

Does the use of diagnostic language affect causal beliefs related to mental health in non-qualified nursing and care staff?

Martin Bennett

08th June 2015

Supervised by

Professor James McGuire

Dr Catrin Eames

Submitted in partial fulfilment of the Doctorate in Clinical Psychology, University of Liverpool

Acknowledgements

I would like to thank everyone who contributed to the completion of this thesis, in particular my supervisors for their patience, guidance and advice since the start of this process. I would like to thank my course mates for the general sense of camaraderie enjoyed throughout. Finally, to Roxanna, for her compassion towards me during this time.

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Introductory chapter: Thesis overview

Attitudes and beliefs about mental health difficulties have important implications for people experiencing these difficulties. Research suggests that stereotypes and stigmatising views held by the public impact on the internalisation of these beliefs by people developing mental health difficulties, delaying help-seeking (Clement et al., 2015). For over 50 years research with the general public has sought to identify correlates of negative beliefs about mental ill health (Nunnally, 1961; Schomerus et al., 2012), and this area of research is increasingly seeking to ascertain the views of mental health workers. Meta-analyses have combined data on the general public to offer summaries of this work and offer interpretations based on the whole body of evidence reporting changing opinions over time, and demographic variables linked with more positive and negative attitudes (Angermeyer & Dietrich, 2006), but to date, there have been no meta-analyses of the research regarding mental health workers attitudes and beliefs. Chapter one of this thesis is a critical review and meta-analysis of recent quantitative empirical literature exploring the impact of methodological differences on research into mental health workers' beliefs about people with mental health problems. Recommendations are made for the use of validated measures and a standardised procedure for future research, to generate findings with clinical relevance.

Aetiological beliefs have been widely researched with the general public because of a demonstrated link between biogenetic aetiology and stigmatising beliefs about people with mental health difficulties (Schomerus, Matschinger, & Angermeyer, 2014). These studies use vignettes as a method of creating a consistent reference without the use of diagnostic labels, which have been shown to influence aetiological beliefs in the general public (Angermeyer & Matschinger, 1996).

Chapter two of this thesis aims to identify whether the presence of diagnostic labels correlates with higher rates of biogenetic causal beliefs than using unlabelled vignettes, with healthcare assistants and support workers in mental health services. This has implications for both the methodology of future research with mental health workers, and addresses the need to rethink the way that we communicate about mental health difficulties as health professionals.

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Chapter 1

Mental health workers' attitudes and beliefs about mental illness: A meta-analysis of
recent research

Abstract

Background: Research has explored the attitudes and beliefs of mental health workers about mental health problems because of their position as opinion leaders, and their roles as carers and supporters for people experiencing mental health difficulties.

Aims: To critically appraise recent research in this area, using meta-analysis and moderator analysis to assess the impact of methodological differences between studies.

Method: Studies published from 2009 to 2015 were sought from six databases and additional checking of abstracts. Twenty eligible studies were identified and their main findings combined to give effect sizes for the whole body of research and subgroups based on methodological differences. These subgroups were then compared for sources of bias.

Results: The overall effect size indicated mental health workers having more positive views of people with mental health problems than the range of comparators used across studies. A wide range of measures, stimuli, populations and comparison groups were identified. Statistically significant differences in effect sizes were found between several subgroups.

Conclusions: Different effect sizes were observed on the basis of a number of identified variables; most notably between studies referring to 'mental illness' and 'schizophrenia', and those using diagnostic labels compared to vignette studies.

Declaration of interest: None

Keywords: attitudes, beliefs, stigma, methodology, meta-analysis

Introduction

Rationale

Psychological research has explored attitudes and beliefs about people with mental health problems¹ for over 50 years (Nunnally, 1961). The main focus is predominantly on mental health stigma: that is, identifying people with mental health problems as a group different from others, and holding stereotyped beliefs that cast them as violent, inferior, unpredictable or weak, causing a difference in attitude or behaviour towards them (Corrigan et al., 2000). Research suggests people desire more social distance from people with mental health problems (Schomerus et al., 2012), contributing to their exclusion from society and leading to additional isolation and rejection (Corrigan, 2000), secondary to that felt as a result of the mental health difficulty itself. Mental health stigma is classed as either 'public stigma', the beliefs of others about people with mental health problems (Wahl, 1999); or 'self-stigma' or 'internalised stigma', the internalising of these stereotyped beliefs about mental illness by people with mental health difficulties (Ritsher & Phelan, 2004). The World Psychiatric Association identifies stigma as the most significant barrier to effective mental health care, suggesting research exploring beliefs and attitudes relating to stigma is paramount for developing effective services and supporting access to them (Murthy, 2001).

Alongside research regarding attitudes and beliefs held by the general public (Angermeyer & Dietrich, 2006; Schomerus et al., 2012), researchers have sought to elicit mental health workers' attitudes and beliefs regarding mental illness. It has been suggested that mental health workers are an important part of both the

¹For the purposes of this review the terms 'people with mental health difficulties', 'people with mental health problems', and 'service users' will be used interchangeably, although it is recognised that the range of terms used to describe people directly affected by mental ill health is nuanced and sensitive.

stigmatisation of people with mental health problems, and an important force for destigmatising mental health problems (Schulze, 2007). Mental health workers take a lead role in providing care and support for people in their most vulnerable times. Several authors have noted the potential for mental health workers or contact with mental health services to be a source of stigma (Chaplin, 2000; Gray, 2002; Schulze & Angermeyer, 2003; Schulze, 2007). Moreover, it has been suggested that the actions and beliefs of mental health workers may be strong contributors to the continuing discrimination faced by people with mental health problems (Sartorius 2002).

Schulze (2007) offered a multifaceted review of the various relationships between mental health workers and stigma. This included summarising research on stigma towards mental health workers, from mental health workers to service users, and the potential for workers to be de-stigmatizing in their practice. It highlighted the importance of studying the role of mental health workers in stigma, and understanding how the views of those working in mental health services differ from others outside these services. Schulze noted that of the research at the time “nearly three quarters of the relevant publications report that beliefs of mental healthcare providers do not differ from those of the population, or are even more negative” (p.142).

A subsequent review by Wahl and Aroesty-Cohen (2010) found more research in the area, and reached different conclusions. Focussing on research relating to qualified mental health staff and their views about people with mental health problems the number of papers more than doubled, despite the relatively short time frame between these reviews. The authors characterised 14 of the 19 included studies as representing mental health workers as holding generally ‘positive’ views in

comparison to the general public, with the remaining five studies characterised as generally 'negative'. They note that none of the studies reported attitudes and beliefs as exclusively 'positive' or 'negative', but rather more nuanced and complicated opinions.

Wahl and Aroesty-Cohen (2010) presented a summary of mental health workers views, though there was no comparison or analysis of the studies it contained. They cite a number of methodological issues with research in this area; namely, the lack of consensus on measures, and the wide range of geographic areas and professional backgrounds that are accounted for in their review, limiting their comparison. The review contained no assessment of the quality of its constituent studies.

The lack of a standardised procedure for studying mental health workers' attitudes and beliefs is a significant barrier to developing a clear understanding of this area, and to a longer term goal of understanding how they may be changed, where necessary, to be more supportive of people who use mental health services. In addition to the difficulties identified by Wahl and Aroesty-Cohen (2010), research is divided between studies that seek to compare mental health workers with a comparison group of the lay public or physical health workers, and those that solely seek the opinions of mental health workers. Some studies explore attitudes towards general 'mental illness' (Taylor & Dear, 1981), others refer specifically to a single diagnosis, most frequently schizophrenia (Wahl & Aroesty-Cohen, 2010), while attitudes towards some other diagnoses are under-researched. A range of measures are used, some lacking validation with the target population, and some reported in a way that negates previous validation and factor analysis undertaken with the chosen scale (Munro & Baker, 2007), such as the reporting of single responses, rather than

complete sets of responses and their factors. Previous reviews have provided a summary of research in the area but no comparison of studies, critique of methodology, or statistical aggregation of results has been undertaken.

Objectives

The reviews of Schulze (2007) and Wahl and Aroesty-Cohen (2010) highlight the emergence and development of an area of research that has direct relevance to understanding stigma towards people with mental health problems.

The present study aims to review papers published from 2009-2015, and to meta-analyse the data to identify whether any general effects or differences can be identified across this area of research. Specifically, the aims of the study are:

- To review the range of participant groups, measures, comparators and stimuli;
- To analyse subgroups of the body of research to identify any impact attributable to the varied methodologies employed;
- On the basis of these observations, to make suggestions regarding future research of mental health workers attitudes to and beliefs about mental health difficulties.

Method

Protocol and registration

A protocol was created in line with the Preferred Reporting Items for Systematic Reviews and Meta-Analyses (PRISMA; Liberati et al., 2009) guidelines to ensure a coherent and consistent search and reporting strategy for the review (see Appendix 1).

Eligibility criteria

Studies were included if published in English between the years 2009-2015 in a peer reviewed journal, as an indicator of research accessible for reference by others and considered suitable for publication. Only studies that included the views of qualified mental health staff were included; where this was part of a larger data set, a study was only included if results relating to this group could be clearly identified from the larger data set. Quantitative studies were selected to facilitate comparison across studies. Only studies of attitudes and beliefs about people with mental health difficulties were included; those that focused solely on aetiology or treatment were excluded.

Information sources

Studies were sought from a number of databases: CINAHL Plus, Medline, PsychINFO, PubMed, Science Direct and Web of Science. Dates searched were 01 January 2009-31 December 2014 inclusive. This time period was chosen to only include papers published since searches were completed for the previous review (Wahl & Aroesty-Cohen, 2010), to the current date. Previous reviews have focused on contemporary research due to an assumption that attitudes and beliefs about mental health are changing, a trend that has to some extent been demonstrated in

studies of the general public (Schomerus et al., 2012). The current review has adopted the same strategy, to review current methods, attitudes and beliefs, rather than beliefs that may have changed with general evolution of attitudes towards mental health difficulties. In addition to database searches, the reference sections of included papers were checked for relevant papers that may have been missed via other methods.

Search

The following terms were used to complete a comprehensive search of these databases in January 2015. These terms were divided into three sets (specified in the EBSCO search format for reference) to give reference to the specific aspects that were required from included studies: Mental health professional terms (“mental health worker” OR “mental health nurs*” OR psychiatri* OR psychologi*), terms related to attitudes (attitudes OR beliefs OR stigma), and mental health problem terms (“mental health problem” OR “mental disorder” OR “mental illness” OR “psychiatric diagnosis”). Broader terms such as “mental health” were excluded because of a lack of specificity.

Study selection

Search outputs were screened by the reviewer and studies were initially selected on the basis of title and abstract. Following collation of potential papers by this method, the full text of each article was screened to ascertain its eligibility.

Data collection process

Data was collected to satisfy the specified aims of the study. Any ambiguity during the data collection process was referred to an independent clinician with a

view to referring to the primary supervisor to review disagreements; however in practice referral to the primary supervisor was not necessary. A random sample of 10% of studies was also appraised independently as a method of quality checking the data extraction process. Following discussion over two points, agreement was reached on all findings.

Data items

Information was extracted from each study relating to:

- Characteristics of participants; profession(s), location, response rate
- Characteristics of any comparison group used
- Data collection methods (face to face, telephone, online); measures used to collect data and its validation with the study participants or relevant comparison group; stimulus used (e.g. participant's experience, vignette, diagnostic label)
- Processes to quantify, avoid or negate social desirability in responses

Risk of bias in individual studies

The range of methods used in this body of research is considered a potential source of bias in all studies. The categories of information above were sought in order to ascertain what effect, if any, these variations have on study outcome. Subgroup analyses were performed to isolate any such effects.

Summary measures

The primary reporting measures relate to the attitudes and beliefs examined by the reviewed studies. Research in this area has previously employed a range of outcome measures of views of mental health workers (Baker, Richards, & Campbell,

2005; Taylor & Dear, 1981; Wahl & Aroesty-Cohen, 2010). Continuous outcomes were collated as means and standard deviations of the test and comparison populations; event rate and n for binary outcomes were extracted from papers where possible and converted to standardised mean differences to allow comparison (Liberati et al., 2009). Where there is no comparison group as part of the study, comparison is made to the validation study for the central measure used, to highlight any difference from this population, and the relative merits of standardising measures with comparable populations.

Effect sizes were used for subsequent subgroup analysis within the reviewed studies. Summaries are made on the basis of the random effects model given significant heterogeneity (reported where present) in the true effect underlying studies, in terms of the range of groups, cultures and locations that are reported.

Synthesis of results

Meta-analysis relies on coherence between the outcomes measured in included studies; measures must seek to identify the extent of similar outcomes to allow statistical combination to produce meaningful results (Borenstein, 2009; Liberati et al., 2009). To facilitate this, only measures that relate to stereotyping or stigmatising views were included in the meta-analysis; those that relate solely to aspects of treatment or specific concepts such as prognosis were not included. Outcomes were converted to give a consistent 'direction' of outcome across all studies, identifying higher scores or agreements with more positive/ less stigmatising/ less excluding views of people with mental health problems. In studies with more than one comparison group, these scores were combined to correspond to the categories existing in other studies; namely groups of general public were combined, and

groups of non-mental healthcare professionals were combined. Data was entered into the analysis per factor where this was specified in each study, and then combined to a study-by-study score or retained as individual factor scores as appropriate to the analysis. To allow for comparison on the basis of response rate, studies were coded as having a low or high response rate either side of 60% response, considered as an acceptable response level for nursing research (Badger & Werrett, 2005), which accounts for the majority of the studies in the review. Participants were grouped according to their profession, and stimuli were grouped as diagnostic labels and vignettes, referring to individual diagnoses or 'mental illness' in general.

Where standard deviations were not reported, these were computed from the available data. A table specifying the conversions and calculations required to give a consistent data set for analysis is provided in Appendix 2. All data analysis was completed using the Comprehensive Meta-Analysis version 3 software package (Biostat Inc, 2015), and Statsdirect version 2.7.9 (StatsDirect Ltd, 2015).

Risk of bias across studies

To assess the possibility of publication bias, a funnel plot was created. To support this, and to reduce any bias in the visual inspection of this plot, the fail-safe N was also calculated.

Apparent omission of data within studies is noted, though it is not possible to know whether such omissions represent publication bias within studies.

Additional analyses

The effects of methodological variations between studies were tested with subgroup analysis. Differences in participant group, comparison group, stimuli, and

reference method were used as moderators, and mixed effects analysis of data pooled within these subcategories employed to test for between group variance.

Results

Study selection

Seven hundred and sixty nine titles were initially screened. Fifty-eight studies were identified as potentially eligible, which reduced to 55 following the removal of duplicated studies. Abstracts were reviewed, and 21 studies identified as eligible. The same data set was referred to by two studies (Loch, Hengartner, et al., 2013; Loch, Guarniero, et al., 2013); and Loch, Hengartner et al. (2013) was included as it allowed for comparison to other studies in the review, having employed a comparison between psychiatrists and the general public, whereas Loch, Guarniero, et al. (2013) was excluded as it focused on a factor analysis of 'stigma profiles' within Brazilian psychiatrists. Twenty studies were therefore included in the review. This process is summarised in Figure 1.

Study characteristics

Of the 20 papers included in the review, nine studies were conducted in Europe, five in Asia, four in North America, one in South America, and one in Australasia. All studies employed a cross-sectional design; 11 studies compared mental health workers to another group, eight studies focused solely on a mental health worker group without a comparator. One study, Stull et al. (2013) compared new measures of explicit attitudes with implicit attitudes, and as such, could not be included in the meta-analyses. A summary of study characteristics is presented in Table 1.

