer, W., Goerg, D., Zbinden, E. & Guimon, J. (1999) Determining factors and the effects of attitudes towards psychotropic medication. In *The Image of Madness: The Public Facing Mental Illness and Psychiatric Treatment* (eds J. Guimon, W. Fischer & N. Sartorius), pp. 162–186. Basel: Karger.

Fischer, L.J. & Goldney, R.D. (2003) Differences in community mental health literacy in older and younger Australians. *International Journal of Geriatric Psychiatry*, 18, 33–40.

Furnham, A. (1984). Lay conceptions of neuroticism. *Personality and Individual Differences*, 5, 95–103.

Furnham, A. (1986) Response bias, social desirability and dissimulation. *Personality and Individual Differences*, 7, 385–400.

Furnham, A. (1988) *Lay Theories*. Oxford: Pergamon.

Furnham, A. (1995) Lay beliefs about phobia. *Journal of Clinical Psychology*, 51, 518–525.

Furnham, A. & Bower, P. (1992) A comparison of academic and lay theories of schizophrenia. *British Journal of Psychiatry*, 161, 201–210.

Furnham, A. & Buck, C. (2003) A comparison of lay beliefs about autism and obsessive-compulsive disorder. *International Journal of Social Psychiatry*, 49, 287–307.

Furnham, A. & Chan, E. (2004) Lay theories of schizophrenia. A cross-cultural comparison of British and Hong Kong Chinese attitudes, attributions and beliefs. *Social Psychiatry and Psychiatric Epidemiology*, 39**,** 543–552.

Furnham, A. & Haraldson, E. (1998) Lay theories of etiology and 'cure' for four types of paraphilia: Fetishism, paedophilia, sexual sadism and voyeurism. *Journal of Clinical Psychology*, 54, 689–700.

Furnham, A. & Henley, S. (1988) Lay beliefs about overcoming psychological problems. *Journal of Social and Clinical Psychology*, 26, 423–438.

Furnham, A. & Hume-Wright, A. (1992) Lay theories of anorexia nervosa. *Journal of Clinical Psychology*, 48, 20–37.

Furnham, A. & Kuyken, W. (1991) Lay theories of depression. *Journal of Social Behaviour and Personality*, 6, 329–342.

Furnham, A. & Lowick, V. (1984) Lay theories of the causes of alcoholism. *British Journal of Medical Psychology*, 57, 319–322.

Furnham, A. & Manning, R. (1997) Young people's theories of anorexia nervosa and obesity. *Counseling Psychology Quarterly*, 10, 389–415.

Furnham, A., Raja, N. & Khan, U. (2008) A cross-cultural comparison of British and Pakistani medical students' understanding of schizophrenia. *Psychiatry Research*, 159, 308–319.