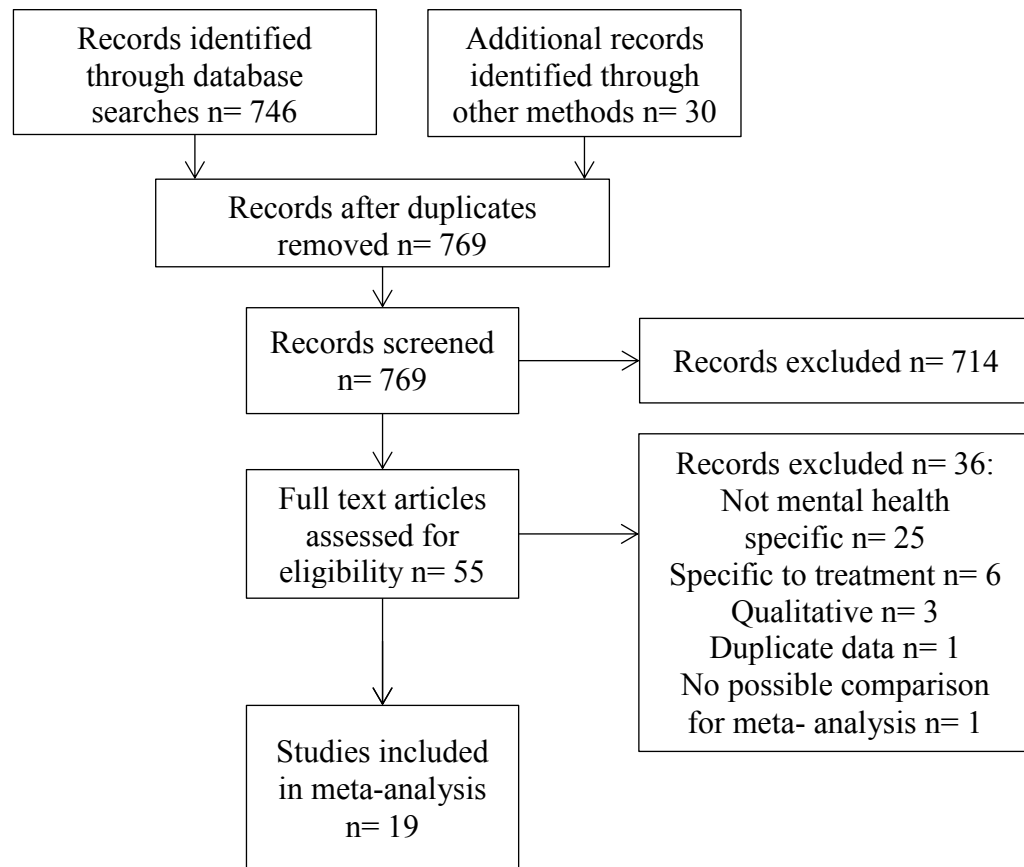


Figure 1: Flow diagram of study selection process

Study methods

Three studies (Ahmead, Rahhal, & Baker, 2010; Hamdan-Mansour & Wardam, 2009; Tyson, 2013) utilised the Attitudes Towards Acute Mental Health Scale (ATAMHS-33; Baker, Richards, & Campbell, 2005), and three (Chambers et al., 2010; Guise, Chambers, Välimäki, & Makkonen, 2010; Linden & Kavanagh, 2012) used the Community Attitudes to Mental Illness Scale (CAMI; Taylor and Dear, 1981). A revalidated Swedish version of the CAMI, the CAMI-S (Högberg, Magnusson, Lützén, & Ewalds-Kvist, 2012) was used in one study (Mårtensson, Jacobsson, & Engström, 2014). Social distance scales were used in three studies, though this refers more broadly to a style of questionnaire rather than a specific measure. Thirteen studies used questionnaires that only featured once in the review.

Table 1: *Summary of study characteristics for reviewed studies*

Study	Location	Participants (N)	Comparison group (N)	Measure
Ahmead et al (2010)	Palestine	MHW (78)	None	ATAMHS-33
Avery et al (2013)	USA	ψ (30)	Med (84)	MCRS
Chambers et al (2010)	Finland, Ireland, Italy, Lithuania, Portugal	MHN (810)	None	CAMI
Guisse et al (2010)	England	MHN (81)	None	CAMI
Hamdan-Mansour & Wardam (2009)	Jordan	MHN(92)	None	ATAMHS-33
Hansson et al (2013)	Sweden	MHW (140)	SU (141)	PDDQ
Hanzawa (2012)	Japan	MHN (215)	None	DCLS, SDS
Hori et al (2011)	Japan	Psy (36), MHW (100)	Med (112), Pub (197)	
Kopera et al 2014	Poland	MHW (29)	Med students (28)	GNAT, OMI
Linden & Kavannagh (2012)	Ireland	MHN(121)	Stu (66)	CAMI, SIS
Loch (2013a)	Brazil	ψ (1414)	Pub (1015)	Sds, PPM, PSS, NSS
Martensson et al 2014	Sweden	MHN (256)	None	CAMI
Michaels & Corrigan (2013)	USA	MHW (133)	Pub (238), SU (74)	ES, S-DS,
Mittal et al 2014	USA	MHW (205)	Health (146)	AQ 9, sds, CS
Panayiotopolous et al (2012)	Cyprus	MHW (311)	Pub (933)	ASMI-3
Rao (2009)	England	MHW (56)	Med (38)	AMIQ
Reavely 2014	Australia	MHW (1004)	GPs (518)	sds, PPSS
Stull (2013)	USA	MHW (154)	None	IAT
Sun (2014)	China	MHW (249)	Fam (137), Pub (149)	FABI
Tyson (2013)	England	MHW(57)	None	ATAMHS-33

MHW, Mental health workers (mixed professions), MHN, Mental health nurses (single profession); Psy, psychiatrists; SU, Service users; Pub, General public; Med, healthcare or medical staff; Stu, compared to student/ in-training group, Fam, Family of service user. CAMI, Community Attitudes to Mental Illness Scale; MCRS, Medical Conditions Regards Scale; ATAMHS-33, Attitudes Towards Acute Mental Health Scale; PDDQ, Perceived Discrimination and Devaluation Questionnaire; DCLS, Difficulties in Community Living Scale; sds, Social Distance Scales; SIS, Social Interaction Scale; AMIQ, Attitude to Mental Illness Questionnaire; IAT, FABI, Fear and Behavioural Intentions towards the mentally ill scale; GNAT, Go/No-go Attribution Test; ASMI, Attitudes toward Severe Mental Illness scale; CS, Characteristics Scale, ES, Empowerment Scale, S-DS, Self-Determination Scale; PPM, perceived prejudice measure; NSS, Negative Stereotypes Scale, Positive Stereotypes Scale; OMI, Opinions of Mental Illness scale;

The details of the content and style of all measures used is presented in Appendix 3. The majority of studies (n=16) used measures that were not validated with staff groups. This included a number of studies where validation had taken place in a different country, or amongst a group cohort with different cultural beliefs. The variations in appropriateness of validation were too numerous to allow this to be a moderating variable for further analysis.

Stimuli

Twelve studies (Ahmead et al., 2010; Chambers et al., 2010; Guise et al., 2010; Hamdan-Mansour & Wardam, 2009; Hansson, Jormfeldt, Svedberg, & Svensson, 2013; Kopera et al., 2014; Linden & Kavanagh, 2012; Mårtensson et al., 2014; Michaels & Corrigan, 2013; Panayiotopoulos, Pavlakis, & Apostolou, 2012; Sun et al., 2014; Tyson, 2013) asked questions referring to 'mental illness', with no specific stimulus material. Five studies were conducted in reference to schizophrenia (Hanzawa et al., 2012; Hori, Richards, Kawamoto, & Kunugi, 2011; Loch, Hengartner, et al., 2013; Mittal et al., 2014; Stull, McGrew, Salyers, & Ashburn-Nardo, 2013); of these, two studies referred to schizophrenia by its diagnostic label (Hori et al., 2011, Loch, Hengartner, et al., 2013) and the remaining two (Hanzawa et al., 2012; Hori et al., 2011) used vignettes without labels. Three studies referred to more than one difficulty; Avery et al. (2013) specified 'schizophrenia', 'polysubstance dependence', 'comorbid polysubstance dependence and schizophrenia', and 'major depressive disorder'; Rao et al. (2009) specified brief psychosis, schizophrenia and 'special hospital patient'; and Reavley, Mackinnon, Morgan and Jorm (2014) used six vignettes, relating to 'depression', 'depression

with suicidal ideation', 'early schizophrenia', 'chronic schizophrenia', 'social phobia' and 'post-traumatic stress disorder' (PTSD).

Study participants

Nurses were the most frequently studied single professional group, subject of six studies (Chambers et al., 2010; Guise et al., 2010; Hamdan-Mansour & Wardam, 2009; Hanzawa et al., 2012; Linden & Kavanagh, 2012; Mårtensson et al., 2014), followed by psychiatrists, focus of two studies (Avery et al., 2013; Loch, Hengartner, et al., 2013). Twelve studies drew participants from a range of professional backgrounds (Ahmead et al., 2010; Hansson et al., 2013; Hori et al., 2011; Kopera et al., 2014; Michaels & Corrigan, 2013; Mittal et al., 2014; Panayiotopoulos et al., 2012; Rao et al., 2009; Reavley, Mackinnon, Morgan, & Jorm, 2014; Stull et al., 2013; Sun et al., 2014; Tyson, 2013). Hori et al (2011) studied a range of mental health workers, though their analysis separately analysed psychiatrists and other workers and Reavley et al. (2014) separately identified results from psychologists and psychiatrists.

Risk of bias within studies

Bias in individual studies was assessed. Table 2 presents a summary of these findings.

Results of individual studies

Effect sizes of all 19 studies are summarised in Figure 2. In 11 studies, mental health workers reported results that were not significantly different from the comparison group.

The overall comparison yielded significant heterogeneity, ($I^2 = 97.45\%$, $Q = 706.017$, $df = 18$, $p < .001$), with over a 97% chance that this was due to true variance between the studies. To account for this variance, a random effects model was preferred, yielding an overall standardised mean difference of $SMD = 0.352$ (95% CI [0.082, 0.622], $p = .011$). This demonstrates an overall effect size indicating mental health workers as having more positive/ less stigmatising views than the various groups used for comparison across studies.

Synthesis of results

Separate meta-analyses were conducted on studies that contained a comparison group and for those whom this review compares to a previous validation group.

Table 2: *Summary of identified sources of bias within included studies*

Study	Questionnaire validation	Response rate %	Reference group and method	Social desirability measure
Ahmead et al (2010)	P	82	MI	
Avery et al (2013)	C	12	Schz, poly, poly&schz, Dep; Vig	
Chambers et al (2010)	P	72.4	MI	
Guisse et al (2010)	Yes	54.7	MI	
Hamdan-Mansour & Wardman (2009)	P	88	MI	
Hansson et al (2013)	Yes	50	MI	
Hanzawa (2012)	Yes	Not stated	Schz; Vig	
Hori et al (2011)	P, C	Not stated	Schz, DL	
Kopera et al 2014	P	NS	MI	GNAT
Linden & Kavannagh (2012)	P	63	MI	
Loch (2013a)	Yes	62.5	Schz; DL	
Mårtensson et al 2014	VP, C	65	MI	
Michaels & Corrigan (2013)	Yes	Not stated	MI	KT
Mittal et al 2014	VP	50.4	Schz, Vig	
Panayiotopolous et al (2012)	Yes	83.2	MI	
Rao (2009)	Yes	54	Bpsy, Schz, SHP	
Reavely 2014	VP	24.7+ 27.7 (17.3)	Dep, Dep SI, Early Schz, Chronic Schz, Social phobia, PTSD	PPSS
Stull (2013)	No	Not stated	Schz; Vig	IAT
Sun (2014)	VP, P, C	Not stated	MI	
Tyson (2013)	Yes	27	MI	

VP, validated with public sample; P, previous validation in different population; C, combined new items with previously validated questionnaire; MI, study referred to unspecified 'mental illness'; Schz, schizophrenia; poly, polysubstance misuse; Bpsy, brief psychosis; SHP, Special hospital patient; Dep, depression; SI, suicidal ideation; PTSD, post-traumatic stress disorder; Vig, vignette study; DL, diagnostic label used for reference; IAT, Implicit Assumptions Test; GNAT, Go, no-go association test; KT, Faux knowledge tests; PPSS, Personal/ perceived stigma scale

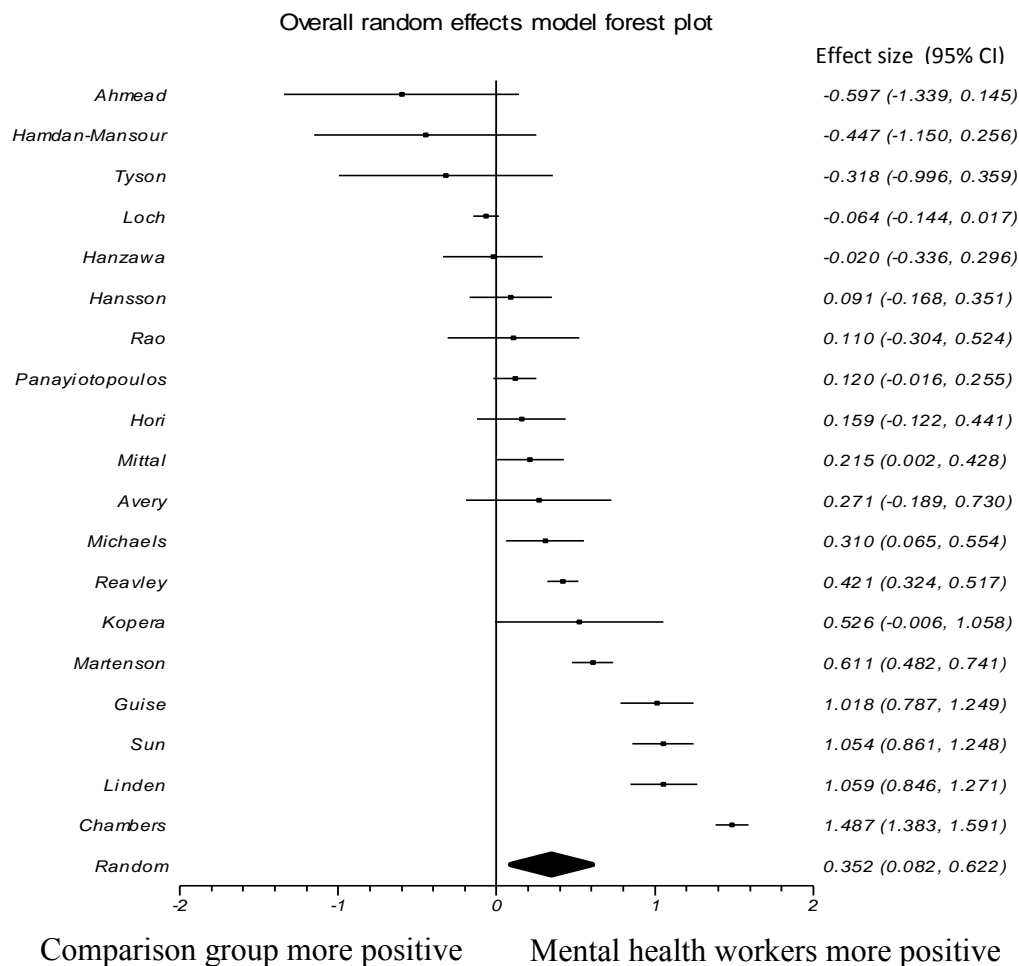


Figure 2: Summary forest plot for all studies, including diamond summary statistic for the random effects model.

Comparison studies

The 11 studies reporting between group comparisons are included in Figure 3. There was significant heterogeneity in this comparison ($I^2=92.26\%$, $Q=142.075$, $df=11$, $p<.001$). Given this heterogeneity, the results of the random effects model are reported. Mental health workers were significantly more positive/ less stigmatising than the comparison groups in their reported attitudes and beliefs about people with mental health problems ($SMD=0.264$, 95% CI [0.067, 0.461], $p=.009$).

Three of these studies demonstrated a significant difference from their comparison group (Michaels & Corrigan, 2013; Reavley et al., 2014; Sun et al., 2014), the other studies having confidence intervals crossing the null value. Sun et

al., (2014), reported the biggest difference from its comparison group ($SMD=1.054$, 95% CI [0.861,1.248], $p<.001$). This study was one of only two studies that used measures that had been modified to be culturally appropriate to its non-western participant group, including questions regarding belief in witchcraft. Despite this, they frame 'positive' beliefs as consistent with a medico-scientific understanding of mental health.

Michaels and Corrigan (2013) aimed to validate a method of testing stigmatised beliefs about mental health while minimising social desirability in responses. Error-choice tests were employed under the guise of a test about mental health literacy, including responses typical of stigmatised beliefs, and compared these to tests related to attribution of blame for symptoms, self-determination and empowerment. Here, it might be expected that a group of professionals with training and experience of mental health may select more accurate and less stigmatising responses, as demonstrated in the study's standardised mean difference ($SMD= 0.288$, 95% CI [0.081, 0.496], $p=.007$).

Reavley et al. (2014) compared the views of psychiatrists and psychologists with the Australian public, and reported a standardised mean difference significantly above the null value ($SMD= 0.421$, 95% CI [0.324, 0.517], $p < .001$), indicating the mental health workers to have more positive views than the within study comparison group. Of all the studies reviewed, Reavley and colleagues elicited attitudes regarding the widest range of mental health difficulties, using vignettes for each. A large sample size and relatively robust methodology appear to have led to the limited variance in the study's results, and its resulting high weighting.

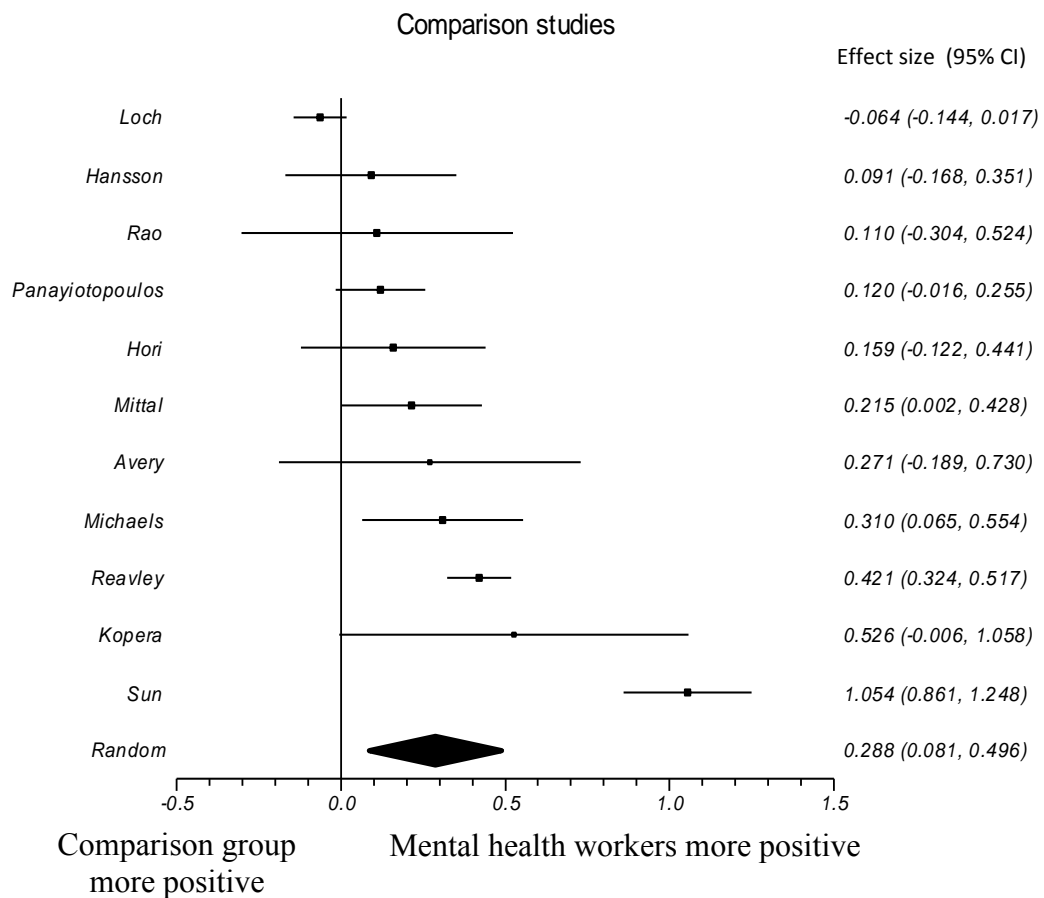


Figure 3: Comparison studies forest plot, including diamond summary statistic for the comparison studies subgroup

One study (Loch, Hengartner, et al., 2013) had a mean falling below the null value, indicating that the psychiatrists group in this study had less positive/ more stereotyping/ stigmatising views of people with mental health problems than the lay public comparison group. This result was not significantly more stigmatising than the comparison group ($SMD = -0.064$, 95% CI [-0.144, 0.017], $p = .122$).

Validation study comparisons

Studies that reported a single group summary with no comparison group were compared to the original validation study for their main measure. This method was

applied to Chambers et al. (2010), Guise et al. (2010), Linden & Kavannagh (2012) comparing to validation for the CAMI (Taylor & Dear, 1981); Mårtensson (2014) compared to the validation study for the CAMI-S (Högberg et al., 2012); Ahmead et al. (2010), Hamdan-Mansour and Wardam (2009) and Tyson (2013), comparing to the ATAMHS-33 (Munro & Baker, 2007), and Hanzawa et al. (2012), in comparison to the Japanese version of the social distance scale (SDS; Hanzawa et al., 2009). Inspection of this data suggested that calculating an effect size across all studies would nullify an apparent effect relating to each particular measure; data is therefore provided separately for each measure. A forest plot summarising these studies is presented in Figure 4.

There was a significant difference between the values reported in the reviewed studies and those acquired in their original validations. The ATAMHS-33 (Baker et al., 2005) was developed in England in 2005. All reviewed studies that used the measure reduced the continuous scale and its four factors to dichotomous reporting of individual items, a process that risks the loss of relevant detail (Streiner, 2002). This method of scoring the scale was piloted by Munro and Baker (2007), in a study where respondents gave 'overall positive' responses to nine of the 25 scaled items, in comparison to four (Ahmead et al., 2010), five (Hamdan-Mansour & Wardam, 2009) or six (Tyson, 2013) overall positive responses in the reviewed studies.

There is a potential cultural bias to be considered. As with the majority of the scales used in the current review, the ATAMHS-33 (Baker et al., 2005) seeks responses on western conceptions of mental health, which are not universal. An example of this is given by Ahmead et al. (2010), who note that in Arabic countries there is a significant belief in possession or spiritual origins to mental health and this belief may extend to Arab mental health professionals (Al-Adawi et al., 2002).

However, none of the individual study results differed significantly from the original ATAMHS-33 study. The overall effect size demonstrated the reviewed studies displayed significantly more negative views ($SMD = -0.446$, 95% CI $[-0.853, -0.038]$, $p = .032$) than the validation study.

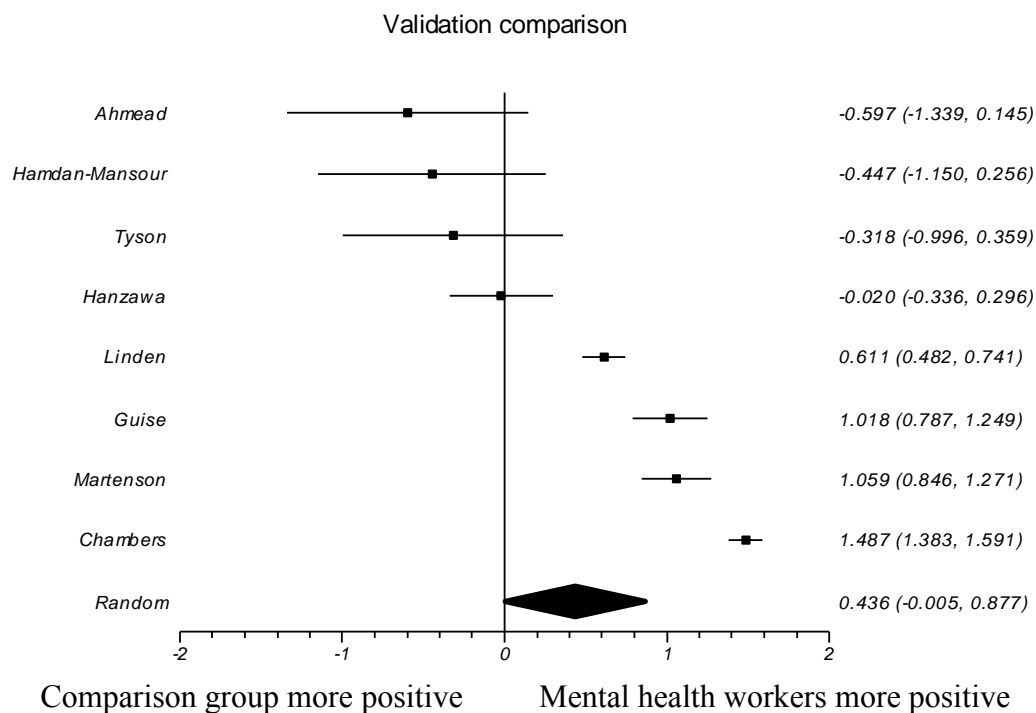


Figure 4: Validation study comparison forest plot including diamond summary statistic for the validation studies subgroup

The reverse effect appears with studies that were compared to the original validation of the CAMI (Taylor & Dear, 1981). Previous reviews have favoured restricting their studies to recently published studies because of the extent of change in general perceptions of mental health in recent years. However, the CAMI was originally validated over 30 years ago in Canada, with a population of the general public, but has been considered an appropriate measure of contemporary attitudes and beliefs in a staff group.

Comparison to the validation study appears to confirm the change of attitudes over the last 30 years. All three studies (Chambers et al., 2010; Guise et al., 2010; Linden & Kavanagh, 2012) reported values for the scale that were significantly more positive than the original values. Given the difference between the results of this comparison and studies that included a contemporary comparison group, this suggestion seems compelling. There was significant heterogeneity amongst the sample ($I^2=90.841\%$, $Q=21.837$, $df=2$, $p<.001$); a random effects model yielded a standardised mean difference of $SMD=1.199$ (95% CI [0.857, 1.541], $p<.001$).

Hanzawa et al. (2012) studied attitudes of Japanese psychiatric nurses using a number of questionnaires. Due to the nature of the Difficulties of Community Living Scale (DCLS; Hanzawa et al., 2010), and the lack of an English version of the paper validating it, the Japanese version of the Social Distance Scale (Hanzawa et al., 2009), was chosen. This measure was validated with the Japanese public and its outcomes were congruent with other studies in the review. Comparison of standardised mean difference from these two studies suggests that professional participants in the current study desired almost identical levels of social distance to family members in the 2009 study ($SMD= -0.020$, 95% CI [-0.336, 0.296], $p= .901$).

Mårtensson et al. (2014) elicited views from mental health workers across Sweden. Their data was compared to the recent validation study for the CAMI-S (Högberg et al., 2012) in the Swedish public. This comparison produced a standardised mean difference indicating that mental health workers in Sweden have significantly more positive and less stigmatising views than the general public of their country ($SMD= 1.059$, 95% CI [0.846, 1.271], $p < .001$).

Risk of bias across studies

Publication bias was assessed by inspection of a funnel plot (see Appendix 4). In addition to this, classic fail-safe N was calculated; this suggested an additional 1722 studies with an effect size of 0 would be necessary to reduce the observed Z -value to below statistical significance; this appears to be an indication of lack of bias across studies.

Additional analyses

Subgroup comparisons were made to test sources of bias within studies. Comparisons used the following factors as moderators to test effects; participant group, comparison group, stimulus and the similarity of the validation group for the measure. Significant results are reported below; figures representing all subgroup analyses are summarised in Appendices 5-8. Studies that lacked within study comparison groups were excluded from the subgroup analysis to avoid bias introduced by comparison to a study not part of the review.

Participants

Significant within group heterogeneity was found in the nurse and mental health worker groups. Although it was not demonstrated in the psychiatrist group, this is likely to be a result of the relatively small number of studies in the group ($k=2$), rather than a true indication of homogeneity. Given the dispersion observed within groups, a random effects analysis is appropriate. However the larger standard deviation apparent in this analysis yields no significant difference between the subgroups ($Q = 5.541$, $df = 2$, $p = .063$).

Comparison group

No significant difference in effect sizes was found in the subgroup analysis of comparison groups ($Q = 1.266$, $df = 2$, $p = .531$). However, studies comparing the attitudes and beliefs of mental health workers to a (non-mental) health care worker group found a significantly more positive overall effect size than their comparators ($SMD = 0.204$, 95% CI [0.029, 0.379], $p = .22$). Comparisons with the public were not statistically significant ($SMD = 0.397$, [-0.091, 0.885], $p = .111$), and findings in comparison to service users were most similar ($SMD = 0.091$, [-0.168, 0.351], $p = .490$), although this should be interpreted carefully as it relates to a single study.

Stimuli

Subgroup analysis was performed comparing standardised mean difference for studies referring to 'schizophrenia' and 'mental illness' or more than one specific diagnosis ('mixed').

Standardised mean difference for the 'mental illness' studies was statistically significantly more positive than the within group comparators ($SMD = 0.417$, 95% CI [0.002, 0.831], $p = .049$). A larger difference was seen in comparison to 'mixed' studies, ($SMD = 0.370$, [0.222, 0.519], $p < .001$) whereas the standardised mean difference for studies using schizophrenia was not significant ($SMD = 0.055$, [-0.126 to 0.284], $p = .451$), indicating similarity of views between participant groups in these studies. The between groups difference in the mixed effects analysis was not statistically significant ($Q = 5.517$, $df = 2$, $p = .063$).

Reference method

Studies were divided according to the method used to refer to their mental health stimuli: diagnostic labels, unlabelled vignettes or referring to 'mental illness'.

The standardised mean difference for the diagnostic label group fell at the null value ($SMD = -0.002$, 95% CI $[-0.143, 0.140]$, $p = .983$), indicating that mental health workers' views were not significantly different to their within study comparators in these studies. The effect sizes for the other two subgroups were both significantly above the null; the vignette group more so ($SMD = 0.344$, $[0.196, 0.493]$, $p < .001$) than the 'mental illness' group ($SMD = 0.417$, $[0.002, 0.428]$, $p = .049$), indicating mental health workers were significantly more positive than their comparators in these studies. There was a significant difference between the groups in the mixed effects analysis ($Q = 12.240$, $df = 2$, $p = .002$).

Discussion

Summary of evidence

Overall, the evidence of the reviewed studies is sufficient to suggest that mental health workers hold more positive views about people with mental health difficulties than the general public. This finding is consistent with the previous review conducted by Wahl and Aroesty-Cohen (2010).

Differences were found in the effect size of studies on the basis of participant profession, the comparison group used, the stimuli that responses were based on, and the way this was referred to, though these differences were only statistically significant in the latter. Due to the relatively small amount of studies in each subgroup, and the large variation in methods between each, these findings should be approached cautiously.

Subgroup analysis was performed on studies that provided a comparison group. Studies without a comparison group were compared to the validation study for their main measure, which demonstrated the potential pitfalls of measure selection, on the basis of difference in time, culture and location between the validation and current studies in most examples.

Two studies employed implicit assumption tests, one of which used comparison between implicit and explicit attitudes as its comparator (Stull et al., 2013), and was excluded from the subgroup analysis in the interest of producing consistent aims and comparisons. Both studies (Kopera et al., 2014; Stull et al., 2013) found differences between explicit and implicit attitudes in health worker groups, an indication that social desirability in responses may warrant further exploration. A further study (Michaels & Corrigan, 2013) aimed to evaluate a method of eliciting stigmatising views that circumvented social desirability in responses, and reported acceptable

correlation with existing measures; offering another potential method for researchers wishing to avoid response bias in future studies.

Reavely et al (2014) elicited participant's own attitudes, and their perception of the attitudes of others. All participants; mental health workers and general public, suggested others to be more stigmatising than themselves. This might be seen as an indication of social desirability, or simply as an example of the 'better than average effect' that is well described in the social psychology literature (Guenther & Alicke, 2010).

Only three studies asked questions regarding more than one diagnosis, and half of the studies were specific to any diagnosis, rather than a general suggestion of 'mental illness', a term so broad as to lack meaning (Högberg, Magnusson, Ewertzon, & Lützén, 2008). Reavely et al (2014) referenced different diagnoses by means of vignettes. They noted that referring to 'schizophrenia' type presentations were judged more harshly than other diagnoses, replicating a previous finding with the general public (Pescosolido, Monahan, Link, Stueve, & Kikuzawa, 1999). The current review found a difference in effect sizes between studies referring to 'mental illness' and 'schizophrenia', and although this was not statistically significant in itself ($p = .063$), more research regarding other diagnoses would have allowed for comparison between the general term 'mental illness' and specific presentations of mental ill health.