Furnham, A. & Rees, J. (1988) Lay theories of schizophrenia. *International Journal of Social Psychiatry*, 34, 212–220.
Furnham, A. & Thomson, L. (1996) Lay theories of heroin addiction. *Social Science and Medicine*, 43, 29–40.
Furnham, A. & Wong, L. (2007) A cross-cultural comparison of British and Chinese beliefs about the causes, behaviour manifestations and treatment of schizophrenia. *Psychiatry*, 151, 123–138.
Geller, B., Fox, L.W. & Clark, K.A. (1994) Rates and predictors of prepubertal bipolarity during follow-up of 6- to 12-year-old depressed children. *Journal of the American Academy of Child & Adolescent Psychiatry*, 33, 461–468.
Goodwin, F.K. & Jamison, K.R. (2007) *Manic-Depressive Illness: Bipolar Disorders and Recurrent Depression* (2nd edition). New York: Oxford University Press.
Hammen, C. & Gitlin, M. (1997) Stress reactivity in bipolar patients and its relation to prior history of depression. *American Journal of Psychiatry,* 154, 856–857.
Hasin, D. & Link, B. (1988) Age and recognition of depression: implication for a cohort effect in major depression. *Psychological Medicine*, 18*,* 683–688.
Henquet, C., Krabbenham, L., De Graaf, R., ten Have, M. & Van Os, J. (2006) Cannabis use and expression of mania in the general population. *Journal of Affective Disorders*, 95, 103–110.
Hillert, A., Sandmann, J., Ehmig, S.C., Weisbecker, H., Kepplinger, H.M. & Benkert, O. (1999) The general public's cognitive and emotional perception of mental illnesses: an alternative to attitude-research. In *The Image of Madness: The Public Facing Mental Illness and Psychiatric Treatment* (eds J. Guimon, W. Fischer & N. Sartorius). Basel: Karger.
Jorm, A.F. (2000) Mental health literacy. Public knowledge and beliefs about mental disorders. *British Journal of Psychiatry*, 177, 396–401.
Jorm, A.F., Christensen, H. & Griffiths, K.M. (2005) The public's ability to recognize mental disorders and their beliefs about treatment: changes in Australia over eight years. *Australia & New Zealand Journal Psychiatry*, 39, 248–254.
Jorm, A., Korten, A., Jacomb, P., Christensen, H., Rodgers, B. & Pollitt, P. (1997a) Public beliefs about causes and risk factors for depression and schizophrenia. *Social Psychiatry and Psychiatric Epidemiology*, 32, 1143–1145.
Jorm, A., Korten, A., Jacomb, P., Christensen, H., Rodgers, B. & Pollitt, P. (1997b) 'Mental health literacy': a survey of the public's ability to recognize mental disorders and their beliefs about the effectiveness of treatment. *Medical Journal of Australia*, 166, 182–186.
Jorm, A., Korten, A., Rodgers, B., Pollitt, P., Jacomb, P., Christensen, H. & Jiao, T. (1997c) Belief systems of the general public concerning the appropriate treatments for mental disorders. *Social Psychiatry and Psychiatric Epidemiology*, 32, 116–121.
Jorm, A., Korten, A., Rodgers, B., Pollitt, H., Christensen, H. & Henderson, A. (1997d) Helpfulness of interventions for mental disorders: Beliefs of health professionals compared to the general public. *British Journal of Psychiatry*, 171, 233–237.
Kendler, K., Neale, M., Kessler, R., Heath, A. & Eaves, L. (1992) A population-based twin study of major depression in women: The impact of varying definitions of illness. *Archives of General Psychiatry*, 49, 257–266.
Kessler, R.C., McGonagle, K.A., Zhao, S., Nelson, C.B., Hughes, M., Eshleman, S., Wittchen, H.U. & Kendler, K.S. (1994) Lifetime and 12-month prevalence of DSM-III-R psychiatric disorders in the United States: Results from the National Co-morbidity Survey. *Archives of General Psychiatry*, 51, 8–19.
Klimidis, S., Hsiao, F.-H. & Minas, H. (2007) Chinese-Australians' knowledge of depression and schizophrenia in the context of their under-utilization of mental health care: An analysis of labelling. *International Journal of Social Psychiatry*, 53, 464–479.
Knapp, J. & Delprato, D. (1980) Willpower, behaviour therapy, and the public. *Psychological Record*, 30, 477–482.
Knight, M., Furnham, A. & Lester, D. (2000) Lay theories of suicide. *Personality and Individual Differences*, 29, 453–457.
Kraepelin, E. (1921) *Manic-Depressive Insanity and Paranoia.* Edinburgh, Scotland: E. & S. Livingstone.
Lam, D.H., Bright, J., Jones, S., Hayward, P., Schuck, N., Chisholm, D. & Shan, P. (2000) Cognitive therapy for bipolar illness: A pilot study of relapse prevention. *Cognitive Therapy Research*, 24, 503–520.
Lam, D.H., Jones, S., Bright, J. & Hayward, P. (1999) *Cognitive Therapy for Bipolar Disorder: A Therapist's Guide to Concepts, Methods and Practice.* Chichester: John Wiley & Sons Inc.
Lauber, C., Falcato, L., Nordt, C. & Rossler, W. (2003) Lay beliefs about causes of depression. *Acta Psychiatrica Scandinavica*, 108 (Suppl 418), 96–99.
Leverich, G., McElroy, S.L., Suppes, T., Keck JR, P.E., Denicoff, K.D., Nolen, W.A., Altshuler, L.L., Rush, A.J., Kupka, R., Frye, M.A., Autio, K.A. & Post, R.M. (2002) Early physical and sexual abuse associated with an adverse course of bipolar illness. *Biological Psychiatry*, 51, 288–297.

Lin, E., Goering, P., Offord, D.R., Campbell, D. & Boyle, M.H. (1996) The use of mental health services in Ontario: Epidemiologic findings. *Canadian Journal of Psychiatry*, 41, 572–577.