While approximately two thirds of studies asked a comparison group for their attitudes and beliefs about mental health, very few asked for attitudes and beliefs about any other group. Stull et al.'s (2013) implicit attributions test compared views of people with mental and physical health problems. Of the questionnaire studies, only Avery et al. (2013) and Rao et al. (2009) explored views towards non-mental

health groups (substance users). Without further studies using this type of methodology it is hard to establish if, for example, high rates of reported authoritarianism are specific to people with mental health problems, or are simply representative of individuals who have generally authoritarian views. Comparison to 'non-stigmatised' groups may give more information about the different beliefs directed towards 'in' and 'out' groups. A final finding worthy of note is the subgroup analysis differentiating between comparison groups. First, the largest positive effect size was observed in studies comparing mental health workers to other healthcare professionals. This should be taken as a point of note, particularly in relation to the physical health challenges that are experienced by people with mental health difficulties (Robson & Gray, 2007), the difficulty accessing these services (Thornicroft, Rose, & Kassam, 2007), and the stigma that is reported by people with mental health problems in healthcare services (Read & Baker, 1996).

Although interpreted with caution, the smallest effect size was present in comparison between mental health workers and mental health service users (Hansson et al., 2013). Stereotypical beliefs about people with severe mental health problems can be distressing and disabling for staff that hold them and the service users they work with (Emrich, Thompson, & Moore, 2003). It is perhaps unsurprising that people who access mental health services have similar views to those who work in such services, but further investigation could target if and/or how these views change over time, and whether there is a relation between involvement in services and internalised stigma.

Limitations

As with the majority of meta-analyses, the limitations of this review are the heterogeneity between study methods, populations and focus.

In the current review, there was a large variation in the quality of the studies. Use of measures validated in the study population of interest was scarce. Reporting of many measures was done on the basis of subgroups, rather than whole data sets. This means comparison across factors within measures, or between studies was not possible.

Several studies dichotomised results obtained from continuous measures, a method of data reporting that risks the loss of data and increases the likelihood of Type II error (Streiner, 2002). It may be that with access to full data sets (none of which were made publically available through the publishing journals), or the reporting of continuous outcomes, firmer conclusions could be drawn. It is accepted that the process of meta-analysis in the current review has done exactly this in comparing mental health workers to other groups. It is hoped that the findings of this meta-analysis bring awareness to the potential impact of methodology on this type of research, with a hope of creating more reliable and detailed findings in the future.

This review has several other limitations. Selecting only peer-reviewed, published studies may have introduced some bias, though inspection of the funnel plot of studies and classic failsafe N calculations suggest that the reviewed studies demonstrated relatively balanced results and a significant number of studies would be needed to negate the overall effect size reported. Published studies were chosen to give an indication of the variation within evidence that has been considered suitable for publication, though in future, review of the grey literature could add more to this developing field of research.

This review may have combined evidence from different areas of research. For example, it is suggested that research using diagnostic labels, and that which refers to behaviours associated with mental illness are fundamentally different (Angermeyer & Matschinger, 1996). To create a group (people with a mental illness) and characterise this group by reference to a list of 'typical' behaviours (for example, using a vignette) is stereotyping in itself (Goffman, 1986), and if this list of behaviours is undesirable, the process becomes stigmatising. Research suggests that describing emotional distress as an 'illness' in itself changes the way that this experience is viewed, reducing perceived accountability but also reducing hope of change (Matschinger & Angermeyer, 1996; Schomerus et al., 2014). The review identifies differences in the attitudes expressed towards these categories, but at present there is such variation in methods and extraneous variables that further understanding of these complex issues is not possible.

This review included studies from 16 countries on five continents. However, for practical reasons, only studies published in English were sought and reviewed. Comparison between studies in the Middle East and a validation group in England revealed differences in the level of beliefs. It seems likely that if studies published in languages other than English were included, more differences may have been identified. In time, and with a wider appraisal of all belief systems to mental ill health, it may be possible to identify how local, culturally specific beliefs can relate to better care in those communities, rather than assuming that western medico-scientific beliefs must be adhered to by all (Kirmayer & Pedersen, 2014).

This review only included studies published in the last six years on the assumption, shared by previous reviewers (Wahl & Aroesty-Cohen, 2010), that opinions about mental health are changing, which is supported to some extent by the

comparisons made to validation studies in the current review. Research with the public has been able to track changing opinion as studies have been replicated over time; this has occurred often enough that a review including only time-trend studies has been possible (Schomerus et al., 2012). In the absence of a body of evidence allowing for direct comparison, further meta-analysis of all studies of mental health worker attitudes may confirm whether worker attitudes have developed alongside those of the general public.

Conclusions

The findings reported here confirm generally positive attitudes expressed by mental health workers regarding people with mental health problems, although there is significant variation amongst the examined research. The range of measures employed, and the frequent lack of situating this in comparison to general attitudes and beliefs, or the attitudes and beliefs of other groups mean that it is currently not possible to draw any firm conclusions.

The current review offers guidance regarding the methodological confounds that are present within this body of research, and their impact on the findings of the reviewed studies.

Future researchers may generate increasing certainty in the area with a number of steps that have frequently been overlooked in the examined studies. First, if questionnaire methods are employed, the chosen tool should be validated with a related population. Ideally this should recruit opinions of mental health workers and other groups simultaneously, and also investigate attitudes and beliefs towards other groups in society at the same time. These measures would allow a fuller understanding of differences in attitudes and beliefs about mental health to be gained.

To enhance clinical utility researchers should seek to establish theory that relates to the way people who use services are treated. If mental health workers may have a stigmatising effect on people who use services, investigation of whether service users' perceptions of stigma vary alongside their time in services could help to improve understanding of the role of mental health workers (and services) in internalising stigma.

Another potential direction would be to investigate interventions to improve the way staff relate to service users. As no consistent relationship is apparent between demographic variables and either positive or negative views in mental health workers (e.g. males have more positive views, Loch, Hengartner, et al., 2013a; females have more positive views, Bjorkman et al., 2008), there is potential for such interventions to be appropriate for a wide range of staff, and for generalisation beyond worker groups to the wider population. If, as suggested by the World Psychiatric Association, stigma is the foremost barrier to effective mental health care (Murthy, 2001), it may be that studies designed to improve the understanding of stigma, and ways to reduce it, should be allocated a larger proportion of mental health research funding.

Funding

This review was undertaken as part of a funded clinical psychology doctorate education programme. No additional funding was provided by any source for this review.

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Bridging section: Introduction to Chapter two

Chapter one reports that research into the beliefs of mental health workers has employed a wide range of methods, and includes a number of confounding variables that interact with the findings of these studies. Amongst the examined moderators was the use of vignettes or diagnostic labels as a method of referring to a single identified mental health difficulty. A significant difference was demonstrated between studies using these two methods. Another moderator considered was the professional background of participants. A significant difference was not found, perhaps as a result of the number of mixed-profession studies that were included in the review. As a whole, this review suggests that a more rigorous approach to research about mental health worker's attitudes and beliefs about mental health difficulties is required if firm conclusions are to be drawn.

The use of diagnostic labels is contested between different professions within mental health services (Division of Clinical Psychology, 2015), and research with the general public has demonstrated that the use of labels such as 'schizophrenia' appears to correlate with a shift towards biogenetic causal beliefs (Angermeyer & Matschinger, 1996). Chapter two aims to identify whether the same effect is apparent with healthcare assistants and support workers in mental health services, a large portion of the workforce who have not previously been the subject of research independently of other groups. This study also aims to identify any demographic correlates of psychosocial or biogenetic causal beliefs, building on a body of work with the general public. Findings are discussed in relation to previous research linking biogenetic causal beliefs and increased discrimination towards people with mental health difficulties.

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Chapter 2

Does the use of diagnostic language affect causal beliefs related to mental health in non-qualified nursing and care staff?²

Abstract

Background: Aetiological beliefs about mental health have been related to stigma in a number of studies with the general public. Diagnostic labelling has been shown to correlate with increased rates of biogenetic causal beliefs (Angermeyer & Matschinger 1996), associated with a greater desire for social distance from people with mental health difficulties, and increased perceptions of their ‘dangerousness’.

Aims: To ascertain whether labelling of vignettes describing mental health difficulties, or a number of demographic variables, is correlated with different levels of psychosocial or biogenetic aetiological beliefs.

Method: One hundred and eight healthcare assistants and support workers were recruited to an experimental internet-based study and randomly allocated to read either labelled or unlabelled vignettes representing schizophrenia or depression, then respond with their beliefs about the aetiology of the described difficulty.

Results: No significant relationship was found between labelling condition and strength or preference for psychosocial or biogenetic aetiological beliefs. Participants who viewed the ‘schizophrenia’ vignette were more likely to rate biogenetic beliefs higher than psychosocial beliefs.

Conclusion: Diagnostic labelling does not influence the aetiological beliefs of healthcare assistants and support workers. Implications for reducing discrimination by increasing familiarity with psychosocial causes of mental health difficulties are discussed.

Declaration of interest: None.

Keywords: Labelling, stigma, Aetiology, Mental health workers.

Introduction

The consideration of personal aetiological beliefs is common post-diagnosis as people try to make sense of their newly described situation (Petrie, Broadbent, & Kydd, 2008). Beliefs about causes of mental health problems are often described on a continuum from the psychological and social (psychosocial) to the biological and genetic (biogenetic; Fisher & Farina, 1979). People are more likely to endorse treatments that are consistent with their causal beliefs; psychotherapy favoured by those with psychosocial causal beliefs, and medication favoured by those with biogenetic causal beliefs (Lauber, Nordt, & Rössler, 2005); described as a common-sense model (CSM) of illness (Leventhal, Leventhal, & Contrada, 1998). Research testing this theory has shown both physical and mental illnesses thought to be caused through social or behavioural mechanisms are viewed as more amenable to treatment than those resulting from a biological cause (Godoy-Izquierdo, López-Chicheri, López-Torrecillas, Vélez, & Godoy, 2007).

Causal beliefs have been correlated with a number of attitudes and beliefs in the general public, and in those working in mental health services. Early research in this area reported former mental health patients who gave psychosocial explanations of their difficulties were viewed more favourably by a State employment support facility in the USA, than those who reported their difficulties in purely biological terms (Rothaus, Hanson, Cleveland, & Johnson, 1963). Perhaps the most notable attitudinal links are between biogenetic causal beliefs and mental health stigma. Magliano, Read, Sagliocchi, Patalano and Olivero (2013) surveyed medical students, and found those who interpreted a vignette as describing a person with ‘schizophrenia’ were more likely to perceive the person as dangerous, to desire greater social distance, and be less likely to consider including the person in

decisions about their ongoing health care. Links between biogenetic aetiological beliefs and perceived dangerousness, increased desire for social distance and lack of perceived control have been found in numerous survey studies with the general public (Angermeyer & Matschinger, 2003a; Dietrich et al., 2004; Schomerus, Matschinger, & Angermeyer, 2014). These are the common elements that contribute to mental health stigma (Corrigan, Kerr, & Knudsen, 2005), a problem identified as the foremost barrier to help seeking in people with mental health difficulties by the World Health Organisation (Murthy, 2001).

As a result of this perceived impact on people with mental health difficulties, there have been numerous programmes aiming to reduce mental health stigma, such as the ‘Global Programme against Stigma and Discrimination because of Schizophrenia’, led by the World Psychiatric Association (Sartorius, 1997). Initially, these programmes were based on attribution theory; that a stigmatised mental illness may evoke less response if the associated behaviours were the result of a biological illness, and therefore out of the control of the person suffering from the problem (Corrigan, 2000). Stigma reduction programmes focused on increasing ‘mental health literacy’, or acceptance of biological causal beliefs, with the intention of reducing perceived responsibility. It appears these programmes had some level of success in their primary aim, with several time-trend analyses demonstrating an increase in ‘mental health literacy’ (Schnittker, 2008; Schomerus et al., 2012). However, this has not been accompanied by a reduction in stigma towards, or social exclusion of, people with mental health problems, leading several researchers to conclude this method ineffective and even counterproductive (Angermeyer, Holzinger, Carta, & Schomerus, 2011). A recent meta-analysis reported biogenetic explanations of mental health difficulties reduced blame for symptoms, but induced

pessimism regarding recovery, and may increase perceptions of dangerousness (Kvaale, Haslam, & Gottdiener, 2013). Nelkin and Lindee's (2004) theory of genetic essentialism suggests that highlighting a biological difference between a 'normal us' and a 'mentally ill them'; that is, an inherent difference between 'us' and 'them' groups, furthers stigma of the perceived out-group. They also propose that highlighting psychosocial aetiology serves to do the reverse of this, emphasising 'sameness'. Research suggests that no single explanatory model is superior in all facets over any other; psychosocial models reduce perceived dangerousness, but increase the blaming of sufferers for their symptoms (Schlier, Lincoln, & Schmick, 2014). Pessimism regarding prognosis is perhaps a more damaging belief among staff, given the suggested importance of hope and positive expectations in achieving good clinical outcomes (Grencavage & Norcross, 1990).

Effects of diagnostic labelling

Investigations into causal beliefs have mostly employed vignettes, allowing researchers to convey a consistent image of a person with mental health difficulties without relying on participants' knowledge of diagnostic labels (Link, Cullen, Frank, & Wozniak, 1987). Much of the research focuses on descriptions of 'depression' and 'schizophrenia' and has found that in vignette studies, the general public have predominately psychosocial aetiological beliefs (Angermeyer & Dietrich, 2006; Schomerus et al., 2012). However, Angermeyer and Matschinger (1996) reported that the explicit mention of 'schizophrenia' alongside a vignette describing it increased the likelihood biological causal factors would be cited over psychosocial factors. In a review of studies with the general public, Angermeyer and Dietrich (2006) indicated the use of diagnostic labels resulting in higher levels of biogenetic

causal beliefs than those employing vignettes, particularly in reference to ‘schizophrenia’ (with a similar yet smaller effect occurring in relation to ‘depression’). Other studies have observed related effects; Schomerus, Matschinger, and Angermeyer (2006) demonstrated that participants who could identify a vignette with the correct diagnostic labels were more likely to endorse biogenetic causal beliefs than those who could not label the vignettes. Angermeyer and Matschinger (2003) found members of the general public who were able to generate the correct diagnostic label (of schizophrenia) for a vignette perceived the person described in it as more dangerous than those who could not label the vignette accurately. Medical students who correctly labelled a vignette of schizophrenia reported more biogenetic causal beliefs and a greater confidence in the efficacy of medications as treatment, though less intent to share information about medicines with patients (Magliano et al, 2013). This study appears to offer an extension of the self-regulatory theory and CSM proposed by Leventhal et al (1984); that “common-sense” links are made between causes and treatments in regards to others as well as in considerations of our own health. Moreover, professional training may have an impact on aetiological beliefs; Read and Law (1999) demonstrated a statistically significant change in aetiological beliefs after just four lectures to psychology undergraduates regarding psychosocial theories of schizophrenia. Amongst qualified professionals, beliefs about cause and treatment of mental health difficulties tend to follow the nature of professional training; for example, psychiatrists, general practitioners and psychologists all favour their own professions and the treatments they offer respectively as the likely remedy to mental health problems (Lauber et al., 2005).

To date, no studies have focused on the causal beliefs of support workers and healthcare assistants working in mental health. This group of workers forms a large

proportion of the mental health work force and are responsible for a considerable amount of the face-to-face contact with users of mental health services (Cavendish, 2013). Healthcare assistants, many of whom have received no specialist training (Cavendish, 2013), seem to fall between the lay public, and professional colleagues who have received formal training in mental health that may have influenced their beliefs systems about mental ill health. Due to this position, and their significant contribution to mental health services, further investigation of this group is warranted. The current study aims to test whether levels of biogenetic and psychosocial causal beliefs held by healthcare assistants and support workers are affected by the presence, or absence, of diagnostic labels.

A number of demographic variables and information relating to experience and education have been related to other attitudes about mental health difficulties; namely, age (Björkman, Angelman, & Jönsson, 2008; Hansson, Jormfeldt, Svedberg, & Svensson, 2013), gender (Chambers et al., 2010; Holzinger, Floris, Schomerus, Carta, & Angermeyer, 2012; Hori, Richards, Kawamoto, & Kunugi, 2011), length of work experience (Tyson, 2013), psychology education or training (Read & Law, 1999), and personal contact with people with mental health problems (Angermeyer, Matschinger, & Corrigan, 2004; Read & Law, 1999). These variables will also be explored to identify any links with aetiological beliefs amongst healthcare assistants and support workers. Information relating to work experience, setting and client group will also be explored to test for the presence of a relationship to aetiological beliefs.

Method

Participants

Five-hundred and thirty six people viewed the study website, with 108 entering the study (20.5%). Not all participants completed the full range of data, 95 being the highest number of participants to complete a section, a completion rate of 17.7%. Due to the anonymity of recruitment via internet, the source of participants cannot be accurately tracked, although the timing of responses suggests that around two-thirds of participants were recruited from the host NHS trust. The majority were female ($n=66$, 70%), and the largest group were below 30 years in age ($n=31$, 32.6%, range 21-70) and had less than five years of experience of working in mental health services ($n=30$, 33%, 1-34 years). Over half the participants worked in adult mental health services ($n=58$, 63.7%), with similar proportions working in secure ($n=29$), inpatient ($n=25$) and outpatient or community services ($n=28$). Approximately half of participants personally knew someone who had experienced a mental health problem ($n=50$, 52.6%), and approximately one third had experienced a mental health difficulty themselves ($n=34$, 35.8%). A full summary of the demographic information is presented in Table 1, and a flowchart of retention of participants throughout the study in Figure 1.

Power

An *a priori* power calculation of Cohen's f^2 effect size was conducted, based on a moderate effect size of $f^2=0.15$ (Cohen, 1992), α error probability = 0.05, power of 0.8, and a total of 5 predictors (gender, personal experience, psychology experience, labelling condition and vignette presented). This calculation suggests that a final sample size of 92 would be sufficient to calculate a statistically significant effect.

Recruitment for the study exceeded this estimated sample size, with 95 participants completing the study.

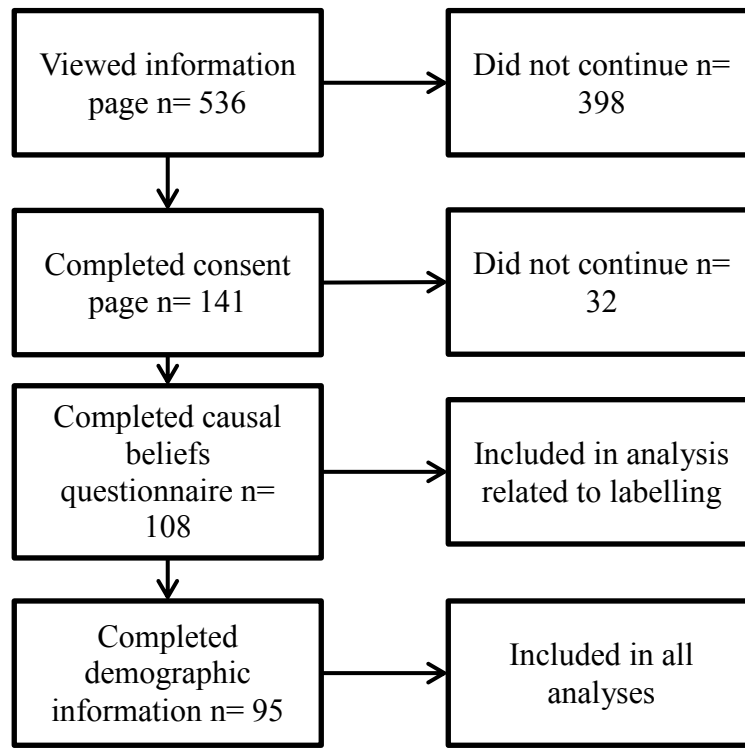


Figure 1: Retention of participants during study

Materials

Vignettes

Vignettes originally created by Angermeyer and Matschinger (1994) for studies involving the general public in Germany were used. The vignettes were validated in the original study by experts in psychopathology blind to the condition. Every day, lay language was used to describe a fictional person ‘known’ to the participant, who is experiencing a number of problems in his or her daily life consistent with the selected diagnostic category (Angermeyer & Matschinger, 1994). In the original validation, there was a 100% inter-rater agreement between expert raters that the vignettes represented ‘major depressive disorder’ and ‘schizophrenia’ respectively.

Table 1: *Participant characteristics*

	Variable	Number	Percentage
Gender (N=94)	Female	66	70
	Male	28	30
Age (N=95)	21-30	31	32.6
	31-40	17	17.9
	41-50	18	18.9
	51-60	25	26.3
	61<	4	4.2
Years of experience (N= 91)	<5	30	33
	6-10	18	19.8
	10-20	36	39.6
	21-30	6	6.6
	31<	1	1.1
Current client group (N=91)	Adult	58	63.7
	Children and young people	2	2.2
	Learning disabilities	6	6.6
	Older adults	16	17.6
	Other	13	14.3
Current work setting (N=95)	Secure forensic	29	30.5
	Inpatient	25	26.3
	Outpatient/ community	28	29.5
	Other	13	13.7
Psychology education (N=93)	None	31	33.3
	GCSE or A level	26	28
	Degree or higher	11	11.8
	Workplace training	25	26.9
Personal experience of mental health problems (N=95)	None	11	11.6
	I have had a mental health problem	34	35.8
	Someone I know in my personal life has had a mental health problem	50	52.6

Although originally assessed against the Diagnostic and Statistical Manual III-Revised, these vignettes have continued to be used as recently as 2014 (Schomerus et al., 2014) and are considered as consistent with these diagnoses. The vignettes were published in English in the original article (Angermeyer & Matschinger, 1994), and have also been used in a French translation for a subsequent study (Angermeyer, Millier, Rémuzat, Refaï, & Toumi, 2013). The full vignettes are found in Appendix 10 for reference. In the ‘labelled’ conditions, the vignettes were titled ‘Schizophrenia’ or ‘Major Depressive Disorder’ respectively.

Causal beliefs

Causal beliefs were identified using ten 5-point scales (1= *certainly not a cause* and 5 = *certainly a cause*). These questions have been used in a range of previous research in the area (Angermeyer & Matschinger, 1994; Schomerus et al., 2014; Schomerus, Matschinger, & Angermeyer, 2006), and factor analysis report scores as understood in three uncorrelated factors. These are ‘current stress’ (stressful life events, work-related stress, problems with family or partner, unconscious conflict), ‘childhood adversities’ (lack of parental affection, growing up in a broken home, childhood sexual abuse) and ‘biogenetic causes’ (chemical imbalance in the brain, brain disease, heredity). For the purpose of analysis, ‘childhood adversities’ and ‘current stress’ factors were combined to a ‘psychosocial’ factor for comparison with the ‘biogenetic’ factor, as comparison of psychosocial/biogenetic dichotomy of aetiological beliefs is consistent with the wider literature (Fisher & Farina, 1979; Lincoln, Arens, Berger, & Rief, 2008). Likert measures have been shown to have good concurrent validity with longer assessment methods of perceptions of cause of illness (Broadbent, Petrie, Main, & Weinman, 2006).

Descriptive information relating to demographic variables, work and educational experiences were collected using a short survey created for this purpose. A copy of all the questionnaires used for the research can be found in Appendix 11.

Design

Participants were randomly allocated to condition. This was facilitated by linking responses to an arbitrary question (colour preference), to each experimental condition. Answers were listed in a random order for each participant, and the links between response and condition changed periodically to avoid any effect that may exist between colour preference and aetiological beliefs.

The true nature of the study was concealed until completion of study questionnaires to avoid introducing bias.

Procedure

Brief advertisements via groups for mental healthcare assistants and support workers on Facebook and Twitter, and through the host trust were posted online and distributed via email (see Appendix 12) within the host trust between December 2014 and March 2015. The adverts contained a link to a website constructed for the purpose of the study. Potential participants followed a link to an information page describing the broad purpose of the study (see Appendix 13) and subsequent consent page (see Appendix 14); in accordance with the British Psychological Society's guidelines for ethical online research (BPS, 2013). Once participants had indicated informed consent and their eligibility for the study, they were directed to a page with a vignette representing either "major depressive disorder" or "schizophrenia". These pages were either titled with the appropriate diagnostic label or untitled according to study condition. Participants were then directed to the causal beliefs questionnaire.

Once each question was completed, a further page requested demographic information and details related to the type and length of employment in mental health. On completion of this page, participants were directed to a debrief page giving full information about the purpose of the study and were offered the option of withdrawing their data at this point, although this was not taken by any participants who entered the study. Participants who submitted their data were given the option to provide email details (to be stored separately and securely) to be entered into a draw to win one of three £25 Amazon vouchers, and to receive details of the findings of the study if interested. This page also provided details of information sources regarding the mental health difficulties referenced in the study, and contact details for the study team to ask any questions related to the study.

All data was stored and analysed on a secure server owned by the University of Liverpool to maintain its security, in line with University sponsorship and ethical guidelines.

Ethical approval

The project received ethical approval from the Institute of Psychology, Health and Society of the University of Liverpool, and was sponsored by the University of Liverpool in line with the Department of Health's Research Governance Framework for Health and Social Care second edition (2005). Following sponsorship, the project was approved by the Research and Development department of the host NHS trust. Relevant approval letters are provided in Appendices 18-20.

Data analysis

Data analysis was conducted using SPSS (22.0) statistical software. Descriptive statistics were computed to report demographic data and are reported in Table 1.

One hundred and eight participants read the study vignettes and completed the causal beliefs questionnaire; 95 completed demographic data. There was no apparent pattern amongst the participants who choose not to complete the study. Data were included where present; responses that did not include demographic data were used for analysis relating to labelling and beliefs.

Initially, causal beliefs were totalled and categorised as either biogenetic or psychosocial on the basis of the higher mean item score per participant (see Table 2). Binomial logistic regressions were performed to model the effect of five predictor variables that have demonstrated relevance in previous studies with the general public: vignette ('depression' or 'schizophrenia'), labelling condition (labelled or unlabelled), age, gender, and length of experience, on the dependent variable of causal beliefs (biogenetic or psychosocial).

To ascertain whether any independent variables related to a change in the extent of biogenetic or psychosocial beliefs, multiple regressions were performed on each score (psychosocial and biogenetic) independently, including the additional predictor variables relating to work setting and client group. First, the dataset was tested to check whether assumptions of multiple regression were met.

Multicollinearity was detected between the 'labelling condition' and 'vignette' variables (see Appendix 15); to avoid the impact of this on the regression model, two separate regressions were performed. Psychosocial data were normally distributed, but biogenetic beliefs showed a positive skew, and were not normally distributed (Shapiro-Wilk, $p = .000$). A square root transformation was performed to allow the

best statistical estimate of normality for comparison to other data. Output relating to this transformation is given in Appendix 16. The transformed scores were converted to Z-scores to allow the comparison of factors with different scaled scores.

Results

Causal beliefs

Across all conditions, the majority of participants rated psychosocial factors higher than biogenetic factors, the proportions are presented in Table 2.

Table 2: *Preferred causal beliefs reported by all participants*

	N	Percentage of total
Psychosocial	56	51.4
Biogenetic	42	38.5
Equal scores	11	10.1

Regression analysis

Binomial logistic regression was performed to test whether labelling condition related to preference for biogenetic or psychosocial causal beliefs. Independent variables vignette, labelling condition were entered to test the main hypothesis; age, gender and length of experience in mental health were included as continuous independent variables in this regression due to their significance in previous studies (see Table 3).

Table 3: *Binomial logistic regression relating age, gender, labelling condition, vignette, and experience to causal beliefs*

				95% C.I. for Exp(B)		
	B (S.E)	Sig	Wald	Lower	Exp(B)	Upper
Constant	-.269 (.565)	.635	0.226		0.765	
Vignette	1.325* (.469)	.005	7.986	1.501	3.763	9.436
Labelling	-.255 (.448)	.569	0.325	0.322	0.775	1.864
Age	-.007 (.022)	.756	0.097	0.950	0.993	1.038
Gender	.032 (.376)	.932	0.007	0.494	1.033	2.156
Length of experience	-.016 (.047)	.731	0.118	0.897	0.984	1.080

$R^2 = .086$ (Cox & Snell), $.115$ (Nagelkerke). Model $\chi^2 = 8.797$. $*p < 0.01$

The regression was not statistically significant, $\chi^2(5) = 8.797, p = .117$.

Although the regression was not statistically significant, vignette ('depression' or 'schizophrenia') had a significant correlation with outcome ($b=1.325, S.E=.469, \chi^2=7.986, p=.005$). Controlling for all other variables in the model, participants who viewed the 'schizophrenia' vignette in both labelled and unlabelled conditions were 3.7 times more likely ($\text{Exp}(\beta) = 3.763, 95\% \text{ CI } [1.501, 9.436]$) to rate biogenetic factors higher than psychosocial factors than those who read the 'depression' vignette in both conditions.

Additional regressions were performed to ascertain any relation between personal experience of mental health problems, level of education in psychology, type of workplace and the client group that participants were currently working with. Separate regressions were performed to avoid under-powering the analysis as a result of creating necessary dummy variables. No significant relationships were found between any of these variables and preference for psychosocial or biogenetic causal beliefs. Tables summarising these regressions are shown in Appendix 17. The main hypothesis was rejected; no relation was found between labelling condition and strength of aetiological beliefs. There was no significant relation between age, gender, work experience, personal experience of mental health problems or psychology education and the extent of agreement with either biogenetic or psychosocial beliefs.

Correlations were conducted to ascertain which variables may be useful to include in a regression exploring relation to the strength of psychosocial or biogenetic beliefs; reading the schizophrenia vignette was significantly correlated with higher level of biogenetic beliefs, $\beta = .189, t(1) = 1.988, p = .049$; this is in

keeping with the previous analysis, where the schizophrenia vignette was associated with increased preference for biogenetic over psychosocial causal beliefs.

Multiple regressions were performed on psychosocial beliefs and biogenetic beliefs as separate scales using the independent variable of work setting. The results of the regression using biogenetic beliefs as the dependent variable can be seen in Table 4.

Table 4: *Linear regression for square root transformed biogenetic factor totals, comparison to secure settings.*

	Standardized coefficients	<i>t</i>	Sig	95% Confidence interval for β	
	Beta			Lower	Upper
Constant		27.661	.000	2.563	2.959
Inpatient	.220	1.949	.054	-.005	.577
Outpatient	.234	2.054	.042	.010	.575
Other settings	.018	.158	.874	-.262	.308

One statistically significant relationship was observed; working in an outpatient setting corresponded to higher biogenetic scores than working in secure settings ($\beta = .18$, $t(3) = 2.04$, $p = .042$), and one relationship approaching significance; working in an inpatient setting being associated with higher scores on biogenetic items ($\beta = .22$, $t(3)$, $p = .054$). None of the tested variables correlated with level of psychosocial beliefs.

Discussion

This study aimed to identify whether diagnostic labelling is associated with increased biogenetic causal beliefs amongst staff working in supportive roles in mental health services, as observed in studies with the general public (Angermeyer & Matschinger, 1996). The study also aimed to identify whether associations between demographic variables, experience of mental health difficulties, training in psychology, and aetiological beliefs were apparent with this participant group.

No significant relationships were found between labelling condition and aetiological belief, in contrast to research with the general public using the same experimental materials (Angermeyer & Matschinger, 1996). As there have been no recent replications of this study, it is unclear whether this represents a difference between the current participant group and the general public. Time-trend analysis of research with the general public has suggested that the public's views are changing over time, with an increase in biogenetic causal beliefs, though psychosocial beliefs still dominate (Schomerus et al., 2012). Further replications of the Angermeyer and Matschinger (1996) study may reveal whether this has been accompanied by an increased stability of aetiological beliefs in the general public, and less susceptibility to this 'labelling effect'.

Overall, participants endorsed psychosocial beliefs more than biogenetic beliefs, in keeping with the majority of research into the general public's aetiological beliefs (Jorm et al., 1997; Sarbin & Mancuso, 1970; Schomerus et al., 2006). Most healthcare assistants and support workers primarily provide support for service users through positive and supportive day-to-day interactions in activities of daily living and supporting recovery (Cavendish, 2013), an essentially social intervention. Lauber et al (2005) suggested an association between role and beliefs about mental

health treatments in qualified mental health workers. Participants in the current study might be expected to endorse treatment beliefs associated with their supportive role, and associated psychosocial causal beliefs. Alternatively, the results of the current study may simply represent a similarity between the views of the current participants and the general public, neither of whom are influenced by professional training, such as participants in Lauber et al.'s (2005) study.