Link, B.G., Phelan, J.C., Bresnahan, M., Stueve, A. & Pescosolido, B.A. (1999) Public conceptions of mental illness: labels, causes, dangerousness, and social distance. *American Journal of Public Health*, 89, 1328–1333.

Neale, J.M. (1988) Defensive function of manic episodes. In *Delusional Beliefs* (eds T.F. Oltmanns & B.A. Maher). New York: Wiley.

Neves-Pereira, M., Mundo, E., Muglia, P., King, N., Macciardi, F. & Kennedy, J.L. (2002) The brain-derived neurotrophic factor gene confers susceptibility to bipolar disorders: Evidence from a family-based association study. *American Journal of Human Genetics*, 71, 651–655.

Nuechterlein, K.H. & Dawson, M.E. (1984) A heuristic vulnerability–stress model of schizophrenic episodes. *Schizophrenia Bulletin*, 10, 300–312.

Nunnally, J. (1961) *Popular Conceptions of Mental Health.* New York: Holt, Rinehart & Winston.

Peet, M. & Harvey, N.S. (1991) Lithium maintenance I: A standard education programme for patients. *British Journal of Psychiatry*, 158, 197–200.

Priest, R.G., Vize, C., Roberts, A., Roberts, M. & Tylee, A. (1996) Lay people's attitudes to treatment of depression: Results of opinion poll for Defeat Depression Campaign just before its launch. *British Medical Journal*, 313, 858–859.

Rabkin, J.G. (1974) Public attitudes toward mental illness: A review of the literature. *Psychological Bulletin*, 10, 9–33.

Rippere, V. (1977) Commonsense beliefs about depression and antidepressive behaviour. A study of social consensus. *Behaviour Research and Therapy*, 17, 465–473.

Rippere, V. (1979) Scaling the helpfulness of antidepressive activities. *Behaviour Research and Therapy*, 17, 439–449.

Rippere, V. (1980) Some historical dimensions of commonsense knowledge about depression and antidepressive behaviour. *Behaviour Research and Therapy*, 18, 373–385.

Rippere, V. (1981) How depressing: Another cognitive dimension of commonsense knowledge. *Behaviour Research and Therapy*, 19, 169–181.

Sarbin, T.R. & Mancuso, J.C. (1970) Failure of a moral enterprise: Attitudes of the public toward mental illness. *Journal of Consulting and Clinical Psychology*, 35, 66–74.

Sarbin, T.R. & Mancuso, J.C. (1972) Paradigms and moral judgements: Improper conduct is not disease. *Journal of Consulting and Clinical Psychology*, 13, 6–8.

Serretti, A. & Olgiati, P. (2005) Profiles of 'manic' symptoms in bipolar I, bipolar II and major depressive disorders. *Journal of Affective Disorders*, 84, 159–166.

Shurka, E. (1983) Attitudes of Israeli Arabs towards the mentally ill. *International Journal of Social Psychiatry*, 29, 101–110.

Siegler, M. & Osmond, H. (1966) Models of madness. *British Journal of Psychiatry*, 112, 1193–1203.

Suppes, T., Swann, A.C., Dennehy, E.B., Habermacher, E.D., Mason, M., Crismon, M.L. *et al*. (2001) Texas medication algorithm project: Development and feasibility testing of a treatment algorithm for patients with bipolar disorder. *Journal of Clinical Psychiatry*, 62, 439–447.

Wehr, T.A., Sack, D.A. & Rosenthal, N.E. (1987) Sleep reduction as a final common pathway in the genesis of mania. *American Journal of Psychiatry*, 144, 201–204.

Wolff, G., Pathare, S., Craig, T. & Leff, J. (1996) Community attitudes to mental illness. *British Journal of Psychiatry*, 168, 183–190.

Yoder, C.Y., Shute, G.E. & Tryban, G.M. (1990) Community recognition of objective and subjective characteristics of depression. *American Journal of Community Psychology*, 18, 547–566.

Young, L.T., Warsh, J.J., Kish, S.J., Shannak, K. & Hornykeiwicz, O. (1994) Reduced brain 5-HT and elevated NE turnover and metabolites in bipolar affective disorder. *Biological Psychiatry*, 35, 121–127.

Adrian Furnham, Department of Psychology, University College London, UK.

Elizabeth Anthony, Department of Psychology, University College London, UK.

Correspondence to: ucjtsaf@ucl.ac.uk and a.furnham@ucl.ac.uk