There was a relationship between the vignette presented and the level of biogenetic causal beliefs, with the schizophrenia vignette rated higher on the biogenetic causal belief scale than the depression vignette, also consistent with research with the general public (Schomerus et al., 2006). Several studies have found that participants who identify a vignette as a particular diagnosis are more likely to hold biogenetic aetiological beliefs (Magliano, Read, Sagliocchi, Patalano, & Oliviero, 2013) and stigmatising views about the described problem (Angermeyer & Matschinger, 2003b). This suggests that the relationship between biogenetic beliefs and labelling is directional; that beliefs increase likelihood of labelling, rather than the reverse. Further research is necessary to understand this relationship and extrapolate this finding to other groups within services and society.

Moreover, depression is thought to be more prevalent (estimated yearly prevalence rate 11%; Singleton, Bumpstead, O'Brien, Lee, & Meltzer, 2003; 19% for anxiety and depression combined; Beaumont & Lofts, 2013) than schizophrenia (estimated lifetime prevalence rate 0.87%; Perälä et al., 2007), which could make the difficulties described in the 'depression' vignette more familiar than those described in the 'schizophrenia' vignette. Additionally, a study of clinical psychologists suggested they felt most similar to a vignette describing depression, and least similar to vignettes representing schizophrenia and borderline personality disorder (Servais

& Saunders, 2007). Greater familiarity, and/or a greater perceived similarity-to-self may lead to 'depression' being more likely to be associated with psychosocial factors than 'schizophrenia', which may be perceived as less familiar/more unusual.

The majority of participants reported some personal experience of mental health difficulties, or contact with someone with a mental health difficulty in their personal lives. However, experience of mental health difficulties did not yield a significant relationship with aetiological beliefs. As the current study did not ascertain the nature of participants' personal experiences or how current they were, it is difficult to establish whether the current sample reported a higher than expected level of experience of mental health difficulties; approximately one in four adults in the UK each year (Halliwell, Main, & Richardson, 2007). This personal familiarity with mental health difficulties may also contribute to a greater perception of psychosocial cause for depression than for schizophrenia, given their relative prevalence.

Previous studies have suggested that both lay and mental health worker groups desire more social distance from schizophrenia than depression in vignette studies (Nordt, Rössler, & Lauber, 2006), and perceive the diagnosis of schizophrenia as more dangerous than depression (Angermeyer & Matschinger, 2003b; Björkman et al., 2008). Results demonstrating higher rates of biogenetic causal beliefs related to the schizophrenia vignette are of interest because of links between biogenetic aetiology and stigmatised beliefs in the general public (Schomerus et al., 2014). Research should seek to identify whether similar links between aetiological beliefs and stigmatising attitudes exist in other staff groups. If so, it may indicate a need for training aimed at reducing levels of biogenetic beliefs and other correlates of stigma.

There was no relationship between age, gender, length of work experience, education in psychology, client group and aetiological belief. These variables have previously been associated with links to aetiological beliefs (Björkman et al., 2008; Chambers et al., 2010; Hansson et al., 2013; Read & Law, 1999; Tyson, 2013), although no consistent effects have been identified. As there has been no consistent evidence of directional links between demographic variables and causal beliefs in previous studies, and no link was present in the current study, it seems likely that the factors governing causal beliefs are more nuanced and subtle than a simple correlation between individual factors.

Participants working in outpatient services reported significantly higher levels of biogenetic beliefs than staff working in secure settings, but no other relationship between workplace and beliefs was observed. The reasons for this are unclear, and there is a general lack of research comparing attitudes of forensic mental health to those of generic mental health staff. Further research could explore whether this is a consistent finding, and seek to identify whether this has any impact on the behaviour of staff in these services. Including other staff groups in a larger sample and employing statistical modelling techniques may ascertain whether workplace, professional identity or professional group have a consistent relationship with aetiological beliefs.

Methodological issues

The current study was conducted online, in contrast to Matschinger & Angermeyer's (1996) initial study, where labelled vignette information was delivered verbally. Internet recruitment is a growing area for mental health research, and has demonstrated success in similar studies with staff groups (Guise, Chambers,

Välimäki, & Makkonen, 2010). It offers an enhanced sense of anonymity for participants (Ahern, 2005); and in doing so has the potential to reduce potential social desirability bias in responses (Heerwegh, 2009). However, there are also potential drawbacks. Response rates cannot be calculated where the total population is not known; therefore this common indicator of potential response bias (Whitehead, 2007) is not available in internet-based studies. Guise et al. (2010), however, compared responses to an attitudinal study collected on paper and via the internet and found no significant differences either between the attitudes of each group, or their demographic description. This suggests that although collected via the internet, these results can be seen as comparable to a sample collected via paper questionnaires. Recruitment via the internet was favoured for the higher response rates obtained in previous research using this method (Guise et al., 2010). This may be particularly relevant with healthcare staff who have relatively low response rates in comparison to other often studied groups such as service users or students (Badger & Werrett, 2005).

There is a possibility that the diagnostic labels in the experimental condition were not prominent enough, causing the labelling effect to be underrepresented in this group. Alternatively participants may have noticed the labels but directed attention towards the more detailed vignettes, as this may be viewed as more useful or relevant, as was reported by participants in Lebowitz and Ahn (2014).

The test materials should also be considered. While it was the specific aim to identify whether an effect identified using these materials with the general public was replicated in this participant group, it is possible that the questionnaire was not suitable for use with this population. Previous research into illness perceptions has found that questionnaires validated with the general public did not report findings in

the same factors when used with qualified mental health nursing staff (Fleming, Martin, Miles, & Atkinson, 2009) and this may also be the case with the current study. Use of the current survey with other staff groups would provide further information about this. As noted by Fleming et al. (2009), there is a current ‘gap in the market’ for a measure that can accurately report the views of staff members about mental health difficulties.

Given the lack of significant effects in the current study, and inconsistent findings amongst the body of related research, future research may benefit from larger sample sizes to allow more intricate statistical analysis. This may allow researchers to identifying more complex relationships than have been available to present methods of enquiry.

Implications

The higher level of biogenetic beliefs linked to the schizophrenia vignette are a potential concern in the context of other research linking biogenetic causal beliefs, raised levels of stigma (Magliano et al., 2013) and pessimism about recovery (Schlier et al., 2014). The difference observed between the two groups in this study suggests that more normalising of ‘schizophrenia’ could be a target for generating parity in conceptions of different mental health difficulties. Definitions of stigma suggest that the creation of groups and attribution of unpleasant or unwanted characteristics to the ‘other’ group are central to the process (Goffman, 1986). The conception of people with schizophrenia as being biogenetically different (genetic essentialism, Nelkin & Lindee, 2004) is an example of this, and is widely associated with stigma and societal division (Boysen, 2011; Haslam, 2011; Kvaale et al., 2013). However, the non-significant findings reported here do not offer any suggestions for ways to

improve this current conception of schizophrenia amongst support staff. Despite this, findings of this study are promising. Results suggest the use of diagnostic language does not change the aetiological beliefs of support staff in mental health services, in contrast to previous studies with the general public (Angermeyer & Matschinger, 1996).

There is an interest in reducing mental health stigma in the UK (Henderson & Thornicroft, 2013), but to date, very few studies relating to health staff attitudes and beliefs have taken place in the UK. The hypothesised role of mental health workers in preventing or contributing to stigma experienced by service users (Schulze, 2007; Gray, 2002) makes this an important target for future research in the NHS. Additionally, given the multicultural nature of the UK, it is important that time and space is given to researching beliefs not limited to a Western biogenetic-psychosocial continuum (Fisher & Farina, 1979), but also relating to beliefs of possession and witchcraft that abound in other cultures (Al-Adawi et al., 2002; Sun et al., 2014), and may be relevant to stigma in communities in Britain today.

Previous efforts to reduce discrimination by the general public have focused on increasing biogenetic causal beliefs, citing attribution theory, and the potential for this method to remove 'blame' from the person experiencing mental health difficulties. However, while this approach has increased biogenetic causal beliefs, it correlates with an increase in discrimination towards people with mental health problems (Angermeyer et al., 2011). Future efforts to reduce such stigma, amongst the public and worker groups, could emphasise the psychosocial aspects of mental health difficulties, and in doing so reduce the 'genetic essentialism' theoretically implied by biogenetic causal beliefs (Nelkin & Lindee, 2004).

Benefits associated with both biogenetic (reduced blame for behaviour; Schlier et al., 2014) and psychosocial (less desire for social distance, lower perceived dangerousness; Kvaale et al., 2013) have been identified. As these beliefs are proposed to exist on a continuum (Fisher & Farina, 1979), and both are associated with advantages, efforts to balance causal belief about mental health may be more effective and realistic than attempts to change people's beliefs entirely. Further research could be required to compare these aims, and identify potentially effective methods for supporting change.

Conclusion

Diagnostic labelling of vignettes, age, gender, work experience and personal familiarity with mental health difficulties were not correlated with differences in causal beliefs in the current study. 'Schizophrenia' was viewed as being more biogenetically caused than depression, a finding which parallels studies with the general public. Understanding this discrepancy may be a useful target for ongoing efforts to reduce stigma towards people with mental health difficulties.

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Appendix

Appendix 1: Literature review protocol

Mental health workers' attitudes and beliefs about mental illness: A meta-analysis of recent research

Protocol Version 2

Martin Bennett

Trainee clinical psychologist

Dr Catrin Eames

Lecturer in Clinical Psychology

Professor James McGuire

Professor of Forensic and Clinical Psychology

Background and justification

An increasing body of research has sought to identify the attitudes and beliefs held by mental health professionals about people with mental health problems. Mental health workers are thought to be important in the process of managing the stigma internalised by people with mental health problems, and as role models for the general community in how they should relate to people with mental health problems.

Two previous reviews have sought to summarise research related to this research (Schulze, 2007; Wahl & Aroesty-Cohen, 2010). Both reviews have noted that research findings are inconsistent; that in some studies mental health workers report positive views about people with mental health problems, some negative, and in the majority a mixed profile of opinions is reported. The most recent of these reviews (Wahl & Aroesty-Cohen, 2010) noted there is no consistent methodological approach to this research, which may contribute to the mixed profile of attitudes and beliefs reported across the body of research. However, this review contained no comparison of these methods, and no summation of the findings of the research reviewed.

As the variation in research methodology has been noted, and the field continues to expand, there is need for a critical review of these methods, and a comparison of the various findings that takes into account variations of population, methodology, stimuli and measure. This can be used as a basis for describing a method for future research that takes into account the confounding variables

identified, and allows future researchers to avoid, or be awareness of, the sources of bias that are introduced by their methodology.

Aims

- To undertake a critical review and meta-analysis of recent research into mental health workers attitudes and beliefs about people with mental health problems.
- To use subgroup analysis to identify the impact of a range of methodological differences between studies on study outcome.
- On the basis of these comparisons, to propose a standard for future research that allows for recognition of the bias introduced by study methodology.

Search strategy and sources

The following databases will be searched for studies that satisfy the inclusion and exclusion criteria indicated below.

CINHAL +

Pubmed

Psychinfo

Medline

Science direct

Web of Knowledge

To supplement this search, the reference sections of any papers used will be hand searched for relevant papers meeting the criteria below.

The specified databases will be searched using the following terms. The Boolean operators are specified in the format accepted by the EBSCO (Pubmed, Psychinfo) database as an example. The title and abstract fields will be specified for each set of keywords.

“mental health professional” OR “mental health worker” OR psychiatrist OR psychologist OR “mental health nurse”

AND beliefs OR attitudes OR views OR stigma

AND “mental health problem” OR “mental illness” OR “psychiatric diagnosis”

This inclusive set of search terms will be used to define a large list that will then be refined by a search of the abstracts of the identified articles to check compliance with the specified inclusion and exclusion criteria. A record of the amount of studies

included and excluded at each stage will be made clear in flowchart that adheres to the PRISMA guidelines (Moher, Liberati, Tetzlaff, & Altman, 2009).

After studies satisfying the search terms above are collated, their titles will be assessed for relevance. Following this stage, further analysis of title and abstract will take place to check agreement with the criteria specified below.

Selection criteria of the studies

Once collated, all papers will be subject to an overview of abstracts where the precise topic of the paper will be determined. Papers will be retained that are:

- Related to the views, beliefs and attitudes of mental health workers about people with mental health problems. Studies related exclusively to treatment or prognosis will not be included.
- Papers where such views are part of a larger general data set will be included, provided that the views of those employed as mental health professionals are identifiable from this larger data set.
- Explicit in the measures and methods used to ascertain these views. In practise, this will limit review to quantitative studies.
- Available in English.
- Published in a peer reviewed journal. While an amount of research into mental health exists as 'grey' literature, reviewing peer-reviewed studies offers some boundary for the relevance and quality of the studies included.
- Published between 01 January 2009 and 01 January 2015.

Exclusion

Papers will be excluded at this stage if:

- They do not relate to the views of people working in mental health services. This will include studies of the general population including mental health workers where the views of these individuals cannot be reliably extracted from the larger data set.
- Staff working with people with mental health problems in physical health settings
- They report only the attitudes and views of students or student mental health workers.

Evaluation of the risk of bias

Assessment of methodological quality will make up the majority of this review.

Although it is suggested that the inclusion of low quality studies in meta analyses can be a source of bias, the aim of this review is to ascertain the impact of a range of methodological features on studies within this body of research. As such, all eligible studies will be included in the meta- analyses.

Data will initially be extracted on items identified in previous reviews as potential sources of methodological bias. These will then be used as moderators in a series of subgroup analyses to identify where methodological differences introduce bias to results across the body of the review.

Any further items identified in the process of data collection as potential sources of bias will be treated likewise to assist with the process of understanding the impact of methodological differences on research into mental health worker's attitudes and beliefs about people with mental health problems.

Bias across studies will be assessed using a funnel plot and classic failsafe N calculations.

Data extraction

The following information will be selected to answer the aims of the review:

- The stimulus group ('mental illness'/ 'schizophrenia' etc) and method (e.g. diagnostic label, vignette)
- The tools used for data collection, their validity and suitability to the study population
- The sample selected
- Any comparison group specified in the research.
- The findings of the study.
- Further categories as determined by the particular tool in use.

Analysis and synthesis

Potential sources of bias will be recorded and tabulated. Study outcomes will be summarised as effect sizes suitable to the outcome format, and used for comparison of results across studies and within subgroups. These will be presented as forest plots

and reported as effect size (standardised mean difference) and 95% confidence intervals.

Results will be reported consistent with the Preferred Items for Systematic Reviews and Meta-Analyses (PRISMA) guidelines (Moher et al., 2009).

References

Moher, D., Liberati, A., Tetzlaff, J., & Altman, D. G. (2009). *Preferred reporting items for systematic reviews and meta-analyses: The PRISMA statement* British Medical Association.

Schulze, B. (2007). Stigma and mental health professionals: A review of the evidence on an intricate relationship. *International Review of Psychiatry*, 19(2), 137-155. doi:10.1080/09540260701278929

Wahl, O., & Aroesty-Cohen, E. (2010). Attitudes of mental health professionals about mental illness: A review of the recent literature. *Journal of Community Psychology*, 38(1), 49-62.

Conflict of interest statement

There are no potential conflicts of interest. This review will be made publicly available via the University of _____ repository following its completion and it passing assessment as part of the Doctorate in Clinical Psychology programme.

Sources of financing

This review is being completed as part of the requirements for the University of _____ Doctorate in Clinical Psychology Program. Research costs are funded by the programme and _____ NHS Trust.

Appendix 2: Table detailing data transformation for meta-analysis

Adjustment	Scale/ factor	Method
Reverse score to unify direction of effect	ATAMHS-33: Authoritarianism Benevolence CAMI: SDS (Hanzawa) OMI (Kopera): Authoritarianism, Social restrictiveness Loch: Perceived prejudice Negative stereotypes Perceived prejudice Social distance scale AQ-9	(minimum score + maximum score) – score= reversed score
Derive standard deviation from standard error	AMIQ	SD= standard error * \sqrt{n}
Response rate reversed to gain response rate consistent with desired direction of effect	PDDQ (Hansson): Items 5, 6, 7, 9, 11, 12 Hori: Items 2-8, 13,14	Binary outcomes: Total participants – participants agreeing= participants disagreeing OR Total participants – participants disagreeing= participants agreeing
Groups/ scores combined to derived combined mean and standard deviation	Sun: combine MH and public sub groups	Mean= $\frac{N_1 M_1 + N_2 M_2}{N_1 + N_2}$ Standard deviation= $\sqrt{\frac{(N_1 - 1) SD_1^2 + (N_2 - 1) SD_2^2 + \frac{N_1 N_2}{N_1 + N_2} (M_1^2 + M_2^2 - 2M_1 M_2)}{N_1 + N_2 - 1}}$

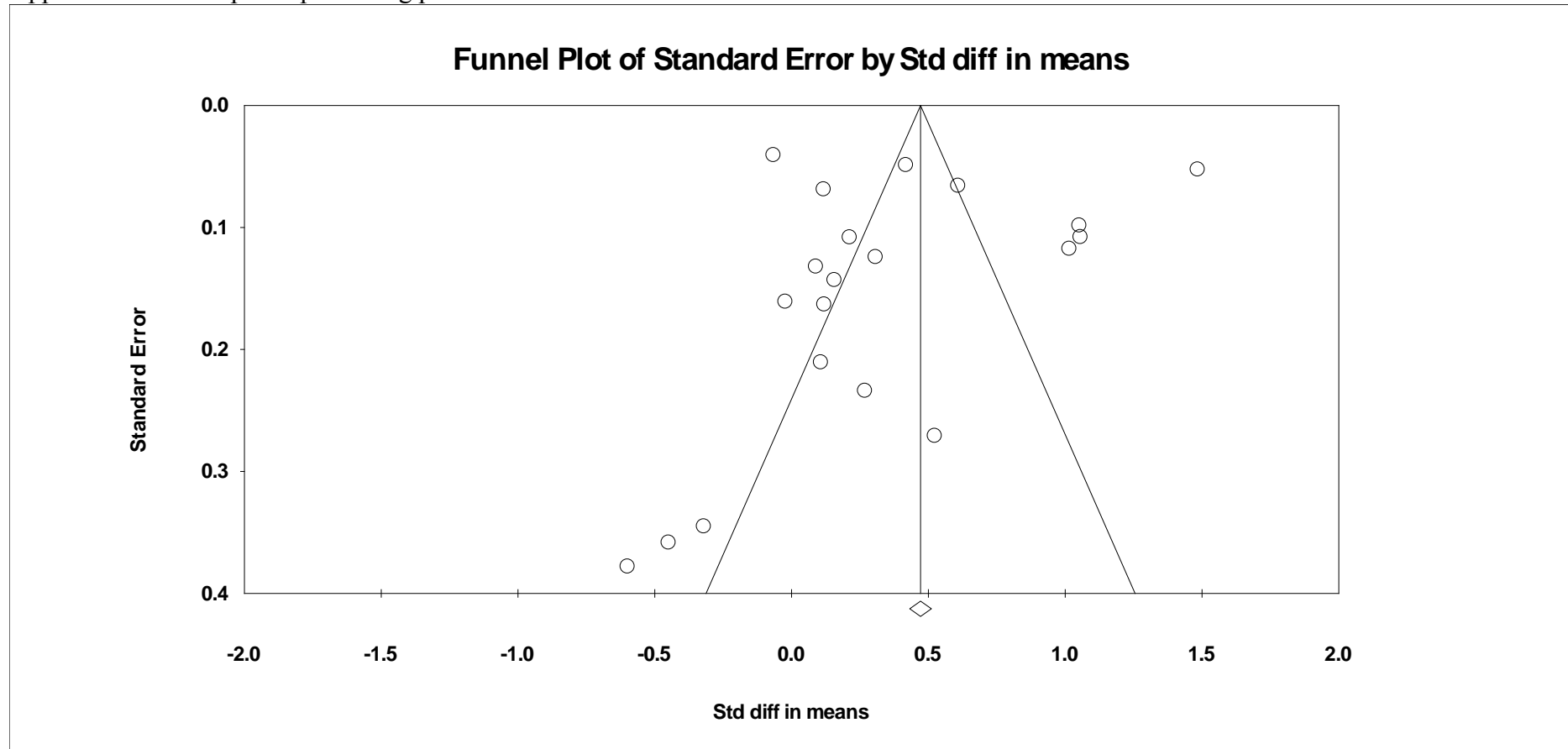
Appendix 3: Table detailing measures used in reviewed studies

Measure	Original reference	Number of items	Response format	Outcome level of data	Factors (as used in reviewed paper)
Attitudes to Mental Illness Questionnaire (AMIQ)	(Luty, Fekadu, Umoh, & Gallagher, 2006)	5	5 point scale	Continuous	Unidimensional
Attitudes Toward Severe Mental Illness 3 (ASMI)	(Madianos et al., 2012)	30	5 point scale	Continuous	Stereotyping Optimism Openness Guiltiness
Attitudes Towards Acute Mental Health Scale (ATAMHS-33)	(Baker et al., 2005)	33	25 items, 5 point scale, 8 semantic differentials	Continuous	Care or control Therapeutic perspective Hard to help Positive attitudes
Attribution Questionnaire (AQ-9)	(Corrigan et al., 2002)	9	9 point scale	Continuous	Unidimensional
Characteristic scale	(Olmsted & Durham, 1976)	9	7 point Semantic differential scale	Continuous	Unidimensional
Community Attitudes to Mental Illness – Swedish version (CAMI-S)	(Högberg et al., 2012)	29	6 point scale	Categorical	Intention to interact Fear and avoidance Open-minded and pro-integration Community mental health ideology
Community Attitudes to Mental Illness (CAMI)	(Taylor & Dear, 1981)	40	5 point likert	Continuous	Authoritarianism Benevolence Social restrictiveness Community mental health ideology
Difficulties of Community Living	(Hanzawa et al., 2009)	12	5 point scale	Continuous	Beliefs about most appropriate form of hospitalisation

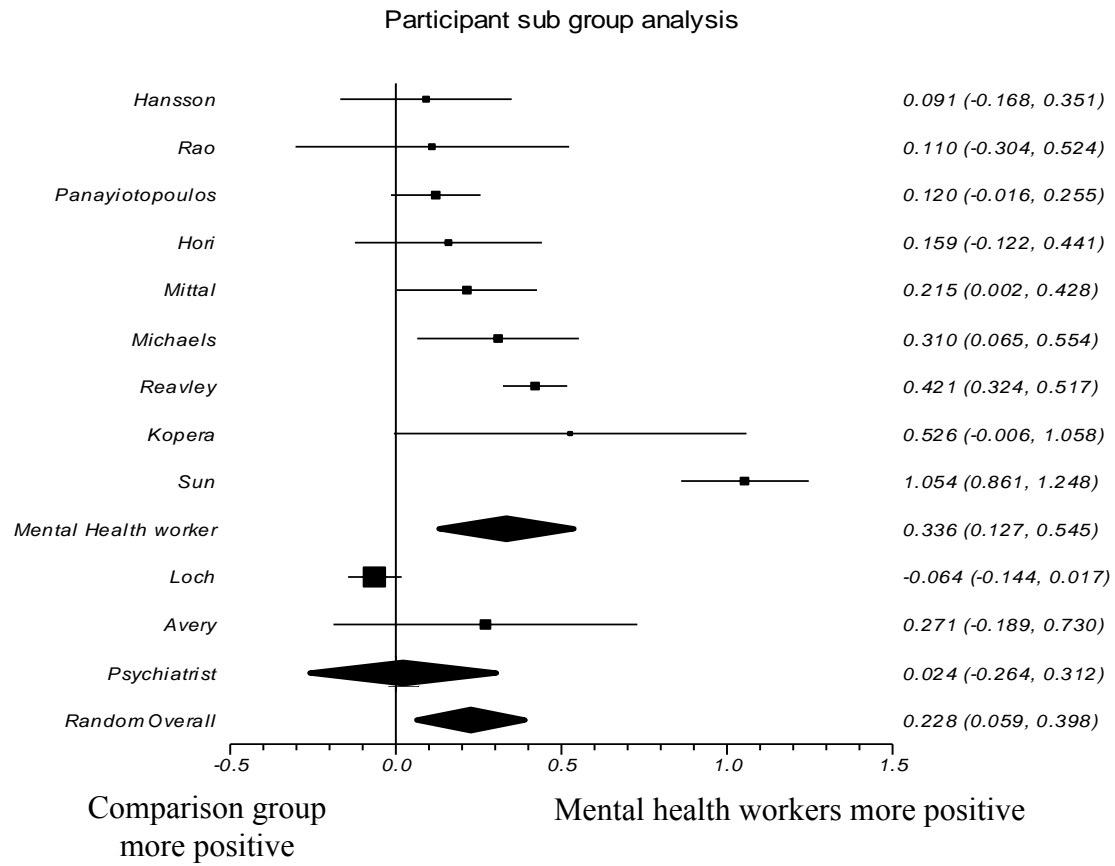
Scale (DCLS)					Resources for living in the community Social disadvantages of living in the community
Empowerment Scale (Michaels & Corrigan, 2013)	(Corrigan, Powell, & Michaels, 2014)	3		Categorical	Unidimensional
Fear and Behavioural Intentions toward the mentally ill (FABI)	(Wolff, Pathare, Craig, & Leff, 1996)	43	Yes/ no	Categorical	With items added by Sun et al. (2014): Community attitude and biopsychosocial causation Socializing Specific interaction Disbelief in witchcraft
Implicit Attitudes Test (IAT)	(Greenwald, McGhee, & Schwartz, 1998)		Differential pairs	Categorical	
Medical Conditions Regards Scale (MCRS)	(Christison, Haviland, & Riggs, 2002)		6 point scale	Continuous	Unidimensional
Opinions about Mental Illness (OMI)	(Cohen & Struening, 1962)	51	6 point scale		Authoritarianism Social restrictiveness Benevolence Mental hygiene ideology Interpersonal eitology
Perceived Discrimination and Devaluation Questionnaire (PDDQ)	(Link, 1987)	12	4 point scale	Continuous	Unidimensional

SDS (hanzawa)		5	5 Point scale	Continuous	Unidimensional
Self-determination scale (Michaels & Corrigan, 2013)	(Corrigan et al., 2014)			Continuous	Unidimensional
Social distance scale (Loch 2013a)		5	3 Point scale	Continuous	Unidimensional
Social distance scale (Mittal et al., 2014)	from National Data Program for the Sciences and University of Chicago	5	4 point scale	Continuous	Unidimensional
Social Interaction Scale SIS				Continuous	Unidimensional

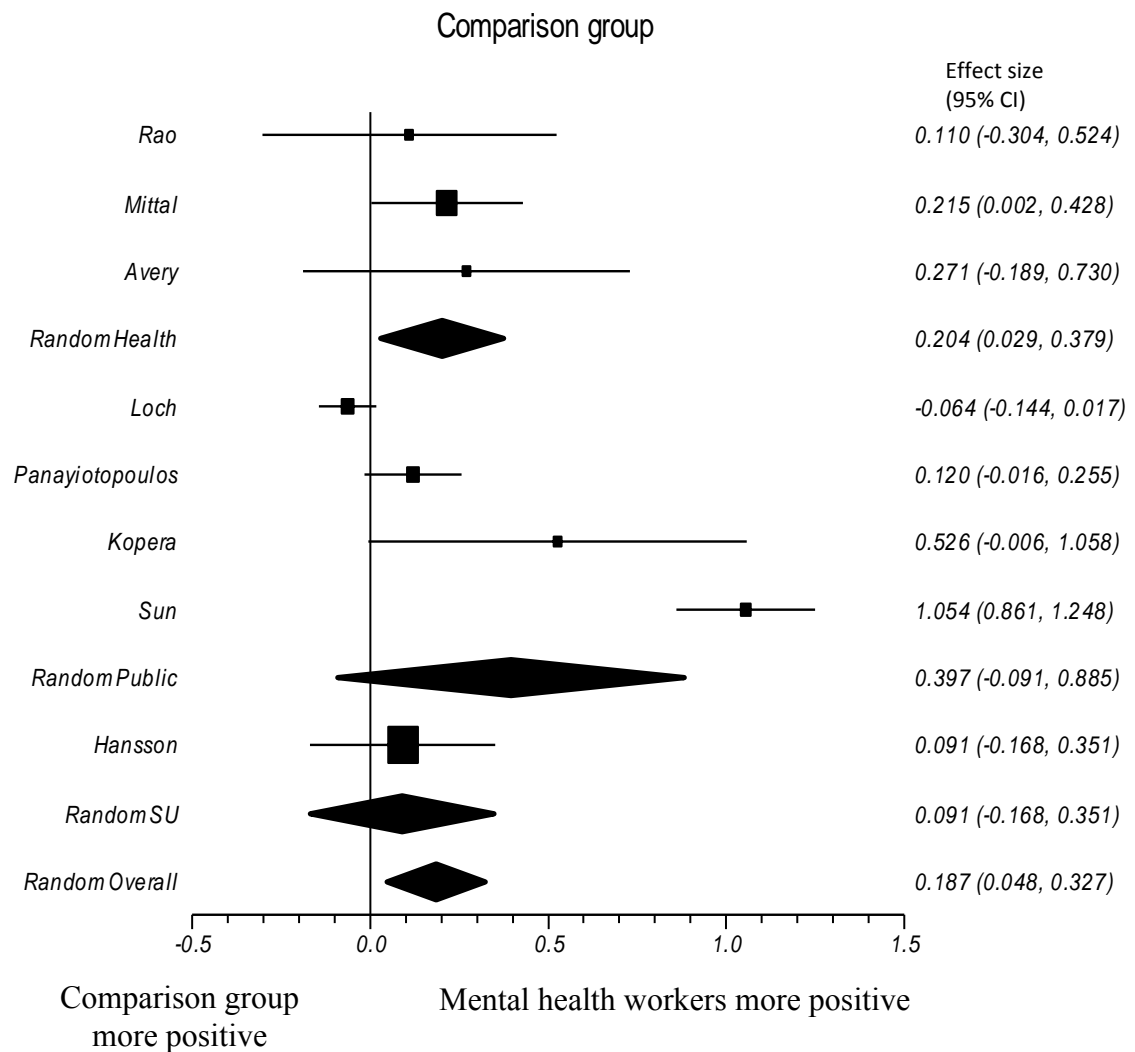
Appendix 4: Funnel plot representing publication bias across reviewed studies



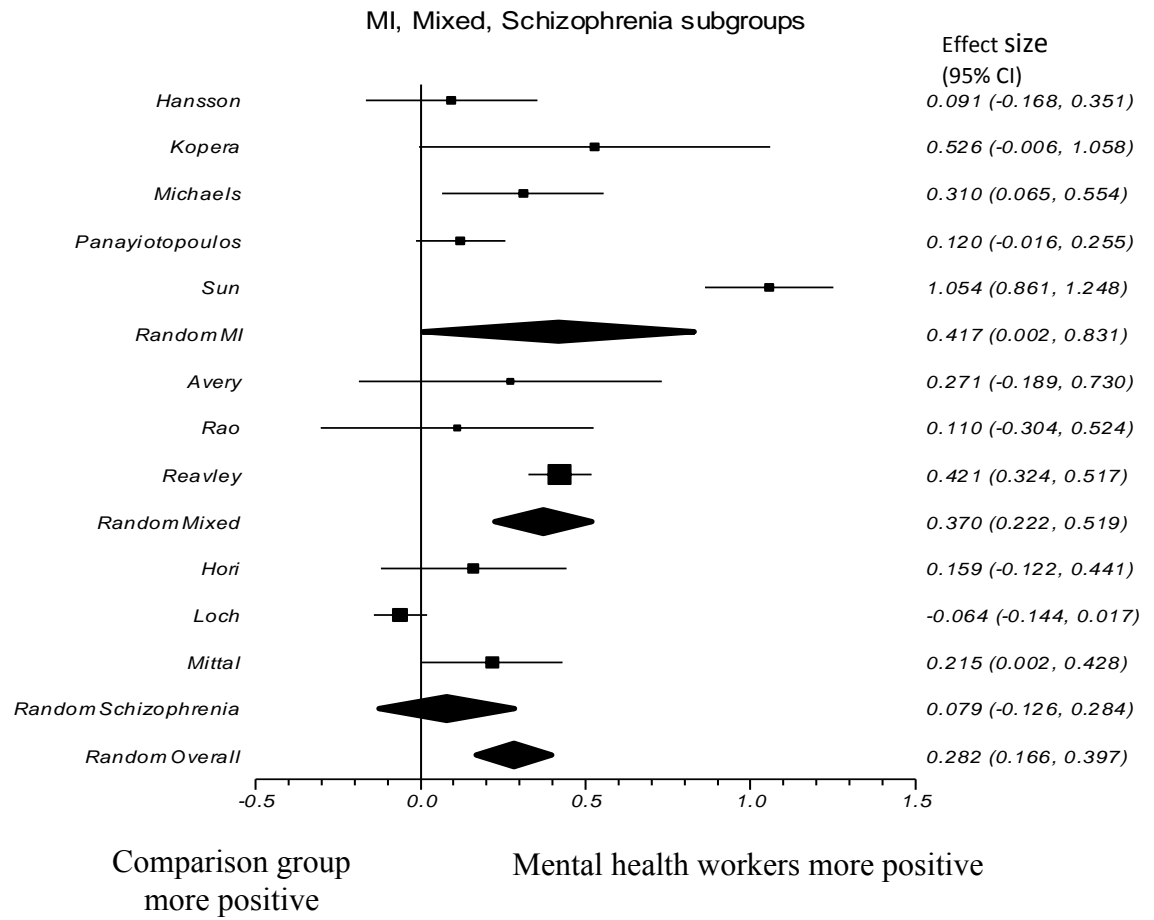
Appendix 5: Participant subgroup analysis forest plot, with diamond summary statistics within group and overall



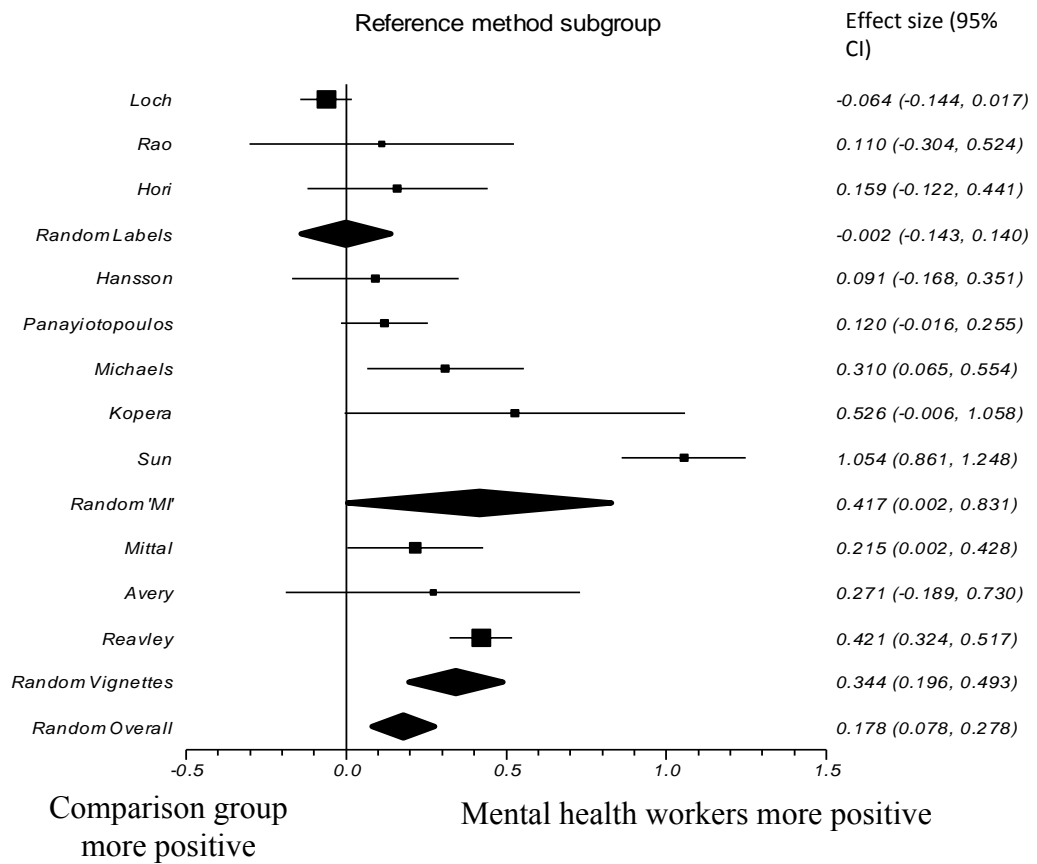
Appendix 6: Within study comparison group analysis forest plot, with diamond summary statistics within group and overall



Appendix 7: Stimuli subgroup analysis forest plot with diamond summary statistics within group and overall



Appendix 8: Reference method subgroup analysis forest plot, with diamond summary statistics within group and overall



Appendix 10 : Email advert for study

Dear colleague,

I am currently recruiting people to take part in a short internet study about how we talk about service users. It will take between 5-10 minutes to complete (under 10minutes from when you click the link), and involves reading a short paragraph, answering some simple questions about it and then filling in some anonymous information about yourself, including age, what type of service you work in and how long you've worked there. If you'd like to complete the study, you'll be entered into a draw to win an Amazon voucher for £25 as a sign of my appreciation for your time.

This study is part of my Doctorate in Clinical Psychology, which I'm studying for at the University of _____. The study has been passed by the university ethics board and is sponsored by the University of _____. For more information and to take part in the study, please follow the link below.

<link to study>

Many thanks for your time,

XXXXXXXXXXXX
XXXXXXX
XXXXXXXXXXXX

Appendix 11: Study vignettes

Major Depressive Disorder

Imagine that you hear the following about an acquaintance with whom you occasionally spend your leisure time:

Within the past two months, your acquaintance has changed in his nature. As opposed to previously, he is down and sad without being able to make out a tangible reason for his feeling low. He appears serious and worried. There is nothing anymore that will make him laugh. He hardly ever talks, and if he says something, he speaks in a low tone of voice about the worries he has with regard to his future. Your acquaintance feels useless and has the impression to do everything wrong. All attempts to cheer him up have failed. He lost all interest in things and is not motivated to do anything. He complains of often waking up in the middle of the night and not being able to get back to sleep. Already in the morning, he feels exhausted and without energy. He says that he encounters difficulty in concentrating on his job. In contrast with previous times, everything takes him very long. He hardly manages his workload. As a consequence, he has already been summoned to his boss.

Schizophrenia

Imagine that you hear the following about an acquaintance with whom you occasionally spend your leisure time:

Within the past six months, your acquaintance appears to have changed. More and more, he retreated from his friends and colleagues, up to the point of avoiding them. If someone managed to involve him in a conversation, he would address only one single topic: the question as to whether some people had the natural gift of reading other people's thoughts. This question became his sole concern. In contrast with his previous habits, he stopped taking care of his appearance and looked increasingly untidy. At work, he seemed absent-minded and frequently made mistakes. As a consequence, he has already been summoned to his boss.

Finally, your acquaintance stayed away from work for an entire week without an excuse. Upon his return, he seemed anxious and hounded. He reports that he is now absolutely certain, that people cannot only read other people's thoughts, but that they also directly influence them. He was however unsure who would steer his thoughts. He also said that, when thinking, he was continually interrupted. Frequently, he would even hear those people talk to him, and they would give him instructions. Sometimes, they would also talk to each other and make fun of whatever he was doing at the time. The situation was particularly bad at his apartment, he claimed. At home, he would really feel threatened, and would be terribly scared. Hence he had not spent the night at his place for the past week, but rather he had hidden in hotel rooms and hardly dared to go out.

Appendix 12: Study questionnaires

12. How much do you think that each of the following could be a cause of the problem you have just read about?*
- (1- certainly not a cause - 5 certainly a cause)

	1	2	3	4	5
Brain disease	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Work-related stress	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Chemical imbalance in the brain	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Lack of parental affection	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Stressful life events	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Childhood sexual abuse	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Problems with family or partner	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Heredity	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Growing up in a broken home	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Unconscious conflict	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

13. Gender*

- ☐ Male
- ☐ Female

14. How long have you worked in mental health services?*

Please enter the amount of time in years. If you have worked in mental health for less than 1 year, enter 0. This can include any previous jobs in mental health services

The value must be between 0 and 55, inclusive.

15. What type of mental health service do you currently work in?*

If the type of service you currently work in is not listed, please tick either box in the final row (none of these types of service), and write type of service into the box in the next question.

	I have worked in this type of service before	Current workplace
Adult secure (forensic) inpatient	<input type="checkbox"/>	<input type="checkbox"/>
Adult inpatient	<input type="checkbox"/>	<input type="checkbox"/>
Adult outpatient/ community	<input type="checkbox"/>	<input type="checkbox"/>
Children and young people's secure (forensic) inpatient	<input type="checkbox"/>	<input type="checkbox"/>
Children and young people's inpatient	<input type="checkbox"/>	<input type="checkbox"/>
Children and young people's outpatient/ community	<input type="checkbox"/>	<input type="checkbox"/>
Older adult inpatient	<input type="checkbox"/>	<input type="checkbox"/>

Older adult outpatient/ community	<input type="checkbox"/>	<input type="checkbox"/>
Learning disabilities secure (forensic) inpatient	<input type="checkbox"/>	<input type="checkbox"/>
Learning disabilities inpatient	<input type="checkbox"/>	<input type="checkbox"/>
Learning disabilities outpatient/ community	<input type="checkbox"/>	<input type="checkbox"/>
None of these types of service	<input type="checkbox"/>	

16. If you currently work in a type of service that is not listed above, please describe it here

17. What is your current job title?*

18. Do you currently work for the NHS?*

- ☐ Yes
- ☐ No

19. Have you had any education or training in psychology? Please indicate below any qualifications in psychology that you have taken part in*
If you have not had any education in psychology, or taken part in any work based training relating to mental health, please click 'none'

- ☐ None
- ☐ GCSE
- ☐ A Level
- ☐ Degree
- ☐ Higher degree (masters or PhD)
- ☐ Work based training

20. Do you have any personal experience of mental health problems?*

Please indicate if you have personally, or know someone who has had a mental health problem

- ☐ I have experienced a mental health problem before
- ☐ Someone I know in my personal life has had a mental health problem before
- ☐ I haven't had/ don't know anyone with mental health problems in my personal life

21. Please enter your age in years* The value must be between 16 and 100, inclusive.

Appendix 13: Information sheet

Information sheet

You are being invited to take part in a research study. Before you take part, it is important to know what the study will involve and why it is being done. Please take time to read this information page carefully and feel free to ask us (using the contact details below) if you have any questions about anything that you do not understand. You do not have to take part in this research study and should only agree to take part if you want to.

What is the purpose of this study?

This study is to explore whether the way we communicate about mental health problems influences what we think about the causes of these problems. It is particularly focused at people who work in caring and support roles with people with mental health problems, but who do not have full professional qualifications. We think it is important to gather the views of people working in these roles because there has been no previous research that does so, and non-qualified nursing, care and support staff make up a large proportion of the mental health workforce.

Why have I been invited to take part?

You have been invited to take part in this study because you are currently working as a healthcare assistant, support worker or care assistant in a service for people with mental health problems. Please note that people with full professional qualifications (for example in nursing, clinical psychology, occupational therapy or speech and language therapy) are excluded from this study.

Do I have to take part?

Participation in the study is entirely voluntary. You are free to withdraw from the study at any time, without explanation. However, if you fill in the entire questionnaire and submit it, your data will be anonymised and can therefore no longer be withdrawn from the study.

What will happen if I take part?

First you will be asked to complete a consent page to confirm that you understand what is involved in this study and that you are willing to take part.

Next, you will be asked to read a short paragraph that describes difficulties like those that may be experienced by users of mental health services.

After reading this page, you will be asked to answer 10 short questions about what you think the causes of the problem described might be.

When you have completed this brief questionnaire, you will be asked to record some basic information about yourself (age, gender etc) and your work experience (type of service you work in, amount of experience).

Finally, if you would like to be entered into the prize draw, you can enter your email address (which will be stored separately from your answers to preserve your anonymity). This is the end of the study.

It should take no more than 5-10minutes to complete the study. You will need to answer all the questions for us to be able to use your data.

Will I get anything in return if I take part?

After completing the questionnaire, you will have the option of entering a prize draw to win one of three £25 Amazon gift vouchers. To do this, you will need to enter your email address in the space provided. If you choose to do this, your email address will be stored separately to your questionnaire data in order to preserve your anonymity.

Are there any risks to taking part?

It is not expected that taking part in this study will pose any risk to you. However, if you do experience distress at any point whilst filling in the questionnaire, or afterwards, contact details for the research team are available at the bottom of this page. Please contact us if you have any concerns, and we will do our best to respond to them in a sensitive manner. I (Martin) am available to respond during office hours.

If the material in this study raises any questions for you, relevant information can be found at the following websites:

<http://www.nhs.uk/livewell/mentalhealth/>

<http://www.mind.org.uk/information-support/>

Thank you for taking the time to read this information.

Martin Bennett - Trainee clinical psychologist

Professor James McGuire - Senior Lecturer

Appendix 14: Consent page

1. I confirm that I have read and understood the information on the participant information on the previous page. I have had the opportunity to consider the information, as questions and have had these answered satisfactorily.

Yes

2. I understand that my participation is voluntary and I am free to withdraw at any time without giving a reason and without my rights being affected.

Yes

3. I understand that my responses will be kept strictly confidential. I give permission for members of the research team to have access to my anonymised responses. I understand that my name will not be linked with any of the research materials.

Yes

4. I understand that confidentiality and anonymity will be maintained and it will not be possible to identify me in any future publications resulting from this study.

Yes

5. I understand that once I submit my data it will be anonymised and therefore can no longer be withdrawn from the study.

Yes

6. I consent to take part in this study.

Yes

Appendix 15: Biogenetic beliefs regression coefficients with colinearity statistics

Model	Unstandardized coefficients				Colinearity statistics	
	B	S.E.	t	Sig	Tolerance	VIF
Constant	8.808	.746	11.8	.000		
Vignette	1.327	.645	2.056	.042	.975	1.025
Labelling condition	.283	.609	.465	.643	.988	1.012
Age	-.034	.027	-1.279	.204	.393	2.544
Length of experience	.062	.062	.998	.321	.394	2.535

A tolerance statistic above .9 indicates colinearity between two variables. Therefore, multicollinearity is demonstrated between the variables ‘vignette’ and ‘labelling condition’. These variables were entered into separate regressions to avoid this impacting on the accuracy of the analysis.

Appendix 16: Tables detailing normality tests pre- and post- square root transformations

Table 8: Tests of normality for biogenetic and psychosocial factor totals

	Kolmogorov-Smirnov			Shapiro-Wilk		
	Statistic	Df	Sig	Statistic	Df	Sig
Biological factor total	.104	109	.006	.964	109	.005
Psychosocial factor total	.080	109	.085	.972	109	.020

Table 9: Tests of normality for square root transformed biogenetic and psychosocial factor totals

	Kolmogorov-Smirnov			Shapiro-Wilk		
	Statistic	Df	Sig	Statistic	Df	Sig
SQRT_Biological factor total	.082	109	.065	.971	109	.019
SQRT_Psychosocial factor total	.065	109	.200	.982	109	.140

Appendix 17: Tables reporting regressions relating to client group, setting and personal experience data

Table 4: Logistic regression relating client group to causal beliefs

	B (S.E)	Sig	95% C.I. for Exp(B)		
			Lower	Exp(B)	Upper
Adult	-.164 (.502)	.473	.317	.848	2.268
CYP	.336 (1.474)	.819	.078	1.4	25.144
OA	.491 (.694)	.479	.420	1.6	6.359
LD	1.030 (.960)	.283	.427	2.8	18.375
Constant	-.336 (.414)	.416		.714	

CYP, Children and young people; OA, older adult; LD, learning disability. $R^2 = .027$ (Cox & Snell), .036 (Nagelkerke). Model $\chi^2 = 2.641$.

Table 5: Logistic regression relating work setting to causal beliefs

	B (S.E)	Sig	95% C.I. for Exp(B)		
			Lower	Exp(B)	Upper
Secure forensic	-.357 (.581)	.540	.224	.700	2.188
Inpatient	.154 (.596)	.796	.363	1.167	3.749
Outpatient or community	.417 (.576)	.470	.491	1.517	4.689
Constant	-.336 (.414)	.416		.714	

$R^2 = .020$ (Cox & Snell), .026 (Nagelkerke). Model $\chi^2 = 1.943$

Table 6: Logistic regression relating work setting experience of mental health problems

Personal experience	B (S.E)	Sig	95% C.I. for Exp(B)		
			Lower	Exp(B)	Upper
I have had a mental health problem	.201 (.784)	.798	.263	1.222	5.862
Someone I know has had a mental health problem	.803 (.752)	.286	.511	2.232	9.740
Constant	-.847 (.690)	.220		.429	

$R^2 = .025$ (Cox & Snell), .034 (Nagelkerke). Model $\chi^2 = 2.247$